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# **2022-2025 Metro Transit Service Policies & Standards**

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## EXECUTIVE SUMMARY

Los Angeles County Metropolitan Transportation Authority (Metro) serves as transportation planner, coordinator, designer, builder and operator for Los Angeles County. More than 9.210.3 million people live, work, and play within its 1,469447-square-mile service area.<sup>1</sup>

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 approving and implementing service changes.

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 ~~to -These goals will~~ help Metro 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

Also in 2018, Metro began the NextGen Bus Study to review and update the Metro bus system to ensure it provides a competitive transit service to meet the travel needs of LA County residents and visitors. The NextGen Bus Study included a comprehensive look at both Metro bus service performance and the overall travel market in LA County to determine where Metro bus service could be more useful. The study included significant input from riders and stakeholders to help develop a framework of guiding principles for positioning Metro's bus services to be more competitive in the overall travel market and to serve Equity Focus Communities most effectively, where the need for high quality transit is greatest.

In early 2020, the Metro Board approved the release of a draft NextGen Bus Plan for public review. Significant public input gathered in the first half of 2020 ~~was incorporated into resulted in~~ a revised draft NextGen Bus Plan ~~being~~ released in July 2020 ahead of public hearings (August 2020), Service Council approvals (September 2020), and Board adoption of this plan in October 2020. Phased implementation of the Reconnect Phase of NextGen Bus Plan with a set of frequency tiers and a simplified route structure focused on fast, frequent,

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<sup>1</sup> Represents all people living in the Census Tracts ~~within covered by~~ Metro's service area per the 2020-2023 American Community Census Survey Data. Service area is calculated from taking 0.75 mile buffer around all Metro bus line and rail stations.

~~and reliable service occurred began in~~ning in December 2020, with additional phases in June and September/December-2021. ~~Implementations of key NextGen Bus Plan bus speed and reliability elements of the NextGen Bus Plan, including a set of new bus priority lanes frequency tiers and other bus speed and reliability tools such as transit signal priority and bus stop optimization began implementation at the same time and continue to be implemented as of 2025. This phase of NextGen is known as Transit First. The NextGen elements, are all reflected in this update of the Transit Service Policy, and the NextGen Bus Plan remains the guiding principles for the Metro bus network.~~

## SECTION 1: INTRODUCTION, PURPOSE & BACKGROUND

Metro first adopted a Transit Service Policy (TSP) in 1986. [It is a required component of Metro's Title VI Plan and](#) [The TSP](#) is reviewed on at least a triannual basis [as part of the Title VI Plan Update](#). [It is and](#) updated as needed to better reflect agency goals and objectives, major [service](#) initiatives [and policy changes](#), and changes in local, state, and federal regulations and funding. [It is a required component of Metro's Title VI Plan](#). This document updates the most recent version adopted by the Board as part of the NextGen Bus Plan adoption in [November October](#) 2020<sup>2</sup>. 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. The TSP outlines the service change process that provides the quantitative tools to evaluate the system, identifies the process required to seek public input ~~on~~ and approvals for major service changes ~~to the system~~, and ensures the regional transit system is adjusted according to the service goals and objectives approved by the Metro Board.

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

### 1.1 Metro Bus

As of December [2021](#) [2024](#), Metro operates 1179 bus routes. Metro's bus operations consist of directly operated and contract operated services: 1073 routes are directly operated by Metro, and 106 routes are operated by contractors. Metro serves [around](#) [over](#) 12,020 bus stops, including station stops on the G Line (Orange) and J Line (Silver) BRT systems. On weekdays, Metro operates a fleet of over 1,6500 buses during peak service hours. Metro operates the largest portion 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 or no service. Metro relies on Access Services for provision of ADA paratransit service in the Metro service area.

As developed in the NextGen Bus Study, 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. [These frequency tiers are especially important to ensure high frequency service is provided on key corridors serving Equity Focus Communities](#)<sup>3</sup> [where the need for high-quality transit is greatest](#).

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<sup>2</sup> <https://boardagendas.metro.net/board-report/2022-0262/> [boardagendas.metro.net/board-report/2020-0617/](https://boardagendas.metro.net/board-report/2020-0617/)

<sup>3</sup> In 2019, under the Equity Platform, the Board adopted a community designation of Equity Focus Communities (EFCs) to identify where transportation needs are greatest. As of 2022, EFCs are defined as areas with higher concentrations of resident and household demographics associated with mobility barriers (low-income

~~Table 1.2 describes the features of each of Metro's bus service types. Tier definitions are based on daytime weekday (i.e. peak and midday) frequencies:~~

- ~~Core (Tier 1): weekday all day headways of 10 minutes or better~~
- ~~Convenience (Tier 2): 12 to 15 minutes~~
- ~~Connectivity (Tier 3): 20 to 30 minutes~~
- ~~Community (Tier 4): 40 to 60 minutes~~
- ~~Commuter (Tier 5): Varies by Line~~

~~These frequency tiers are especially important to ensure high frequency service is provided on key corridors serving Equity Focus Communities<sup>4</sup> where the need for high quality transit is greatest.~~

**Table 1.1 Service Type Determination<sup>5</sup>**

Service Type	Corridor	Optimal Characteristics
Heavy Rail (Subway)	Operate 100% within an exclusive right of way.	<ul style="list-style-type: none"> <li>— 2,500 boardings per route mile or more than 50,000 boardings per day.</li> <li>— Ability to construct a fully grade-separated facility.</li> </ul>
Light Rail	Operate in mixed flow traffic, semi-exclusive or a fully- exclusive right of way.	<ul style="list-style-type: none"> <li>— 1,000 boardings per route mile or more than 25,000 boardings per day.</li> <li>— Ability to construct a guideway within or adjacent to the corridor.</li> </ul>
Commuter Routes (Tier 5)	Operate in mixed-flow traffic in <del>either</del> a High Occupancy Vehicle (HOV) or High Occupancy Toll (HOT) Lane. <ul style="list-style-type: none"> <li>— <del>Segments m</del> May operate <del>segments of the route</del> on local streets.</li> <li>— Operated using 40', 45', or 60' buses.</li> </ul>	<ul style="list-style-type: none"> <li>— 300 or more boardings during <del>peak hour</del> <del>peak hours</del> and in peak direction of travel.</li> </ul>
Metro Liner and Metro Rapid	Operated using 40', 45' or 60' buses. <ul style="list-style-type: none"> <li>— Metro G Line BRT and J Line (Metro Liner) operate entirely or partially on a fixed guideway dedicated to transit buses.</li> <li>— Metro Rapid Lines operate in exclusive peak period or all day bus lanes or mixed flow traffic on local streets with signal priority.</li> </ul>	<ul style="list-style-type: none"> <li>— 300 or more boardings during <del>peak hour</del> <del>peak hours</del> and in peak direction of travel.</li> <li>— <del>Daily average of m</del> More than 500 <del>average daily</del> boardings per route mile or more than 10,000 daily boardings.</li> <li>— Ability to implement operating speed improvements in the corridor.</li> </ul>

~~households earning less than \$60,000 per year; Black, Indigenous, or People of Color (BIPOC) populations; and households that do not have a car).~~

<sup>4</sup>~~In 2018, Metro's Board adopted the Equity Platform, a framework that guides how the agency works to address inequities and create more equitable access to opportunity. In 2019, under the Equity Platform, the Board adopted a community designation of Equity Focus Communities (EFCs) to help identify where transportation needs are greatest. The definition of EFCs, as of 2022, consists of areas where there are higher concentrations of resident and household demographics associated with mobility barriers (low income households earning less than \$60,000 per year; Black, Indigenous, or People of Color (BIPOC) populations; and households that do not have a car).~~

<sup>5</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)~~

<b>Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), and Community (Tier 4) Local Routes</b>	<p>Operate in mixed flow traffic on local streets by 32', 40', 45', or 60' buses.</p> <ul style="list-style-type: none"> <li>Core lines to be supported by exclusive peak period or all day bus lanes and signal priority on existing and former Metro Rapid corridors.</li> <li>Lines are also defined by in terms of the frequency of service offered, with Core lines being the most frequent and Community lines having a minimum frequency of at least hourly, with all tiers intended to run all days of the week.</li> </ul>	<ul style="list-style-type: none"> <li>The median bus route carries about 5,000 average weekday boardings (CY2024 pre COVID, 2019).</li> <li>Core and Convenience services are expected to carry more than the daily median, while Connectivity and Community are anticipated to carry less.</li> </ul>
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Table 1.2 describes the features of each of Metro's bus service types. Tier definitions are based on daytime weekday (i.e. peak and midday) frequencies:

- Core (Tier 1): 10 minutes or better**
- Convenience (Tier 2): 12 to 15 minutes**
- Connectivity (Tier 3): 20 to 30 minutes**
- Community (Tier 4): 40 to 60 minutes**
- Commuter (Tier 5): Varies by Line**

~~These frequency tiers are especially important to ensure high frequency service is provided on key corridors serving Equity Focus Communities where the need for high quality transit is greatest.~~

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

Feature	Bus Service Type				Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), Community (Tier 4) Local Bus Services
	BRT and Liner	Rapid	Commuter (Tier 5)		
Right of Way	Segregated right-of-way	Major arterials; peak hour or all-day bus lanes	Major arterials and freeways.	Major arterials and local streets; peak hour or all-day bus lanes for Core Tier 1 lines, with bus bulbs as alternative to bus lanes for Tier 1 and 2 lines	
Target Average Stop Spacing	1.25 miles	0.75 mile	1.25 miles	0.25 mile	
Target Travel Market	Inter-community, regional	Inter-community	Inter-community, regional	Inter-community, neighborhood	
Vehicle Type	40/45/60-foot buses	40/45/60-foot buses	40/45/60-foot buses	32/40/45/60-foot buses	
Communities Served	Multiple	Multiple	Multiple	Multiple	
Signal Priority	Yes	Yes	No	Yes for Core and Convenience (Tiers 1 and 2)	

Fare Collection	On board J Line ( <b>Silver</b> ) Off-board pre-pay G Line ( <b>Orange</b> )	On board	On board	On board, with all-door boarding <b>being implemented for all bus lines (2025)</b> a goal for Core and Convenience (Tier 1 and 2)
Passenger Amenities	Shelters and stations	Shelters and stations	Shelters and stations	Benches and shelters ( <b>provided by local jurisdictions</b> ), though not at all stops
Real-time Passenger Info	Yes	Yes	Yes	At some stops and via smart phone applications

#### Metro Liner Transit

~~Metro Liner transit provides regional, high speed line haul service in high volume corridors. These lines are designed to operate like rail service, complete with separated right of way, wide stop spacing, bus stations, pre paid and/or all door boarding, real time customer information, and transit signal priority. Currently, Metro operates two Metro Liner services:~~

- ~~— G Line (Orange) operates on its own semi exclusive right of way, and meets the Federal Transit Administration (FTA) definition of Bus Rapid Transit (BRT)~~
- ~~— J Line (Silver) operates on the I 10 and I 110 ExpressLanes (freeway toll lanes) as well as surface streets through downtown Los Angeles, so it does not fully meet the FTA definition of BRT. J Line charges a premium fare (coordinated with Foothill Transit service fares on same corridor) since it operates on the freeway.~~

~~Attributes supporting the Metro Liner services and other Metro bus services as part of the NextGen Bus Speed and Reliability focus are:~~

- ~~— Separated Bus Lanes: There are three types of segregated bus lanes that Metro Liner service can use:~~
  - ~~• Fully segregated transit bus right of way: segregated bus lanes reserved exclusively for transit service on a full time basis such as the right of way built for the G Line (Orange) or the I 10 transitway for the J Line (Silver) other transit services. These lanes can either be spaced apart from streets and freeways or be physically separated with either physical barriers or painted lines.~~
  - ~~• Exclusive bus lanes operating on existing arterial roads and local streets on a part time basis (e.g. peak period weekday, daytime weekday, etc.). These lanes are also being implemented to support the NextGen Core (Tier 1) Local bus lines and Metro Rapid lines.~~
  - ~~• HOV travel lanes reserved not only for transit but also for high occupancy vehicles and sometimes vehicles paying a toll. Separation is achieved with either physical barriers or painted lines. J Line (Silver) and Metro Commuter (Tier 5) services use this third type of lane on parts of the I 10 and I 110 freeways.~~
- ~~— Bus Bulb Outs: On NextGen Core (Tier 1) and Convenience (Tier 2) corridors where dedicated bus lanes are unable to be accommodated due to the need to maintain traffic~~

and parking capacity, or where the frequency of service (less than 7.5 minute headway) does not warrant dedicated lanes, bus bulb-outs can support transit service by minimizing stop delay. Bulb-outs are extensions of the bus zone, typically across the first parking lane, that enable buses to serve the bus stop from the second traffic lane. This reduces delays for buses merging in and out of traffic and creates additional space for transit stop amenities. Figure 1.1 provides an illustration.<sup>6</sup>

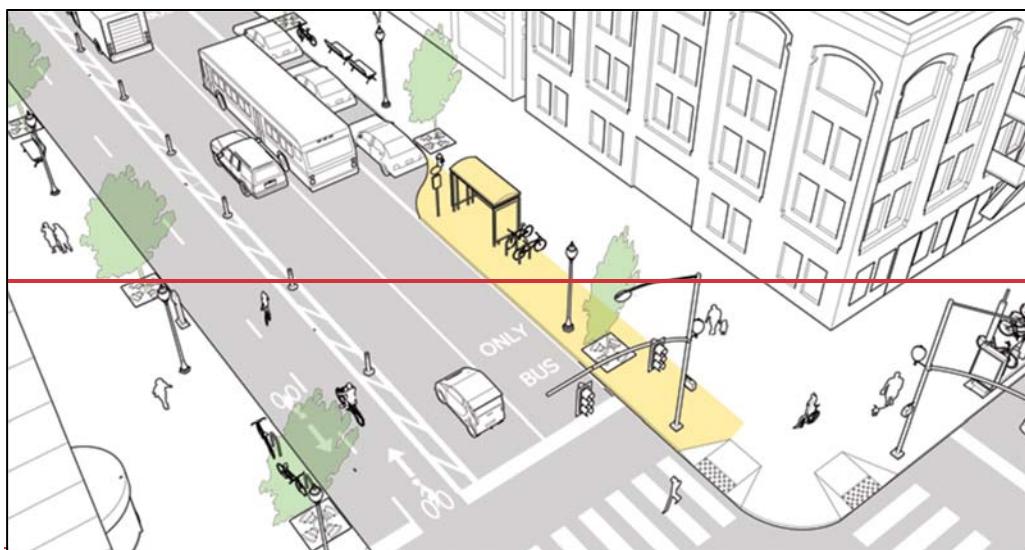


Figure 1.1 Bus bulb

**Transit Signal Priority:** This key NextGen Bus Speed and Reliability strategy 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 (advancing the green phase) of traffic signals when a transit bus is detected at an intersection. This technology already exists on former and existing Metro Rapid corridors in City of LA, selected other cities, and LA County unincorporated areas, or is being added to NextGen Core (Tier 1) and Convenience (Tier 2) routes. Metro is working with LADOT to adapt LADOT's existing Transit Signal Priority system to better serve Metro's NextGen service model. The work underway will adapt LADOT's system to provide signal priority to all Metro buses. Certain constraints of the old system such as only serving buses that arrived late and requiring individual buses to be associated with a single corridor will also be removed. This project will provide improved signal priority operation for all Metro buses operating on equipped corridors. Work on this project is anticipated to be complete by fall 2022.

**Headway-Based Service Management:** Operating the most frequent and highest usage bus lines on a system based on managing headways (or intervals) between trips rather than operating based on timepoints to regulate service offers the chance to keep service

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<sup>6</sup> Illustration from National Association of City Transportation Officials Urban Design Guide: [nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/bus-bulbs/](http://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/bus-bulbs/)

~~moving while minimizing wait times and travel times for riders. This approach will be piloted as part of the NextGen Bus Speed and Reliability initiatives using a mix of staff and technology based line management techniques.~~

- ~~— **Bus Transit Centers and Stop Amenities:** Stations and shelters provide customers with enhanced comfort and safety. As part of the NextGen Bus Plan, Metro will continue to work with municipalities to maximize the number of bus stops with seating and shelter, as this function is led by municipalities. An emphasis will be made on allocating many of these amenities to Equity Focus Communities where the need for high quality transit is greatest.~~
- ~~— **Streetscape:** Streetscape and other design features such as landscaping, pedestrian countdown signals, bicycle racks, and well designed crosswalks make it easier for pedestrians and bicyclists to access the stations.~~
- ~~— **Fare Collection Amenities:** For convenience and faster service, major stations have ticket vending machines (TVMs) which allow customers to preload their TAP cards. For the G Line (Orange), all fare collection is completed at the stations and the fleet does not have on-board fare boxes. The J Line (Silver) has TAP validators at both the front and back doors to facilitate all door boarding to speed up boarding and reduce rider travel times. Metro Rapid Lines 720 (Wilshire) and 754 (Vermont) operate on two of Metro's busiest bus service corridors and have also piloted this option. All door boarding will be extended to all Core (Tier 1) and Convenience (Tier 2) lines by mid-decade to help reduce travel times for most riders.~~
- ~~— **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 experience including on-board stop announcements.~~

### Articulated Buses

~~The G Line (Orange) operates with a dedicated fleet of 60' higher capacity articulated buses. The advantage of the deployment of articulated buses is the opportunity to reduce vehicle requirements and service hours while maintaining high ridership capacity; 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 better are ideal candidates for this type of bus. In evaluating services for higher capacity articulated buses, other factors must be considered including facility compatibility, street design, and operational factors such as buses that operate on a mix of lines during their operating day. The deployment of articulated buses must also be coordinated with the efforts to convert the Metro fleet to fully zero emission buses.~~

### 1.2 Metro Rail

~~As of Summer 2025 November 2024 May 2022, Metro operates two heavy rail and four light rail lines serving a total of 96 111 107 stations across approximately 101 121 309 route miles,~~

~~with a fleet of 102-100 heavy rail and 337-293 light rail cars.~~ Metro Rail operates in heavily congested, high-demand 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 heavy rail is high capacity, two line rapid transit services operating along a dedicated subway right of way, serving full scale transit stations in some of the most densely populated areas of LA County. Metro's existing light rail system consists of four lines with segments of mixed flow, street running, or grade separated right of way, with full scale transit stations. The rail system is a critical public transportation asset in the greater Los Angeles region, linking many key multi-modal transportation centers and destinations together.~~

As of sSummer, 2025, Metro operates two heavy rail and four light rail lines serving a total of 111 stations across approximately 121.3 route miles, with a fleet of 108 heavy rail (including the first eight new HR4000 cars) and 337 light rail cars.

Metro heavy rail is high-capacity, two line rapid transit service operating along a dedicated subway right-of-way, serving full-scale transit stations in some of the most densely populated areas of LA County. Metro's heavy rail is the subway system served by the B and D Lines (Red, Purple) powered by a third rail and are generally operated with 4- or 6-car train sets.

Metro's existing light rail system consists of four lines with segments of mixed flow, street running, or grade separated right of way, with full-scale transit stations. The rail system is a critical public transportation asset in the greater Los Angeles region, linking many key multi-modal transportation centers and destinations together. Metro's four light rail lines – A (Blue), C (Green), E Line (Expo), and L K Lines (Gold) are powered by overhead catenary wires, generally use shorter 2- or 3-car train sets, and operate at slower speeds than heavy rail.

The first segment of the new 8.5 mile, 8-station Crenshaw/LAX K Line is expected to open in October late 2022; a ninth new station, the Airport Metro Connector (AMC) Station, should open on June 6, by the end of 20242025. In June 2023, The the opening of the new 1.9 mile Regional Connector light rail alignment through downtown LA facilitated the will also open around the same time as the K Line, which will see the realignment of the former L Line (Gold) rail line realigned into the A Line (Blue) and E Line (Expo) services, creating direct links from Long Beach to Azusa (A Line) and Santa Monica to East LA (E Line). This alignment includes two new stations and one replacement station in downtown LA.

### 1.3 Metro Micro

Some areas of the County are difficult to serve with fixed-route transit due to terrain, narrow streets, dispersed lower density destinations and population, and relatively low travel activity. To address these challenges, Metro launched pilot microtransit operations in December 2020, branded as Metro Micro.

Metro Micro is operated with passenger vans within eight designated zones and is intended to test a range of use cases including areas where fixed route service has not been effective or

is unable to access parts of a community. A number of lower ridership fixed-route services have been discontinued within the new Metro Micro zones as part of the NextGen Bus Plan implementation, to determine if Metro Micro can be an effective and efficient replacement for Metro fixed route bus service in these hard-to serve areas.

Section 5 is-has been dedicated forte discussing the unique nature of this service.

## SECTION 2: DESIGNING A WORLD CLASS BUS SYSTEM

~~As outlined in the Executive Summary, 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. The NextGen Bus Plan and Study were completed to address strategic plan Goal #1: **Provide high quality mobility options that enable people to spend less time traveling.** The study also encompassed 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 Vision 2028 ~~strategic 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 from available resources.

These goals and objectives drove the development of the NextGen Bus Plan, including guiding principles for routing, stop spacing, frequency, span of service, and coordination with municipal operators. A set of performance measures are defined below to ensure the bus network continues to evolve consistent with the intent of NextGen to create a competitive bus service for LA County.

### NextGen Bus 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 and from the bus stop, waiting time, and onboard travel time.

As mentioned in the Executive Summary, NextGen's primary purpose was 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 the strategy of the NextGen Bus Plan's design as the foundation for building a fast, frequent, and reliable World Class Bus System.

**Step 1: Reconnect Scenario:** Metro currently provides roughly 7 million revenue service hours (RSR) 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 presented a path forward for

reinventing the bus network through restructuring the bus lines consistent with service usage and travel patterns using the following guiding principles identified in the NextGen Bus Study:

- **85% of LA County residents have used transit at least once in the past year**, THEREFORE, the NextGen Bus Plan attempts to maintain coverage throughout the County by minimizing discontinued segments.
- **Fast/frequent/reliable service is key**; THEREFORE, the NextGen Bus Plan is designed 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 pre-NextGen bus system was not always competitive to get people where they want to go**, THEREFORE NextGen Bus Plan has adjusted routing to reflect the key origins and destinations identified in cell phone location data for overall travel patterns and ridership data for transit ridership patterns.
- **The greatest opportunity to grow ridership is between midday & evening when many trips are short distance**, THEREFORE service levels under the NextGen Bus Plan have been improved for off-peak periods, especially middaymidday, weekday, and weekends, with more improvements planned, especially for evenings. New overnight Owl services have been added or are planned.
- **Need to integrate Metro's Equity Framework into the planning process**, THEREFORE the NextGen Bus Plan service improvements prioritize equity-focus areas where the need for high-quality transit service is greatest.

These lessons were incorporated into the Plan's Service Design Guidelines outlined in Section 3 to “reconnect” routes and schedules with where and when people travel today. as the This NextGen Bus Plan Reconect scenario was implemented across the December 2020, June 2021, and September/December 2021 service change cycles. Reconect was estimated to increase ridership by 5% with no additional increase in revenue service hours. It will also help Metro recover from the impacts of the COVID-19 pandemic on ridership.

**Step 2: Transit First Scenario:** Building upon the Reconect scenario of NextGen Bus Plan that provides a bus network that better reflects 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 frequent service.

- **Speed and Reliability Improvements** – Declining As bus system speeds have continued to decline over the last decade, Metro has had to allocate an additional \$10 million cumulatively on an annual basis to provide the same amount of service. Not only does this reduce the opportunity to increase service, it degrades the competitiveness and attractiveness of bus service, and are not sustainable. 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 that can be implemented include such as optimizing stop spacing, spacing and implementing all-door boarding,

~~and piloting headway based service management~~. However, other improvements can only be implemented through collaboration with local jurisdictions, such as transit signal priority system upgrades and expansion, new bus bulb-outs, and bus-only or bus priority lanes. Under the NextGen Transit First scenario, a major 5-year program of capital improvements was approved 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, ~~thus and to allowing~~ for more frequent service to be delivered without adding additional operating costs. New bus lanes ~~were have already been~~ rolled out in 2020 and 2021 on 5<sup>th</sup> and 6<sup>th</sup> Sts, Grand Av, Olive St, and Aliso St in downtown LA, and on Alvarado St between 7<sup>th</sup> St and ~~Sunset Bl~~<sup>the 101 freeway</sup>.

~~Additional lanes have been implemented on La Brea Av between Sunset Bl and Olympic Bl (2023), and Roscoe Bl between the SR-170 freeway and Topanga Canyon Bl (2024) – as part of the North San Fernando Valley eCorridor Improvements Project~~. These are just the beginning of a program to add over ~~100~~ 80 miles of dedicated bus lanes through partnerships with City of LA and other municipalities.

- **Customer Wait Environment** – ~~Through the s~~Significant public outreach conducted in Phase 1 of the NextGen Bus Study, as well as other Metro initiatives such as the Understanding How Women Travel Study<sup>7</sup>, highlighted we learned that an uncomfortable and unsecured wait environment is a significant barrier to for customers in using the bus network for current and potential customers. This is particularly concerning for women who account for over half of our customers and often travel with young children. Metro completed the a Metro Transfers Design Guide in March 2018<sup>8</sup> to elevate the importance of the transit rider experience and builds upon Metro's First/Last Mile Strategic Plan by addressing the "complete journey" for riders. Under the Transit First scenario, the NextGen Bus Plan is intended 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 through the NextGen outreach and the How Women Travel Study. Implementation will be completed in partnership with local authorities responsible for the provision of bus stop amenities throughout the Metro transit network.
- **Boarding and Riding Experience** – Metro has implemented all-door boarding on the G Line ~~(Orange)~~, J Line ~~(Silver)~~, and Rapid Lines 720 (Wilshire) and 754 (Vermont). Experience on the J Line showed that dwell times were reduced by up to 15% on average, on-time performance improved, and cash payment declined with more TAP penetration. Surveys confirmed that both customers and operators were significantly satisfied with the implementation of all-door boarding. In early 2022, the Metro Board approved the purchase of rear door validators and other equipment to allow for implementation of all-door boarding across the higher frequency Core and Convenience (Tiers 1 and 2) local

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<sup>7</sup> [libraryarchives.metro.net/DB\\_Attachments/2019-0294/UnderstandingHowWomenTravel\\_FullReport\\_FINAL.pdf](https://libraryarchives.metro.net/DB_Attachments/2019-0294/UnderstandingHowWomenTravel_FullReport_FINAL.pdf)

<sup>8</sup> [dropbox.com/s/iv6ruaxdw5g945b/Metro\\_Transfers\\_Design\\_Guide\\_2018-0312.pdf?dl=0](https://dropbox.com/s/iv6ruaxdw5g945b/Metro_Transfers_Design_Guide_2018-0312.pdf?dl=0) Metro Transfers Design Guide

bus lines. Other strategies to improve the boarding and riding experience have focused on improved real-time information accuracy. As of early 2025, the installation of rear door validators on all Metro buses was completed. Software testing continues in advance of expanding all-door boarding systemwide.

- **Layover Optimization** – Due to limited curb space, many routes are extended purely to access a suitable layover location. These route extensions are not required for riders and cost several million dollars in operating costs per year. By investing in off-street layover terminals to optimize layover locations, Metro can reallocate wasted operating resources to more productive uses. In addition, these locations can provide facilities for better regional mobility coordination, better wait and rest environments for customers and operators, improved bus service reliability, and opportunities for new en-route Zero Emission Bus (ZEB) charging infrastructure.

This estimated \$1 billion capital program for the NextGen Speed and Reliability and Passenger Amenity improvements mentioned above, planned for implementation over a five-year period, is expected to achieve resource savings by generating more revenue service miles/trips with the same number of revenue service hours. These savings would be reinvested into Transit First service improvements, including:

- Ensuring that all bus lines operate seven days per week;
- Increased weekday midday and evening service levels;
- Increased weekend service levels and;
- Expanded owl (overnight) service.

Investing “one time” capital dollars into transit supportive infrastructure will 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 and above what Reconnect sScenario was expected to an achieve) without additional increases in revenue service hours.

**Step 3: Future Funding Scenario:** Should future funding be secured through efforts such as congestion pricing, additional resources can be added to the NextGen 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 to provide even more frequent service, as planned under a Future Funding Scenario, would only be expected to yield a 10% increase in ridership over Transit First.

## **SECTION 3: BUS SERVICE DESIGN GUIDELINES**

### **Key Principles of Network Design**

Three key elements were taken into consideration during the NextGen Bus Study and NextGen Bus Plan to identify when and where transit can be competitive and 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 (especially those identified in Metro's Equity Focus Communities) for most of their travel such as commuters, students who use transit for work and school trips, and discretionary customers who choose transit for some or all their trips. The second characteristic 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. Third, a pedestrian-oriented street environment that includes safe and well lighted pathways, sidewalks and curb-cuts, grid street network, and level topography is critical.
- **Existing Service Performance** – It is important to identify the most productive segments of the existing bus network which articulate current transit demand. These corridors and routes have been optimized through the NextGen Bus Plan, and lessons learned will 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, not just to facilitate fast, frequent, and reliable transit operations, but also to support to the ability of transit to thrive as a viable option. The importance of environmental elements such as pedestrian orientation of the streets, land use, barriers to other modes such as limited and costly parking supply, and transit supportive infrastructure such as bus-only lanes and other transit prioritization design are critical. The NextGen Bus Speed and Reliability program is working to address this key element.

Once these key elements are taken into consideration in the NextGen Bus Plan's focus on fast, frequent, and reliable service, 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 were developed as part of the NextGen Bus Study and incorporated into the NextGen Bus Plan -based on the feedback received through the study's stakeholder and public outreach sessions and established as guidelines. 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

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

**Table 3.1 Service Design Concepts**

	<u>Faster service</u>	<u>Frequent service throughout the day</u>	<u>More reliable service</u>	<u>Better network connectivity</u>	<u>Access to key destinations</u>	<u>Improved security</u>
Optimize stop spacing	X		X			
Shorter route lengths			X			
Subarea transit hubs				X		X
Municipal operator coordination				X	X	
Standardize frequency by service tier	X	X				
Routing to reflect current travel patterns and transit propensity				X	X	X
Transit-supportive infrastructure	X		X			X

Based on these themes, the following service design concepts were incorporated into the NextGen Bus Plan implemented to deliver an improved Metro bus network:

**Optimize Hybrid Local/Rapid Stop Spacing** – Past practice was that stop spacing was determined by route classification. For example, Local lines were planned with 0.25¾ mile stop spacing, while Rapid lines had 0.75¾ to 1 mile stop spacing. As a result, customers travelling on Local lines travelled more slowly but had closer access to origins and destinations. Conversely, Rapid customers travelled faster along a ~~corridor, but corridor but~~ may have been picked up or dropped off much further from their origin or destination. Thus in addition, resources were split between the Local and Rapid lines, resulting in less frequency for each service, and Thus overall end-to-end travel time including walking/rolling to/from stops, waiting for the bus, and in-vehicle run time may result in longer overall travel times on the Rapid, especially for shorter distance trips.

Consolidating Local and Rapid resources along 18 major transit corridors was implemented in 2020/2021 as part of the initial roll out of the NextGen Bus Plan. The single hybrid service retained on these key corridors provides more frequent service at all stops and, when matched with optimized 0.25 ¾ mile average (and 0.3 mile maximum) stop spacing adopted as part of NextGen Bus Plan and new bus lanes, results in shorter wait times, faster on-board travel times compared to the previous Local service, and shorter walk/roll compared to Rapid service. In addition, this standardizes the service frequency along the entire corridor as compared to providing inconsistent frequencies between Local and Rapid services that have different speeds. Stop spacing can be adjusted to reflect local conditions with the needs of key

destinations such as schools, medical centers, and senior centers ~~being~~ taken into account while balancing the impact each stop has not just for those that use the stop, but for those on board that are delayed by buses stopping. Stop spacing may exceed stop standards due to extenuating circumstances such as incompatible land uses and non-compliant stop locations.

**Shorter Route Lengths and Subarea Transit Hubs** – Location-based cell phone data indicates that almost half of all trips made 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 across the region. Creating shorter, core route lengths with maximized service frequency and bus speed improvements such as new bus lanes will improve schedule reliability. Being able to tie the lines to subarea transit hubs will improve network efficiencies and provide safer and more convenient locations 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 Liner ~~[(G Line (Orange) and J Lines (Silver))]~~, and Metro Bus serve as the backbone of the urban transit network within much of LA County, and are augmented by municipal operators. Municipal and local return operators complement the system with community and shuttle buses that serve specific neighborhood needs.

It is imperative that Metro bus service be closely coordinated with municipal transit service as roughly one-third of transit service in LA County is provided by municipal bus operators and Metrolink, ~~and resources are scarce~~. Duplication of service should be avoided to maximize the benefit of transit service across the County. ~~The~~ Municipal operator ~~is~~ coverage is especially strong in Santa Monica, Culver City, South Bay, Gateway Cities, and eastern San Gabriel Valley as well as Santa Clarita and the Antelope Valleys. When Given that several municipal operators ~~are currently~~ undergoing their own system redesigns, there are opportunities to work together to develop service change ideas between Metro and municipal services to improve overall coordination for customers. The NextGen Bus Plan included four transfers of Metro bus service to municipal operators, ~~two of which were implemented in 2021~~ in cases where the line was more appropriate as part of the municipal operator's network; ~~two were~~ transitioned in 2021, and the remaining two were transferred in 2024.

**Standardized Frequencies by Service Tiers and Headway Standards** – Prior to the implementation of the NextGen Bus Plan, schedules were written based on the Board-adopted load standard for frequent services (15 minutes or better) and on policy service levels for low frequency services (less than 15 minutes). To ensure the core network has consistent frequencies and span of service, the NextGen Bus Plan categorized transit lines into tiers based on transit propensity, current ridership, the nature of the service, and overall travel demand. Each tier has been assigned a frequency range for each time period to ensure that all services within the tier provide consistent service levels for ease of transfer across the network, with minimal adjustment from year to year.

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; it should not be exceeded for at least 90% of all hourly periods. These frequencies are the minimum service levels versus the target frequencies established under NextGen Bus Plan shown. The minimum acceptable frequency levels for bus and rail are defined in Table 3.2. The minimum levels are below normally operated existing levels but may be applied in special circumstances such as an urgent maintenance need or system expansion rail tie-in, and transitional periods such as 6-7 p.m. when bus frequencies are adjusted to those for the next time period, or for a significant decline in ridership for bus (e.g. COVID) that is not expected to be permanent. Use of minimum frequencies must still allow load standards to be met. A line may see frequency improved at a selected time of day in response to high demand, consistent with the Board-adopted load standard being met on all trips operating on the line.

**Table 3.22 Minimum Service Frequency by Service Type**

<u>Service Type</u>	<u>Peak</u>	<u>Midday Weekday</u>	<u>Weekend</u>	<u>Evening</u>
<u>Heavy Rail</u>	<u>10</u>	<u>12</u>	<u>12</u>	<u>20</u>
<u>Light Rail</u>	<u>10</u>	<u>15</u>	<u>15</u>	<u>20</u>
<u>Core Network (Tier 1)</u>	<u>10</u>	<u>10</u>	<u>15</u>	<u>7.5</u>
<u>Convenience Network (Tier 2)</u>	<u>15</u>	<u>15</u>	<u>30</u>	<u>10</u>
<u>Connectivity Network (Tier 3)</u>	<u>30</u>	<u>30</u>	<u>60</u>	<u>15</u>
<u>Community Network (Tier 4)</u>	<u>60</u>	<u>60</u>	<u>60</u>	<u>30</u>
<u>Commuter Network (Express)</u>	<u>varies</u>	<u>varies</u>	<u>varies</u>	<u>varies</u>

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; it should not be exceeded for at least 90% of all hourly periods. These frequencies are the minimum service levels versus the target frequencies established under NextGen Bus Plan shown. minimum acceptable se for bus and rail 21These are minimum levels, below existing levels normally operated but may be applied in special circumstances such as an urgent maintenance need or system expansion tie in for rail and transitional periods such as 6-7 pm when bus frequencies are adjusted to those for the next time period or for a significant decline in ridership for bus (e.g. COVID) that is not expected to be permanent. Use of such minimum frequencies must still allow load standards to be met.

**Table 3.23 Minimum Rail and NextGen Bus Plan Frequency by Service Type for Title VI Analysis**

<u>Service Type</u>	<u>Weekday Peak (6-9a and 3-6p)</u>	<u>Midday Weekday (9a-3p)</u>	<u>Weekends (10a-5p)</u>
<u>Heavy Rail</u>	<u>15</u>	<u>15</u>	<u>15</u>
<u>Light Rail</u>	<u>15</u>	<u>15</u>	<u>15</u>
<u>Core Network (Tier 1)</u> Metro Liner and Metro Rapid	<u>10-15</u>	<u>15</u>	<u>15</u>

Convenience Network (Tier 2)	15-20	20-30	20-30
Connectivity Network (Tier 3)	30-40	40-60	40-60
Community Network (Tier 4)	60	60	60
Commuter Network (Tier 5)	varies	varies	varies

**Metro Micro MicroTransit and Other On-Demand Services** – Some areas of the County are difficult to serve with fixed-route transit due to terrain, narrow streets, dispersed lower density destinations, and relatively low travel activity. To address this, Metro ~~launched operated a is currently conducting a three year Metro Micro microtransit pilot program~~, an on-demand, van-based rideshare service branded as Metro Micro. ~~The service launched in December 2020 and the final eighth zone was implemented in December 2021. The zones are: Watts/Compton (originally two separate zones), LAX/Inglewood, North Hollywood/Burbank, El Monte, Highland Park/Glendale/Eagle Rock, Pasadena/Altadena/Sierra Madre, Northwest San Fernando Valley, and Westwood/UCLA.~~ The service is designed to provide short trips within a zone where each rider would have to wait no more than 15 minutes from the time a reservation is made to when they are picked up at a designated pickup location. ~~Reservations can be made the same day and up to a week in advance. Riders can reserve rides by calling Metro's Call Center, through an online reservation system, or via the service's dedicated smart phone application.~~ All pickup and drop-off locations are located within the zone and must be ADA ~~accessible, but~~accessible but are not limited to bus stops. The pilot program ~~will operated~~ for three years and continues in operation today while Metro continues to ~~improve the financial sustainability of this service model. The service was originally operated by Metro staff but the operations is now contracted out and a new software vendor has recently been contracted.~~, after which Metro will determine whether to make the service permanent or not. A number of lower ridership fixed-route services ~~were have been~~ discontinued within the ~~new~~ Metro Micro zones as part of the NextGen Bus Plan implementation, ~~and~~, to determine if Metro Micro ~~was used~~ microtransit can be an effective as a replacement and efficient replacement for Metro fixed route bus service in these hard-to serve areas. More information about this new mode is available in Section 5.

**Table 3.12 – Minimum Rail and NextGen Bus Plan Frequency by Service Type**

Service Type	Peak	Midday Weekday	Weekend	Evening
Heavy Rail	10	12	12	20
Light Rail	10	12-15	15	20
Core Network (Tier 1) Metro Liner and Metro Rapid	5-10	5-10	15	20 <sup>7.5</sup>
Convenience Network (Tier 2)	12-15	12-15	30	60 <sup>10</sup>
Connectivity Network (Tier 3)	20-30	20-30	60	60 <sup>15</sup>
Community Network (Tier 4)	40-60	40-60	60	60 <sup>30</sup>
Commuter Network (Tier 5)	varies	varies	varies	varies

**Standardize Frequencies by Service Tiers** – Prior to the implementation of the NextGen Bus Plan, schedules were written based on the Board adopted load standard for frequent services (15 min or better) and on policy service levels for low frequency services (less than 15 min). To ensure the core network has consistent frequencies and span of service, the NextGen Bus Plan categorized transit lines into tiers based on transit propensity, current ridership, the nature of the service, and overall travel demand. Each tier has been assigned a frequency range for each time period to ensure that all services within the tier provide consistent service levels for ease of transfer across the network, with minimal adjustment from year to year. These frequency levels are defined in Table 3.1. A line may see frequency improved at a selected time of day in response to high demand, consistent with the Board adopted load standard being met on all trips operating on the line.

**Routing to Reflect Current Travel Patterns and Transit Propensity** – Under the NextGen Bus Study, corridors ~~were are currently being~~ evaluated by segments based on the origin-destination travel patterns identified using the cell phone location-based data and regional TAP data. The segments ~~were ill be~~ connected together to create lines that better align the routing with travel patterns. This is expected to reduce the number of transfers required to make a trip, and to increase the distance travelable and access to opportunities along the network within a given time frame. While resources ~~are will be~~ focused in areas with high transit propensity, there ~~is will be~~ a concerted effort to maintain service in areas of low demand but with the greatest mobility needs.

**Transit Supportive Infrastructure** – 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 ~~separated bus only~~ lanes, queue jumpers, bus bulb-outs, traffic signal retiming, transit signal priority, all door-boarding, fare payment technology, and ~~the Advanced Transportation Management System (ATMS) use other technologies and infrastructure~~ that improve the attractiveness and competitiveness of transit while reducing revenue hours so that they can be reapplied to provide more frequent service. Infrastructure that optimizes terminals and layover locations, reduces out of direction movements, and improves transfer movements will reduce non-revenue miles and hours that can also be reallocated to more frequent service. Infrastructure supporting the NextGen Bus Speed and Reliability focus includes:

- **Separated Bus Lanes:** There are three types of segregated bus lanes that Metro Liner service can use:
  - Fully segregated transit bus right-of-way: segregated bus lanes reserved exclusively for transit service on a full-time basis such as the right-of-way built for the G Line or the I-10 transitway used by the J Line and other transit services. These lanes may be spaced apart from streets and freeways or physically separated with physical barriers or painted lines.
  - Exclusive bus lanes operating on existing arterial roads and local streets on a part-time basis (e.g. peak period weekday, daytime weekday, etc.). These lanes are also being implemented to support the NextGen Core (Tier 1) Local bus lines and Metro Rapid lines.

- HOV travel lanes reserved for transit, high occupancy vehicles, and sometimes, vehicles paying a toll. Separation is achieved with physical barriers or painted lines. J Line and Metro Commuter (Tier 5) services use this third type of lane on parts of the I-10 and I-110 freeways.

107.5

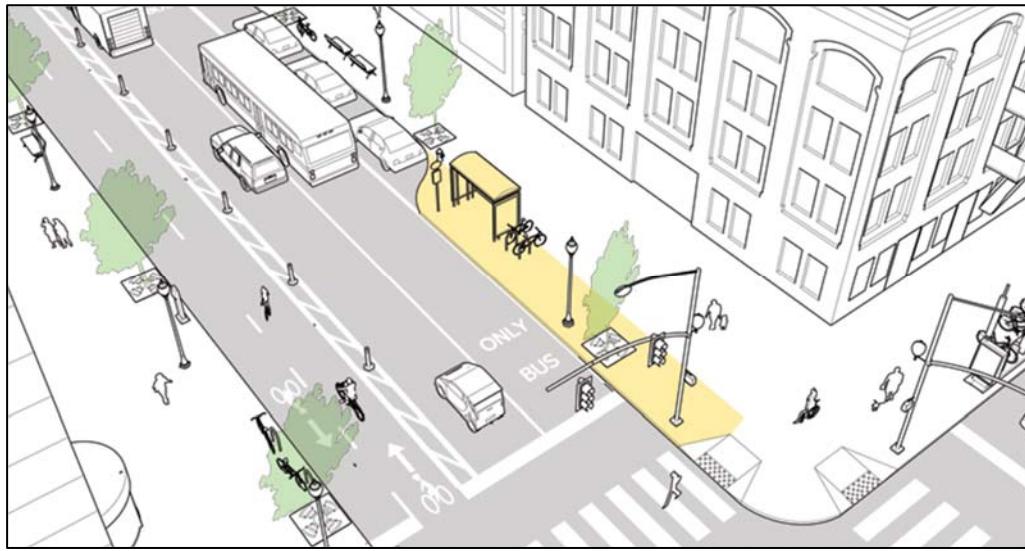


Figure 3.1 Bus bulb

- **Bus Bulb Outs:** On NextGen Core (Tier 1) and Convenience (Tier 2) corridors where dedicated bus lanes are unable to be accommodated due to the need to maintain traffic and parking capacity, or where the frequency of service (less than 10 minute headway) does not warrant dedicated lanes, bus bulb-outs can support transit service by minimizing stop delay. Bulb-outs are extensions of the bus zone, typically across the first parking lane, that enable buses to serve the bus stop from the second traffic lane. This reduces delays for buses merging in and out of traffic and creates additional space for transit stop amenities. Figure 3.1 provides an illustration.<sup>9</sup>
- **Transit-Signal Priority:** This key strategy 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 (advancing the green phase) of traffic signals when a transit bus is detected at an intersection. This technology already exists on former and existing Metro Rapid corridors in City of LA, selected other cities, and LA County unincorporated areas, or is being added to NextGen Core (Tier 1) and Convenience (Tier 2) routes. Metro is working with LADOT to adapt LADOT's existing Transit Signal Priority system to better serve Metro's NextGen service model using cloud-based technology. The work underway will adapt LADOT's system to provide signal priority to all Metro buses. Certain constraints of the old system such as only serving buses that arrived late and requiring individual buses to be associated with a

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<sup>9</sup> Illustration from National Association of City Transportation Officials Urban Design Guide: [nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/bus-bulbs/](http://nacto.org/publication/urban-street-design-guide/street-design-elements/curb-extensions/bus-bulbs/)

single corridor will also be removed. This project will provide improved signal priority operation for all Metro buses operating on equipped corridors. Work on this project is ongoing with launch of the cloud-based solution to be rolled out in 2026.

- **Queue jumpers:** A queue jump is where there is a separate signal phase for transit vehicles so they can get ahead of other traffic. -They ~~may~~ ~~can~~ operate from either a regular traffic lane or be partnered with a queue bypass lane.
- **Headway-Based Service Management:** Operating the most frequent and highest usage bus lines on a system based on managing headways (or intervals) between trips rather than on time points to regulate service offers the chance to keep service moving while minimizing wait times and travel times for riders. This approach was piloted on 3<sup>rd</sup> St Line 16 between June 2023 and December 2024 as part of the NextGen Bus Speed and Reliability initiatives, using a mix of staff-and technology-based line management techniques. Results are being evaluated and appear mixed, with limited improved reliability in terms of intervals and challenges rolling out the labor required to manage multiple lines. No further pilots are planned at this time. -and results were mixed
- **All-door boarding:** The J Line has TAP validators at both the front and back doors to facilitate all-door boarding to speed up boarding and reduce rider travel times. Metro Rapid Lines 720 (Wilshire) and 754 (Vermont) operate on two of Metro's busiest corridors and also piloted this option. All-door boarding is planned to ~~will be~~ extended to all Core (Tier 1) and Convenience (Tier 2) Metro bus lines by mid-2025~~decade~~ to help reduce travel times for most riders. All buses have the required rear door validators, but software ~~remains under testing~~ continues.
- **Fare Payment Technology:** For convenience and faster service, major stations have ticket vending machines (TVMs) which allow customers to preload their TAP cards. All G Line Bus Rapid Transit fare collection is completed at the stations and the fleet does not have on-board fare boxes. Additional features such as the ability to access low income, student, and senior discounts, receiving two hours of free transfers, paying for transfers between TAP agencies, and participating in fare capping have also been incorporated into Metro's TAP system for ease of use.
- **Advanced Transportation Management Systems: (ATMS):** provides an array of technologies to improve service reliability and customer experience. ATMS relies on global positioning system (GPS) satellite navigation and terrestrial communication technologies to enable public transportation authorities and fleet operators to ~~better~~ tracking, management, and dispatching of their vehicles. At any moment, a controller can pinpoint the location of a specific vehicle and respond to an emergency situation; dispatch an FET or tow truck, and/or notify passengers of a delay. The end result is a behind the scenes management capability that provides better service for the public.
- **Components**
  - It is an integrated fleet management system that combines mobile voice and data communications, computer assisted dispatch (CAD), automatic voice annunciation (AVA), and automated vehicle location (AVL) to provide users with tools to manage Metro's bus fleet. This data also provides a source of real-time information that is integrated into provided for riders to know service information in real time service

information feeds to help riders them navigate the system successfully. Ultimately, the system provides information so that all users can make informed decisions about operational issues, improve response to both public and internal departments, and improve overall on time performance.

- ATMS relies on global positioning system (GPS) satellite navigation and terrestrial communication technologies to enable public transportation authorities and fleet operators to better track, manage and dispatch their vehicles. At any moment, a controller can pinpoint the location of a specific vehicle and respond to an emergency situation; dispatch an FET or tow truck, and/or notify passengers of a delay. The end result is a behind the scenes management capability that provides better service for the public.
- Automatic Voice Annunciation
- Provides next bus stop announcements for all Metro Bus passengers. It is fully compliant with the Americans with Disabilities Act (ADA). The system uses both audio and visual announcements. [More information](#)
- Automatic Passenger Counting
- Automatic Passenger Counting (APC) and a is a data collection and reporting system. The data from APC is used to provide data for required Federal Reports, such as the National Transit Database, and to provide data used to analyze the actual daily performance of the bus system compared to the scheduled daily operation. The data and reports are also used for short and long term planning of Metro Bus routes, Metro Rail lines, traffic engineering, marketing, cooperative business ventures and many other uses. [More information](#)
- Video Surveillance System
- Video Surveillance System (VSS) are also used to gather ridership data and uses video cameras to monitor events on Metro Buses. This system enhances passenger and employee safety. Metro vehicles typically have between 3-12 cameras that record various views. The video is downloaded for review when necessary to assist with operator training, criminal activity (i.e. tagging, ect) and other request that require visual confirmation.

Table 3.2 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				✗	✗	✗
Standardize frequency by service tier	✗	✗				
Subarea transit hubs				✗		✗
Shorter route lengths			✗			
Optimize stop spacing	✗		✗			

Municipal operator coordination				X	X	
MicroTransit and other on-demand		X			X	
Transit-supportive infrastructure	X		X			X

Table 3.2 illustrates how each service concept will address the various themes expressed by the public and stakeholders.

### 3.2 LoadService Standards

Board-adopted service standards are established to ensure that service levels are maintained to meet a minimum standard of rider experience. ~~This section also focuses on such items as maximum average loads on trips, and on time performance and are discussed below. Passenger load standards have been developed to ensure there is sufficient capacity on Metro Bus and Rail service. The loading standard for bus is based on the maximum average ratio of customers 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 customers per seat by service type (i.e. Heavy Rail and Light Rail). Current loading standards are shown in Table 3.4.~~

#### 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; it should not be exceeded for at least 90% of all hourly periods as summarized in Table 3.3. These frequencies below are the minimum service levels versus the target frequencies established under NextGen Bus Plan shown in Table 3.1 above.~~

**Table 3.3 Minimum Headway by Service Type**

Service Type	Peak (Weekday)	Off-Peak (Weekday/Weekend)	Weekend Base
Heavy Rail	10	20	
Light Rail	12	20	
Liner	12	30	
Rapid	20	30	
Core Network (Tier 1)	10	10-15	
Convenience Network (Tier 2)	15	15-30	
Connectivity Network (Tier 3)	30	30-60	
Community Network (Tier 4)	60	60	
Commuter Network (Tier 5)	Varies	Varies	

#### Passenger Loads

~~Passenger load standards have been developed to ensure there is sufficient capacity on Metro Bus and Rail service. The loading standard for bus is based on the maximum average ratio of customers 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 customers per seat by service type (i.e. Heavy Rail and Light Rail). Current loading standards are shown in Table 3.4.~~

**Table 3.44** Passenger Loading Standards by Vehicle Type

Service-Vehicle Type	Seats per Vehicle	Peak Passengers per Sq. Foot per Standing -Passenger (Rail)/SeatSeat (Bus)	Maximum Passengers Onboard
Heavy Rail —A650	502	3.45 <del>2.30</del>	14320
Heavy Rail —HR4000	47	3.45	131
Light rail Rail – P3010	60 <del>7668</del>	4.25 <del>1.75</del>	133 <del>105</del> 133
Light Rail – P2550	71	4.25	138
Light Rail – P2000	70	4.25	139
Bus – 40 foot	38	1.30	49
Bus – 45 foot	46	1.30	60
Bus – 60 foot	57	1.30	74
Van — MicroTransit Metro Micro	10	1.0	10

- **Bus Passenger Loading Standard** expresses the maximum average ratio of customers 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 ~~maintains~~ ~~sets~~ the current loading standard for Metro bus to 1.3 as recommended by the 2016 APTA Peer Review Committee. ~~Vehicles used for Metro MicroTransit will have a load standard of 1.0.~~
- **Rail Passenger Loading Standard** expresses the maximum average ~~load based on seats available plus either a standard for passengers per square foot (heavy rail) or ratio of customers to seats (light rail) 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.~~
- **Rail Passenger Loading Standard** expresses the maximum average ratio of customers to vehicle type and by direction for a one-hour period which should not exceed for at least 95% of all hourly periods.
  - ~~The load standard for Metro heavy rail is number of seats plus 3.45 square feet per passenger by vehicle type and is consistent with Metro's peers like New York MTA, Chicago Transit Authority, BART and Boston MBTA.~~
  - ~~The load standard for Metro light rail is number of seats plus 4.25 square feet per passenger by vehicle type and is consistent with Metro's peers like Denver RTD.~~

~~Switching to a square footage per passenger better reflects the balance between available seating and standing room. The former metric of a multiplier by seating capacity does not respond to the changes in Metro Rail fleet seating count and~~

~~standing area space allows for more standees to be accommodated. - The total amount of square footage available for standees is based on the net -interior square footage of the passenger cabin.~~

### Wheelchair Boardings and Pass ups.

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

### Metro Liner Transit

Metro Liner transit provides regional, high-speed line haul service in high-volume corridors. These lines are designed to operate like rail service, complete with separated right-of-way, wide stop spacing, bus stations, pre-paid and/or all door boarding, real time customer information, and transit signal priority. Currently, Metro operates two Metro Liner services:

- G Line operates on its own semi-exclusive right-of-way and meets the Federal Transit Administration (FTA) definition of Bus Rapid Transit (BRT)
- J Line operates on the I-10 and I-110 ExpressLanes (freeway toll lanes) as well as surface streets through downtown Los Angeles, so it does not fully meet the FTA definition of BRT.

### Wheelchair Boardings and Pass ups.

~~Ideally, in a floating 6-month period, regular operating bus service will average no more than a 5% pass-up rate of customers who use wheelchairs or other mobility devices. Should the average increase to over the 5% threshold, Service Planning will adjust service to better serve the ridership patterns of the route so as to minimize pass-ups.~~

### 3.3 On-Time Performance

A key element of high-quality transit service, as confirmed in the NextGen Bus Study, is reliability. This element is measured firstly in terms of on time performance. Managing this metric is intended to provide a high standard of service reliability. On-time performance for buses is defined as a range from no more than 1 minute early to no more than 5 minutes late, which is measured at all timepoints along a route. For rail lines, on-time performance is measured based on end terminal arrival. This standard varies between heavy rail and light rail.

Metro internally has an internal interim goal of 78.5%. As the agency works to improve on-time performance, this goal will be progressively moved towards achieving the aspirational goal of 85%. The on-time performance standard is summarized in Table 3.5.

**Table 3.5      Target Standard for On-Time Performance**

Service Type	On-Time Performance
Heavy Rail	95%
Light Rail	90%

All Metro Bus Services: Liner, Rapid, Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), Community Bus (Tier 4) Commuter (Tier 5)	85%
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### Service Cancellations:

In recent years, both pre-pandemic and during times of significant impacts from the COVID-19 pandemic on the Metro operator workforce, cancelled service due to lack of available operators has had a significant impact on service reliability. Metro should not enter into service level changes unless sufficient operators are available to provide the required extra board operator as required (OAR) ratio of 1.23 for bus and 1.25 for rail at each operating division. Cancelled service should ideally be zero each day in support of the best customer experience. As of March 2022, a target of 2% or less cancelled service has been set as part of service restoration preconditions and continues to be the goal. Current service cancellations as of mid-2025 are below 1.0% for weekdays and Saturdays and below 2.0% for Sundays.

### 3.34 Transit Stop Spacing:

Bus stops and station stop locations should balance safe, convenient access with pedestrian safety as well as other community curb space needs. Locations should support efficient transit operations, convenient rider transfers, minimize walking distances and unnecessary crosswalk movements, and be located at a signalized or signed crosswalk to disincentive or minimize crossing against traffic lights at unprotected/uncontrolled locations (i.e., no crosswalk or signal light, etc.). 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 activity centers to provide access for uses that generally attract transit customers. Access to medical centers, senior centers, and schools have high priority when considering new bus stop locations and/or when relocating existing bus stops.

#### 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.

#### Stop/Station Spacing

The average 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 3.46.

**Table 3.6 Target Average Stop/Station Spacing**

Service Type	Average Stop/Station Spacing (miles)
Heavy Rail	1.50
Light Rail	1.50
Metro Liner	1.25
Rapid	0.75
Commuter (Tier 5)	1.25
Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), Community (Tier 4)	0.25

Stop/station spacing is established based on the goals and guidelines each service type is designed to achieve as described in the following discussion discussed below:

**Heavy/Light Rail Line** station spacing is greater than bus stop/station spacing to achieve a higher operating speed, recognizing that riders are willing to access such service from a greater distance and to ensure this mode is competitive for longer distance travel, while ensuring stations serve key activity nodes and transit connection points. Rail station location is determined during the design phase. Ideal average rail station spacing should be no greater than 1.50 miles.

- **Metro Liner, Commuter Bus (Tier 5) and Rapid Bus Routes** achieve the highest bus speeds through even greater stop spacing than Local Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), and Community (Tier 4), and Commuter (Tier 5) lines. 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 such as freeway HOT or HOV lanes. See Table 3.5 for further details. Target average spacings are 1.25 miles for Metro Liner and Commuter Bus service tiers, and 0.75 for Rapid Bus.
- **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 miles for convenient walk access while maximum stop spacing should be 0.3 miles between any two consecutive stops except in areas where no stops are required or physically possible (freeways, bridges, undeveloped areas).

Decisions regarding bus stop spacing and location call for analysis of ridership density, customer service requirements such as balancing access to key destinations and impact to on-board riders, rider and operational safety, equipment size, the service type provided, interaction of stopped buses with general traffic flow, and coordination with other curbside space allocations such as parking and driveways. Stops should be spaced closer together in major commercial districts and farther apart in outlying areas. In general, bus stop spacing should not exceed 0.3 miles for local bus service except in areas where local physical conditions such as bridges, freeways, and/or areas that lack of ridership generators such as

undeveloped areas may result in a wider gap between stops. Care should be taken to avoid low usage stops in areas where the buses are closest to the maximum load on board the bus. Special consideration may be given to stops near schools, senior centers, and medical centers where there is reasonable ridership (>= 15 boardings or alightings on average per weekday).

**Table 3.5** *Target Average Stop/Station Spacing*

Service Type	Average Stop/Station Spacing (miles)
Heavy Rail	1.50
Light Rail	1.50
BRT	1.25
Rapid	0.75
Commuter (Tier 5)	1.25
Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), Community (Tier 4)	0.25

### 3.4 On Time Performance and Service Cancellations

A key element of high-quality transit service, as confirmed in the NextGen Bus Study, is reliability. This element is measured firstly in terms of on time performance. Managing this metric is intended to provide a high standard of service reliability. On time performance for buses is defined as a range from no more than one minute early to no more than five minutes late, which is measured at all timepoints along its route. For rail lines, on time performance is measured based on end terminal arrival. This standard varies between heavy rail and light rail. The on time performance standard is summarized in the Table 3.6.

As part of the NextGen Bus Plan speed and reliability improvements, a pilot of headway based service management will be conducted. This involves the operation of high-frequency bus lines without intermediate timepoints along the line. The reliability of this type of service will be based on the intervals between buses remaining within a range. More information will be added and standards developed for this mode of operation once the pilot has been completed.

**Table 3.6** *Target Standard for On Time Performance*

Service Type	On Time Performance
Heavy Rail	95%
Light Rail	90%
BRT	85%
Rapid	85%

Commuter (Tier 5)	85%
Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), Community Bus (Tier 4)	85%

The on-time performance for the five bus tiers and Rapid Bus has typically been between 70–75% so the target of 85% remains challenging.

### Service Cancellations:

~~In recent years, both pre-pandemic and during times of significant impacts from the COVID-19 pandemic on the Metro operator workforce, cancelled service due to lack of available operators has had a significant impact on service reliability. Metro should not enter into service level changes unless sufficient operators are available to provide the required extra board operator as required (OAR) ratio of 1.23 for bus and 1.25 for rail at each operating division. Cancelled service should ideally be zero each day in support of the best customer experience. As of March 2022, a target of 2% or less cancelled service has been set as part of service restoration preconditions and continues to be the goal. Current service cancellations as of mid 2025 are below 1.0% for weekdays and Saturdays and below 2.0% for Sundays.~~

### 3.5253 Bus/Rail Interface and Route Planning

BRT/Rail station locations are determined during the design phase of a fixed guideway/right-of-way. There are criteria associated with station location, including connectivity and centrality to catchments and major arterials, but also technical feasibility which 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 and arterials. 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.

As the Metro Rail system expands, the surrounding bus system within ~~0.50 a half~~ mile of each station is assessed for adjustments that would improve access to rail stations, take advantage of new transfer facilities, and reduce bus and rail service duplication. The following guidelines provide direction for routing and scheduling changes that will be necessary as the Metro Rail system is expanded:

#### Discontinuation of Parallel Limited and Express Service

Competing Community and Commuter (Tiers 4 and 5) bus services that parallel the rail corridor will be discontinued where duplication exists. Revenue services should be reinvested to improve service on lines that feed the new rail service where possible.

#### 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 is positive i.e. the transfer to rail does not result in overall increased travel time.

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 up to one mile of a rail station may~~will~~ be considered for ~~extended~~ to terminate at ~~that~~ 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 consistent with area travel patterns 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 based on significant area travel patterns 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~~--60~~ minutes ~~or greater~~ ending at a rail station should be scheduled to arrive 5 minutes before the rail departure time (plus walk time between the modes). When the predominant movement is from rail to bus, terminal buses should be scheduled to depart 5 minutes after the scheduled rail arrival time (plus walk time between the modes).

## **3.6 3.34—Metro Bus Routing and Facility Guidelines**

### 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 miles apart from one another, and bus routes operating parallel to rail should be spaced a 0.5 miles apart from 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, alternative delivery methods should be considered.

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 0.25~~a quarter~~-mile to 0.50~~a half~~ mile distance provides an opportunity to simplify the network for ease of use, reduce underutilized capacity, and invest those resources into other areas of the network. This

concept requires ~~better~~ coordination of schedules and transfer ~~points and points and~~ will result in an easier-to-use and more convenient system ~~that while reducesing rider~~ wait time and overall travel time.

### Facility Design:

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:

- Bus Transit Centers /Bus Layover Zones and Terminals
  - Layover zones should be designed to accommodate various sizes of buses based on expected fleet deployments (including the outlook for future ridership increases and fleet options).
  - Layover zones should utilize sawtooth bay configurations where possible to ensure curb space is more efficiently and reliably ~~utilized, and utilized and can~~ accommodate~~eing~~ 60' buses where needed.
  - 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.~~21~~)
  - 47.5 feet for 45-foot buses (Figure 3.3)
  - 44 feet for 60-foot articulated buses (Figure 3.~~42~~)
- ~~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~~ at minimum be:
  - 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~~ e:
  - Far-side and mid-block – 120 feet
  - Near-side – 170 feet

For two 60-foot buses servicing a stop simultaneously, add 70 feet.

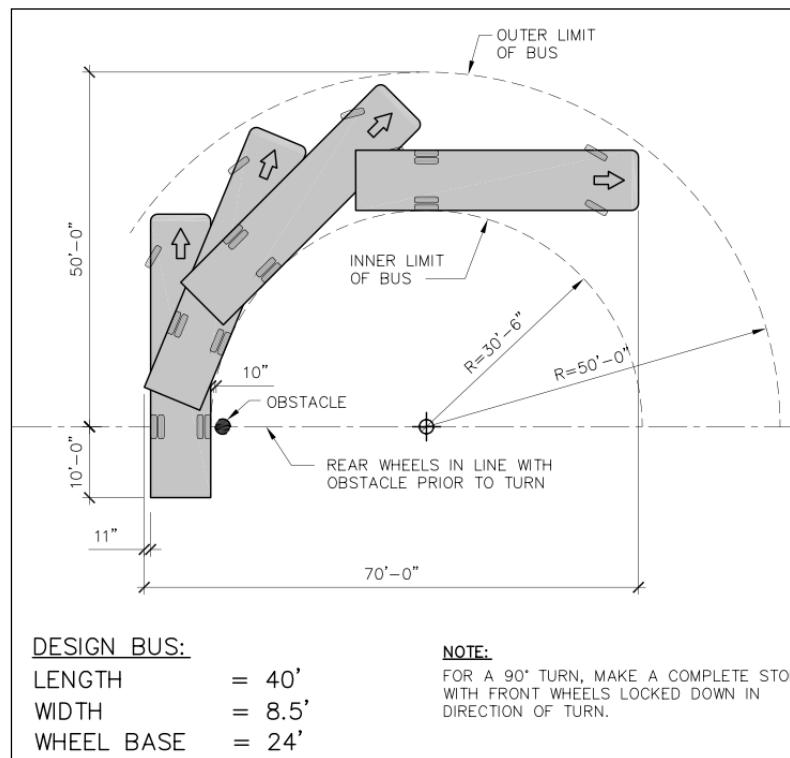


Figure 3.1-2 40-foot bus turning radius

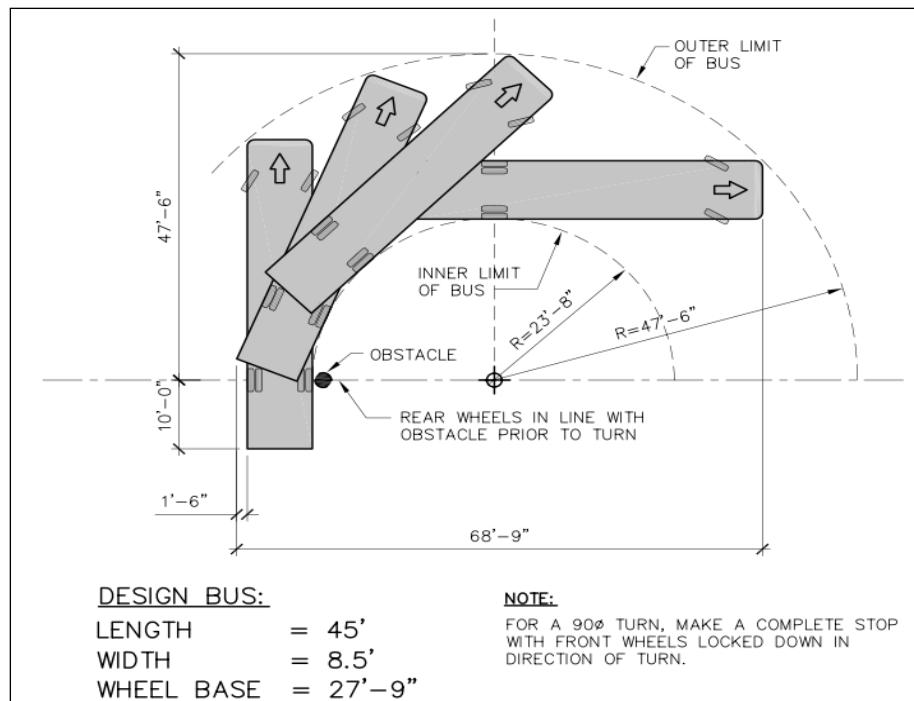


Figure 3.2-3 45-foot bus turning radius

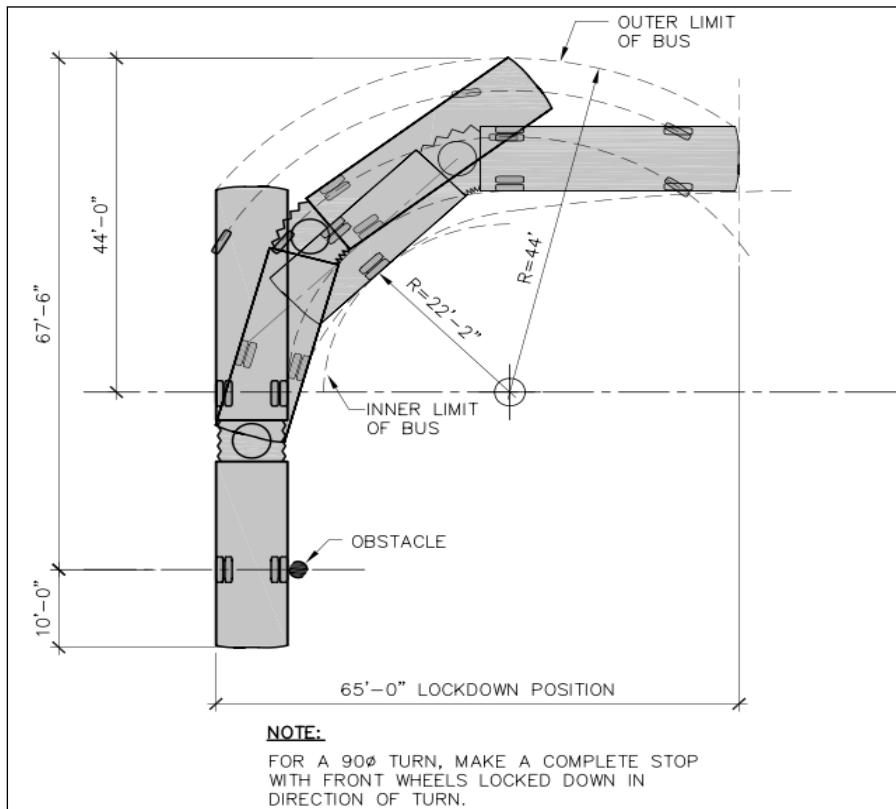


Figure 3.3-4 Articulated 60-foot bus turning radius

- **Bus Layover Zone** general space requirements based on frequency between scheduled trips:
  - One space – 20 minute service or less frequent
  - Two spaces – 12 to 15 minute frequency
  - Three spaces – 7.5 to 10 minute frequency
  - Four spaces – 5 to 6 minute frequency
  - Desired street lane widths for bus operations should be 12 feet or more.

Route length may impact these above requirements with longer routes needing longer layover time between trips.

#### 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 wheelchairs or other assistive mobility devices, and that pathways to and from stops and stations 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 be moved to a new location on a permanent basis or temporary basis depending on situations, such as during construction. There are some stops that were grandfathered in under ADA legislation to maintain service, pending future improvements.

**Table 3.7 Comparative Analysis of Bus Stop Locations**

Stop Type	Advantages	Disadvantages
<u>Near-Side</u>	<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>– Through lane may be blocked during peak periods by queuing buses</li> <li>– Increases sight distance problems for crossing pedestrians</li> </ul>
<u>Far-Side</u>	<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>– Creates traffic flow gaps for buses re-entering the flow of traffic at signalized intersections</li> <li>– Allows bus routes that operate with signal priority to reap benefits of the technology at signalized intersections.</li> </ul>	<ul style="list-style-type: none"> <li>– Queuing buses may block intersections during peak periods</li> <li>– Increases sight distance obstruction for crossing pedestrians and vehicles</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>
<u>Mid-Block</u>	<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>

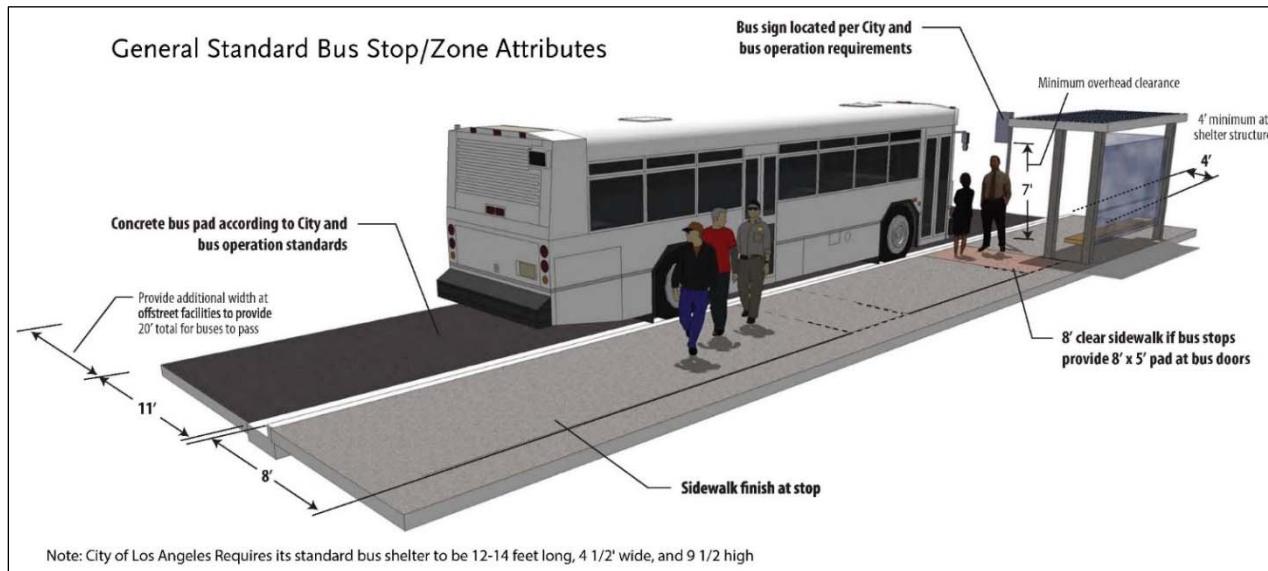
Source: FTA web page ([http://www.fta.dot.gov/12351\\_4361.html](http://www.fta.dot.gov/12351_4361.html))

A summary of advantages and disadvantages to each type of stop location is provided in Table 3.7. In general, far-side bus stops are preferable, particularly at signalized intersections, though near side or mid-block stops may be justified in some situations. When two or more bus routes operate along the same corridor, stops should be consolidated to facilitate ease of transfers, provide a single location for all transit activity, avoid unnecessary crosswalk movements, and minimize confusion as to where customers should wait to catch their bus. However, for 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 allow for required turn movements, 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.)

The following renderings (Figures 3.5-3.8) illustrate a typical bus stop/zone design and offers guideline for near-side, far-side, and mid-block locations. Transit Cooperative Research Program (TCRP) Report 19 “Guidelines for the Location and Design of Bus Stops” (1996) provides a more detailed discussion. Metro also adopted its own Transfers Design Guide in 2018 – see Section 2, page 12 for more information.



**Figure 3.5 General Standard Bus Stop/Zone Attributes**

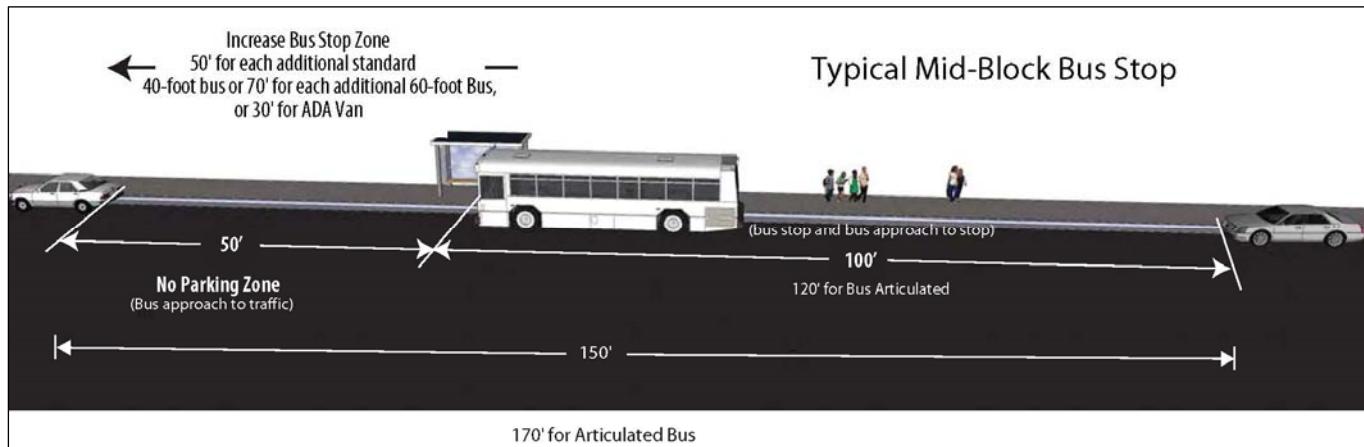


Figure 3.6 Typical Mid-Block Bus Stop

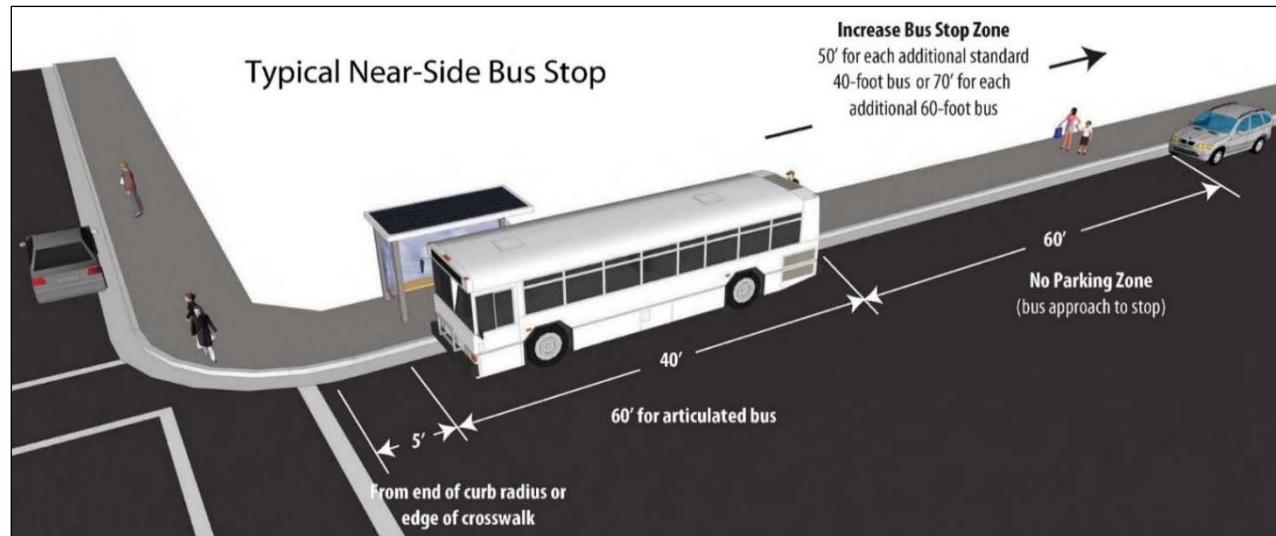
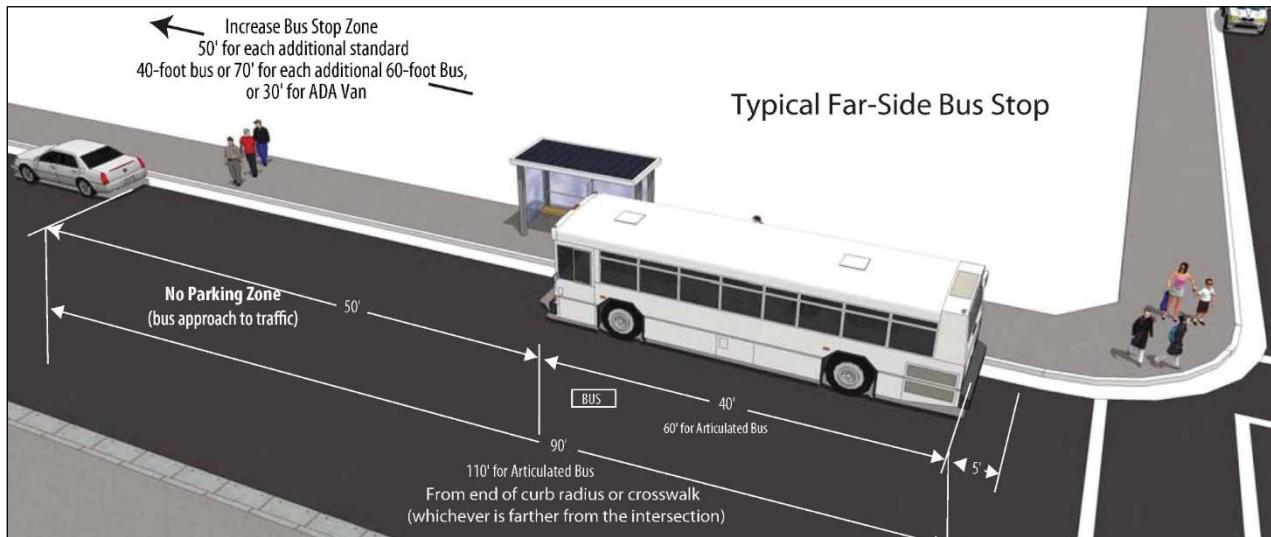


Figure 3.7 Typical Near-Side Bus Stop



**Figure 3.8 Typical Far-Side Bus Stop**

### **3.4-7 Vehicle Assignment**

Metro's transit system consists of light rail, heavy rail, and bus operations. Metro's goal is to ensure a consistent basis for assigning vehicles to facilities to meet operating needs and provide equitable access to the newest vehicles across the Metro network to enhance quality of service.

~~Metro's transit system consists of light rail, heavy rail, and bus operations. As of October 2019 (pre COVID), for an average weekday Metro served approximately 925,000 bus boardings and 297,000 rail boardings.<sup>10</sup>~~

- **Buses:** Buses will be assigned to individual facilities based on vehicle size requirements for lines supported by each facility. The fleet is also distributed to ensure the average age of fleet is consistent across each division for each bus type, so that all areas may have some service delivered using the newest buses.
  - Articulated Buses: The G Line operates with a dedicated fleet of 60' higher capacity articulated buses. The advantage of the deployment of articulated buses is the opportunity to reduce vehicle requirements and service hours while maintaining high ridership capacity; however, deployment should not increase service intervals (i.e. reduce frequency) to the point where service quality is degraded. For this reason, bus lines with a peak headway of 5 minutes or better are ideal candidates for this type of bus. In evaluating services for higher capacity articulated buses, other factors must be considered including facility compatibility, street design, and

<sup>10</sup> Figures taken from October 2019 data; selected for seasonal average and adjusted for A Line (Blue) closure.

operational factors such as buses that operate on a mix of lines during their operating day. The deployment of articulated buses must also be coordinated with the efforts to convert the Metro fleet to fully zero-emission buses.

- **Light Rail:** ~~Light Rail eC~~ars will be assigned to individual lines based on ~~a variety of factors including~~ facility compatibility, the deposition of the feet during mid-life modernization programs, and age so that no single light rail line ~~must solely~~must rely on the oldest rail fleet. 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/training for mechanics who work on the different fleets. There is also a weight restriction that precludes the P2550 light rail cars from being assigned to the C Line along the I-105 freeway.
- **Heavy Rail:** Assignment policy is not applicable to ~~H~~heavy ~~r~~Rail. The ~~Metro~~ B Line (Red) and D Lines ~~s~~ (Purple) operate out of the same division, with the same vehicle type.

### **3.58 School Trippers**

School trippers are extra service operated to protect against overcrowding on bus lines 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 general public. School tripper service may be operated if the following criteria are met:

- There is sufficient demand to warrant the operation of a tripper that cannot on average be accommodated within the load factor applicable to the regular service available;
- There are sufficient resources to operate a tripper;
- The school tripper will not result in a significant increase in travel time (no more than 5 minutes extra) for regular customers if the service is to be deviated via a school; and
- The school tripper is operated as part of the regularly scheduled public transportation service and is included in such schedules and available for any person to ride.

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;
- 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 and/or on the Metro website at [metro.net](http://metro.net); and
- Requests for new school trippers or modifications to existing school trippers (bell time changes, etc.) will be considered when a notice is given at least ~~30 days~~30 days in

advance of the school year starting, 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 Development's partment Scheduling section are~~ is responsible for ensuring that all school trippers in their respective service area fully comply with Metro's School Tripper Policy as discussed herein.
- Uniform documentation standards for ~~the documentation of~~ daily school tripper arrangements must be employed. This includes standardizing the documentation form and oversight of the documented information being input into the scheduling system to ensure accuracy. All requests for new school trippers and modifications to existing school trippers must be logged into the scheduling system regardless of whether the requested new or modified school tripper is implemented.
- ~~The Scheduling team DMs are~~ is responsible for working with school districts in their service area which use school tripper service, where special events and bell-time changes are disseminated to Metro through communication with district staff.
- The information fed to transit apps and trip planners, such as Transit App and Google Transit, is made available via a General Transit Feed Specification (GTFS) compatible feed which is updated weekly to reflect school tripper service changes captured in the transit service scheduling software calendar utilized by Metro.

### **3.5-9 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 FTA. 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.

### **3.6-10 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](#), which is consistent with FTA Charter Bus regulations.

### **3.711 Service Transfer Guideline**

The regional public transit network in LA County 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 State of California Transit Development Act/State Transit Assistance 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, T~~here are also numerous Local Return fixed route transit providers who are not eligible for FAP ~~funding~~, ~~but~~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 ~~o~~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 saving 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 ~~minus 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 the latest FTA procedures for adherence to 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, span, and frequency of the existing Metro service for at least a two-year period ~~(two year lag)~~ for which Metro will include such operation through the FAP. In addition, the assuming agency must be a participant in the regional TAP program to minimize fare change impacts.

### **3.812 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 complementary paratransit services for functionally disabled individuals in Los Angeles County as required by federal ADA law. Access Services transportation service is available for any ADA paratransit-eligible individual to any location within 0.75¾ of a mile of any fixed route bus operated by the Los Angeles County public fixed route bus operators and within 0.75 ¾ 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 federal ADA law does not require that these services provide complementary paratransit service.<sup>11</sup>

Please also refer to Section 5 for an overview of Metro's own Metro Micro program.

~~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 operated for 12 months. Metro partnered with Via, a provider of on demand ride sourcing services, 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 was funded in part by a \$1.35 million Mobility on Demand (MOD) Sandbox Demonstrations grant from the FTA. The system was operated utilizing private cars. The Mobility on Demand pilot concluded in January 2021 and the three Mobility on Demand zones were transitioned to become part of the Metro Micro microtransit pilot program.~~

~~Metro's microtransit program, Metro Micro, is a three year pilot of on demand ride source service operated with passenger vans within eight designated zones, intended to test a range of use cases including areas where fixed route service has not been effective or is unable to access parts of a community. Metro is partnering with a third party vendor for the technology to support this pilot program, while Metro staff operate and manage the service. The pilot zones were coordinated with the NextGen Bus Plan to replace some lower usage fixed route lines or route segments where Metro Micro service could better serve such areas, though this is only one of a range of use cases being tested by Metro Micro.~~

~~The first two zones were launched in December 2020 (LAX/Inglewood and Watts/Willowbrook). The three Mobility on Demand zones were added to the Metro Micro program in January 2021. Two additional Metro Micro zones launched in June 2021 (Highland Park/Eagle Rock/Glendale and Altadena/Pasadena/Sierra Madre). The Northwest San Fernando Valley zone was launched in September 2021, and the final pilot zone at UCLA/Westwood launched in December 2021, for a total of eight pilot zones.~~

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<sup>11</sup> [accessla.org/about\\_us/overview.html](http://accessla.org/about_us/overview.html)

Based on experience to date, Metro Micro generally serves short trips of approximately 20 minutes in vehicle time and one to five miles in distance on average. These short trips are intended to serve as connections to other transit options such as Metro operated bus and rail services and municipal operators. The target maximum size for each zone was originally set at no greater than 20 square miles to ensure the goal of no more than an average 15 minute wait time for pick up could be consistently achieved. However, a number of zones were expanded to help better replace some low performing fixed route services during NextGen Bus Plan implementation, and the overlapping Artesia and Watts/Willowbrook zones were also combined into a 35 square mile mega zone (Watts/Compton) in December 2021.

## **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 information via telephone, through customer service representatives. Metro buses, railcars, and stations also include announcement systems for stops and stations as well as other general service information. Mobile device applications and text/SMS messaging have expanded significantly as smart phones have become a common part of life for many people. Published schedules, maps, and other information are also available through Metro Customer Service Centers and by mail. Significant information is also provided online at the [metro.net](http://metro.net) website, and via email alerts for customers who sign up to receive them. Information is also provided on signage at major stops and stations.~~

- ~~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:~~
  - ~~Real time information streamed to many transit information applications, including the Transit App, Metro's official smartphone app, as well as being displayed on Google, Apple and Bing Maps and in use by their trip planners.~~
  - ~~Metro's own website [metro.net](http://metro.net):~~
    - ~~Route maps and timetables, fare information, detour notices, service change information, cancelled service alerts, special event detours, and other service related information~~
    - ~~Metro's blogs, "The Source" and "El Pasajero"~~
    - ~~Specialized guides (Bikes, Riders with Disabilities, Safety & Security)~~
    - ~~Commuter program information (carpools, vanpools, employer programs, etc.)~~
    - ~~News and media information~~

- Latest information on Metro projects and programs
- Contact information
- Metro's social media accounts including Facebook, Twitter, and Instagram
- **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 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. Real time information is provided within selected transit shelters across the Metro network. Metro is testing e paper real time information signs at a limited number of bus stops and plans to roll out this amenity in a larger pilot in FY23.
- **Printed and Distributed Information** such as timetables, maps, service change notices, customer newsletters, etc., are made available at multiple locations such as Metro's own Customer Service Centers, regional libraries, and recreation and community centers.
- **Posted Information** such as system maps, bus cubes posted at stops, stations, and on board transit vehicles.
- **Route Signage 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 as well as direction of travel and location the lines terminate at, as well as names of major corridors served.
- **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 public service announcements.

### 4.2 Customer Amenities

Customer amenities are those elements provided at a transit stops, transit centers, and stations to enhance comfort, convenience, and security. Amenities include items such as shelters, benches, trash receptacles, lighting, restrooms, vending machines, and emergency telephones. In some instances, Metro coordinates with municipalities to provide appropriate amenities.

- **Benches** provide seating for waiting customers, help identify the stop or station, and provide an affordable alternative to shelters. Benches are provided by the local jurisdiction in coordination with Metro.

- ~~Elevators/Escalators provide accessibility for those who otherwise cannot use stairs to elevated or lowered station stops.~~
- ~~Lighting increases visibility and 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 waiting customers with protection from climate conditions and help identify the stop or station. Metro does not own or install shelters but coordinates with local jurisdictions on placement where appropriate. The NextGen Bus Plan includes an initiative to fund additional shelters across the Metro bus network in partnership with local jurisdictions.~~
- ~~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 at bus stop locations and maintained by individual municipalities.~~

Table 4.1 Customer Information and Amenities

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

Bus Facilities:	At least 1 per 3 bays/2 per facility
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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.

### 4.3 Rail Stations and Bus/Multi Modal Transit Center Facilities

When transit service is not available near one's trip origin, driving to a Park & Ride lot or utilizing another first last mile option such as a bicycle or scooter to transit may be a viable alternative. 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 cars to access a bus or train. Park & Ride facilities are usually provided at rail stations or bus transit centers such as the Metro El Monte Station and Harbor Gateway Transit Center. Park & Ride lots in suburbs serve as a staging area for commuter customers. Parking may be provided for transit riders at no cost or for a nominal fee, based on demand.
- **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 to install and operate, 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 micro mobility devices such as electric scooters. As part of the pilot, Metro has designated parking areas at selected stations and transit hubs for parking of micro mobility devices; the private firms seeking to park their vehicles at Metro sites must pay a fee for use of the parking facilities.<sup>12</sup>

### 4.4 Bus Stop Amenities

Transit services are supported by bus stop and transit center 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, which was confirmed in the NextGen Bus Study, it is vital that transit routes and schedules are developed in consideration of the quality, appropriateness, and availability of facilities.

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<sup>12</sup> Planning and Programming Committee File #2019-0085; LACMTA Administrative Code Title 8: Metro Parking Ordinance

~~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 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. Tests are underway for new e-paper real time information signs for bus stops. 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 Metro, or in some cases by the local municipality..~~

~~Metro has no jurisdiction over a bus stop beyond a bus stop sign post; amenities are installed by the municipality where the stop is located. This function is sometimes contracted to third parties who support installation and maintenance, usually funded by advertising revenues. The NextGen Bus Plan noted the importance of bus stop amenities such as seating and shelter, and Metro will work with municipalities to maximize the number of Metro bus stops with such amenities available.~~

~~Transit stations are stops along a fixed guideway and have features such as loading platforms, TVMs for pre loading of TAP cards, shelters, benches, lighting, information displays, trash receptacles, bike racks and/or lockers, public announcement systems, security cameras, and emergency call boxes. Many are located adjacent to Park & Ride lots and customer pick up/drop off areas.~~

~~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 layover terminals are major offsite layover areas for multiple bus lines and may or may not allow for customer boarding and alighting.~~

~~Locating bus layover 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 adds costs to an already budget constrained operation. Metro continues to include such facilities in joint development projects where feasible to maximize the efficiency of bus terminal operations.~~

~~Cost and minimization of customer disruptions are significant concerns when locating facilities for bus operations. Metro Operations staff continue to evaluate routes and layovers to reduce costs and improve efficiency as well as maintain required access to restrooms for operators. 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 joint development or private 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 resulting in expanded line operations to reach suitable alternative layovers.~~

#### **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 as well as other community curb space needs. Locations should support efficient transit operations, convenient rider transfers, minimize walking distances and unnecessary crosswalk movements, and should be located at a signalized or signed crosswalk to disincentive/minimize 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 activity centers to provide access for uses that generally attract transit customers. Medical centers, senior centers, 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, including connectivity and centrality to catchments and major arterials, but also technical feasibility which 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 and arterials. 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. When two or more bus routes operate along the same corridor, stops should be consolidated to facilitate ease of transfer, a single location for all transit activity, avoid unnecessary crosswalk movements and minimize confusion as to which stop customers should wait to catch their bus wherever possible. However, for 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 allow for required turn movements, under the following circumstances:~~

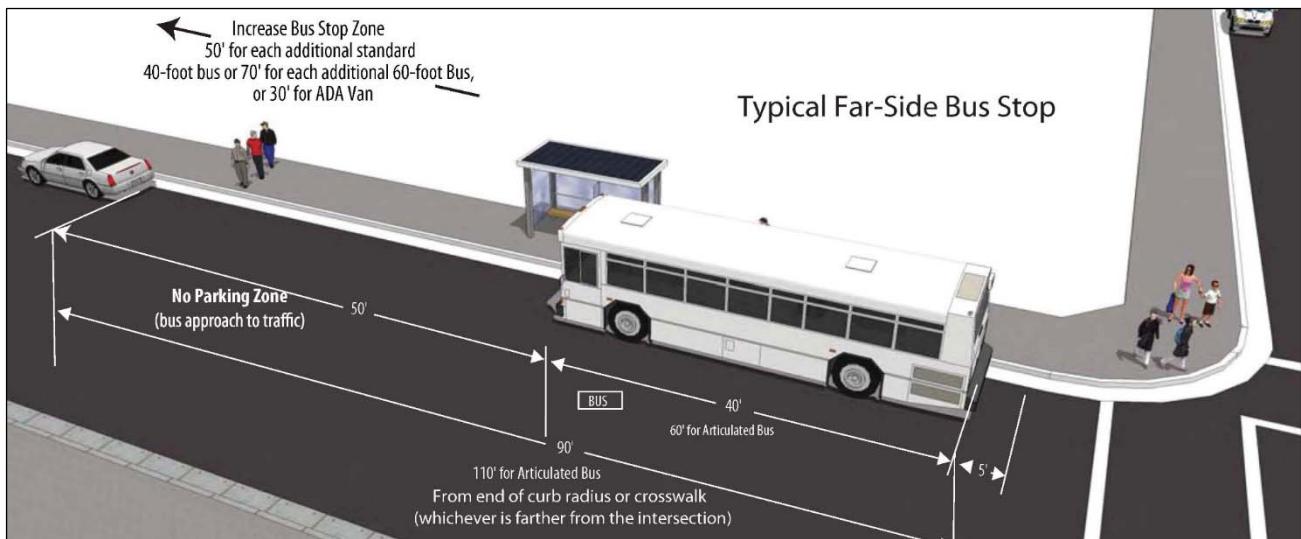
- ~~— Some bus lines will queue up to make a right turn while other lines continue through the intersection (unsafe right turn movements)~~
- ~~— Lack of space availability and no room to lengthen zone due to business owner objection, jurisdiction refusal to extend, a loading zone being located behind 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. A summary of advantages and disadvantages to each location are provided in Table 4.2.

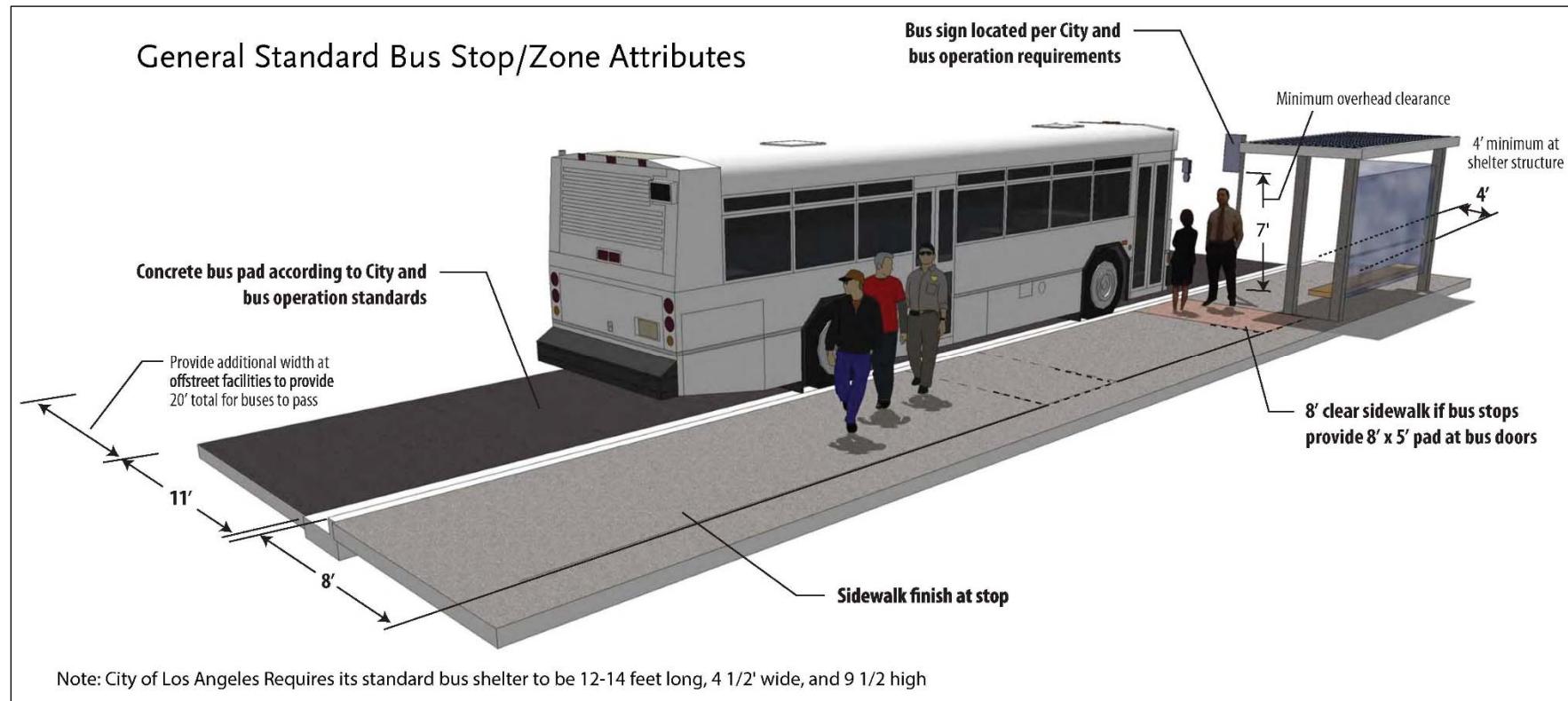
**Table 4.2 Comparative Analysis of Bus Stop Locations**

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 with signal priority to reap benefits of the 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>

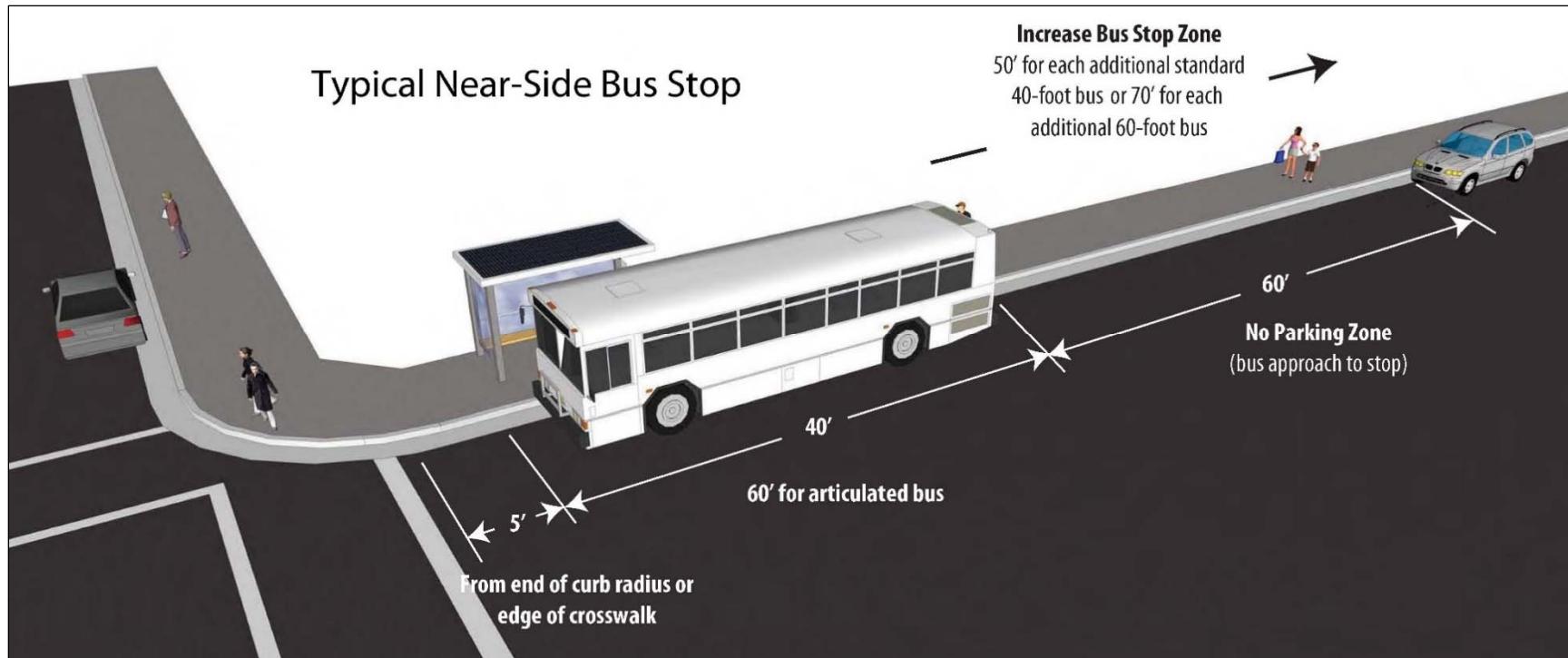


**Source: FTA webpage ([http://www.fta.dot.gov/12351\\_4361.html](http://www.fta.dot.gov/12351_4361.html))**

~~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. Transit Cooperative Research Program (TCRP) Report 19 “Guidelines for the Location and Design of Bus Stops” (1996) provides a more detailed discussion. Metro also adopted its own Transfers Design Guide in 2018 – see Section 2, page 15 for more information.~~



**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**

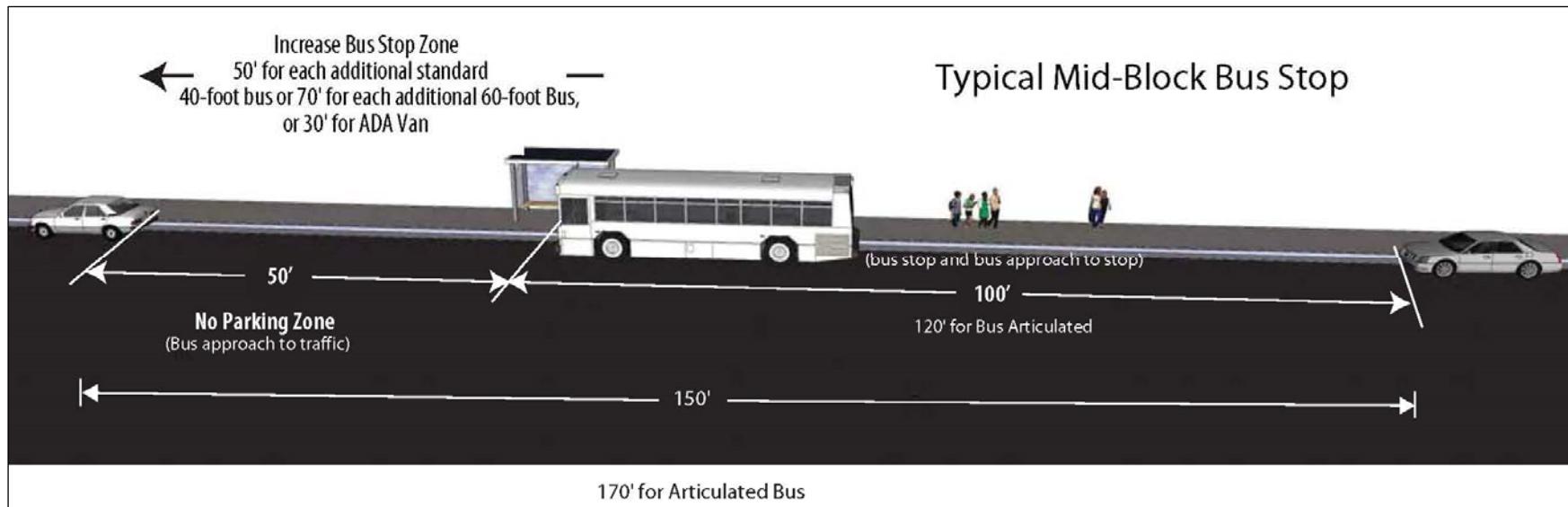


Figure 4.4 Typical Mid-Block Bus Stop

## **SECTION 54: BUS SERVICE PERFORMANCE EVALUATION**

This Metro [Transit Service Policy \(TSP\)](#) 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 criteria measure how well the transit system can attract customers to use the system more often and for new trip purposes.

### **54.1 Route Performance Index**

The Route Performance Index (RPI) is a conventional industry measure used to ensure transit services are effective and provide a reasonable return on investment. Metro's 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, allowing time for new lines to reach a level of maturity where riders have adapted to their availability. 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 (RS<sub>H</sub>) are 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 RS<sub>H</sub>s operated. A route having a higher number of boardings per RS<sub>H</sub> represents a better utilization of the service provided.
- **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 service 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 fare revenues collected. Higher subsidy services require more public funding support per passenger boarding.

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

RPI = ((Passengers/RSH/System Avg.) +(Passenger Miles per Seat Mile/System Avg.) +(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 0.60 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 ~~the Title~~ VI, Metro Service Council, and Board approval processes.

The RPI is calculated and reported quarterly by Metro's Service Planning staff for use in developing revised service plans to improve route performance.

### **54.2 Customer Experience**

Providing high quality mobility options that enable people to spend less time traveling on the transit network requires that service be available when and where customers want to travel, that service be competitive enough to have customers be willing to try transit over other options, and that service be attractive enough to ensure riders return for the same trip and ideally for more trips. Therefore, the recommended measures of success are aimed at evaluating the bus network implemented under the NextGen Bus Plan within these three elements, referred to as Find, Try, and Rely. These customer-focused measures help to balance the 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 are readily available
  - Percentage of trip ends within  $\frac{1}{4}$  mile of transit stop
  - Trip planning apps and website usage rates
  - *Percent of public considering transit (survey-based)*
- Bus system is easy to understand and use
  - Percentage of out-of-direction travel
  - Percentage of route miles with all-day frequent service ( $\leq 15$  min headways)
  - *Percent of public that understands 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 1/4-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)*

### **54.3 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, service frequencies consistent with NextGen Bus Plan, productivity, and balance loads.
- **Priority 2** – Restructure services that are duplicative with Metro Rail, other Metro Bus lines, 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 after implementation based on the 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 a**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 5: METRO MICRO ON DEMAND SERVICES**

Some areas of LAthe County are difficult to serve with fixed-route transit due to terrain, narrow streets, dispersed lower density destinations, and relatively low travel activity. Metro offers microtransit service, branded as Metro Micro, to select locations in its service area to fill in gaps in fixed-route systems and make public transit more convenient for more people. Metro Micro uses smaller vehicles than fixed-route service, which facilitates the ability to serve locations that are inaccessible to transit buses and operate at a lower cost per revenue service hour.

### Background

Metro launched two pilot programs to leverage demand-responsive technology to improve mobility, customer experience, and system performance by providing additional first- and last-mile service options: Mobility on Demand and Metro Micro, a microtransit service. The Mobility on Demand pilot launched in January 2019 and operated for 12 months. Metro partnered with Via, a provider of on-demand ride sourcing services, 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 was funded in part by a \$1.35-million Mobility on Demand (MOD) Sandbox Demonstrations grant from the FTA. The system was operated utilizing private vehicles. The Mobility on Demand pilot concluded in January 2021 and the three Mobility on Demand zones were transitioned to become part of the Metro's on-demand, van-based rideshare-source service branded as Metro Micro.

Metro Micro was launched in December 2020 by LA Metro as a three-year pilot. , and aAfter an extension to further study the service post-pandemic, Metro Micro became a permanent service on March 16, 2025. Metro Micro was designed in parallel with the NextGen Bus Plan. in some cases Metro Micro infix route The first two zones (LAX/Inglewood and Watts/Willowbrook) were launched in December 2020. The three Mobility on Demand zones were added to the Metro Micro program in January 2021. Two additional Metro Micro zones launched in June 2021 (Highland Park/Eagle Rock/Glendale and Altadena/Pasadena/Sierra Madre). The Northwest San Fernando Valley zone was launched in September 2021. The overlapping Artesia and Watts/Willowbrook zones were combined into an over 3091-35 square mile mega zone (Watts/Compton), and the final pilot zone at UCLA/Westwood launched in December 2021.

The pilot zones were coordinated with the NextGen Bus Plan to replace some lower ridership fixed route lines or route segments where Metro Micro service could better serve these hard-to-serve areas, though this was only one of a range of use cases being tested. The target maximum size for each zone was originally set at no greater than 20 square miles to ensure the goal of no more than an average 15-minute wait time for pick up could be consistently achieved. However, a number of zones were expanded to help replace some low performing fixed route services during NextGen Bus Plan implementation.

### 5.1 Micro Service Overview

Metro Micro is operated with passenger vans within eight designated zones, intended to test a range of use cases including areas where fixed route service has not been effective or is unable to access parts of a community. Metro is partnering with a third-party vendor for the technology, staffing, maintenance and vehicles to support this pilot program, while Metro provided the van operators and staff to manage. Metro provides staff, training materials, guidelines, and oversight for the operation. In March 2025, the operating model changed with a new technology vendor and a new vendor to manage operations including the provision of operators and vehicles.

Micro offers customers the ability to book rides within designated zones on the same day and up to a week in advance. Riders can reserve rides by calling Metro's Call Center, through an online reservation system, or via the service's dedicated smart phone application. Customers are directed to a virtual stop location (a designated pick-up or drop-off location which may be but is not necessarily a Metro bus stop or rail station) to be picked up by the service. All designated pickup and drop-off locations are located within the zone and must be ADA accessible. Stops are virtual because they typically do not have any signage indicating that they are service points, and they can be activated or deactivated in real-time as conditions change.

The service is designed to provide short trips within a zone where each rider would have to wait no more than 15 minutes from the time a reservation is made to when they are picked up at a designated pickup location, to facilitate pickup within a 10-minute window, and drop off at another virtual stop within the same zone.

The pilot program will operate for three years, after which Metro will determine whether to make the service permanent or not.

Based on experience to date, Metro Micro generally serves short trips of approximately 20 minutes in vehicle time and 1-5 miles in distance on average. These short trips are intended to serve as connections to other transit options such as Metro-operated bus and rail services and municipal operators.

### Metro Micro Capacity/Load Profiles

The Micro Passenger Loading Standard expresses the maximum average ratio of customers 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. Vehicles used for Metro Micro will have a load standard of 1.0 x available seats in each van. The largest vehicles have a seating capacity for up to 10 passengers; a range of seating capacities of the vans used.

**Table 5.1 Metro Micro Vehicle Capacity**

<u>Metro Micro Vehicle Type</u>	<u>Seats per Vehicle</u>	<u>Peak Passengers per Seat</u>	<u>Off-Peak Passengers per Seat</u>	<u>Maximum Passengers Onboard</u>
Large Van	7 + 2 Wheelchairs	1.0	1.0	9
Small Van	5	1.0	1.0	5
Small Wheelchair Accessible Vehicle	5 or 3 + 1 Wheelchair	1.0	1.0	5

Minor service changes may be conducted at any time. This includes:

- Adding, removing, or relocating virtual stops for safety, convenience, or operational reasons
- Minor changes to zone boundaries
- Reduction or expansion of revenue service hours
- Reduction or expansion of operating hours

A major service change for the purposes of microtransit is a change that exceeds 20% in any one zone: Such changes would require a public hearing similar to bus service changes. Where possible, such hearings should be held within the Micro zone.

### 5.2 Metro Micro Zone Boundaries

As of April 2025, Metro operates eight Metro Micro zones across Los Angeles County, ranging in size from <10 square miles to >30 square miles. All zones include at least one major transit station, and most zones include areas not served by fixed-route transit. These zones were determined through multi-stage process in which equity concerns (e.g. areas where it is difficult to obtain private Transportation Network Company (TNC) rides), coverage of areas without fixed-route service, and expanding access to rail and busway service. Details of each zone are provided in Table 5.1

Table 5.2 Metro Micro Zone Details

Zone	Launch Date	Zone Sq Miles	Weekday Hours of Operation	Weekend Hours of Operation	Hours in Operation per Week
Watts/Compton	Dec 2020	31	5a-11p	5:30a-9:30p	122
LAX/Inglewood	Dec 2020	19.5	5a-9p	5a-9p	112
El Monte	Jan 2021	23.4	6a-10p	10a-10p	104
North Hollywood/Burbank	Jan 2021	17.4	6a-10p	10a-10p	104
Highland Park/Eagle Rock/ Glendale	June 2021	23.3	5:30a-10p	5:30a-10p	112
Altadena/Pasadena/Sierra Madre	June 2021	23.2	5:30a-10p	5:30a-10p	112
Northwest San Fernando Valley	Sept 2021	20	5:30a-10p	5:30a-10p	112
UCLA/Westwood/VA Medical Center	Dec 2021	7.1	9a-9p	Closed	60
<b>TOTAL</b>		164.9			

In determining future changes to zone boundaries, Metro will consider equity impacts, connections to high-quality fixed-route service, geographic and topographic factors that affect fixed-route access and walk/rollability, zone size and shape, and origins and destinations. The role of each of these factors in determining Micro zones is described below:

- **Equity Impacts:** Similar to fixed-route service, Metro must consider the impact on Equity Focus Communities and target populations such as seniors and students, when determining changes to service zones. Populations with higher transit dependency, lower incomes, and historically and/or currently marginalized communities are

prioritized for improved access. In particular, Metro should consider how microtransit may be able to address inequities in availability of TNC services on the private market.

- **Connections to high-quality fixed-route service:** Though Metro's fixed-route system reaches a high proportion of Angelenos, there are areas that are served only infrequently or not at all, due to a variety of factors. Microtransit service connects these areas to high-quality fixed-route service and provide an alternative to single-occupancy vehicles for shorter trips.
- **Geographic and topographic factors that affect fixed-route access and walk/rollability:** Because the service uses smaller vehicles, microtransit can serve areas where transit buses cannot go due to their size and impact on neighborhoods. Areas with hilly terrain or narrow streets often cannot accommodate transit buses but are servable by microtransit vehicles. Hilly areas also suffer from poor walk/rollability, making the traditional 0.25 mile walking distance to transit physically challenging.
- **Zone size and shape:** Microtransit works best with zones 20 square miles or smaller, with shapes that are as close as possible to circular. With larger zones, it is easier for all available vehicles to be pulled to one area of the zone, leaving many patrons out of reach when they attempt to book a ride. Irregularly-shaped zones can lead to vehicles ending up in a “sock” where they are far from many origins and destinations within the zone. Based on efficiency metrics of existing zones, any new zones should have a maximum longest diagonal of 8 miles (longest distance between two zone edges). Similarly, zones that are too small to generate significant ridership should be avoided. A zone's diameter should exceed a comfortable walking distance (> 1 mile), and in general, zones should be at least 5 square miles, and impacts of geography and topography are also important to determining zone boundaries. Obstacles such as freeways, railroad tracks, the Los Angeles River, etc. should have multiple passing points within the zone and reduce the complications of crossing a zone. Zone boundary design should avoid creation of “dead corners” at the edges of zones that are difficult to get in and out of.
- **Origins and destinations:** To efficiently allocate resources, microtransit zones should have at least one major transit access point (a rail station, busway station, transit center, etc.) as well as a variety of residential and commercial uses.

### 5.4 Microtransit NTD Reporting

Metro reports Metro Micro as a Demand Response – Purchased Transportation (DR-PT) mode. FTA requires that Demand Response modes report the following data monthly:

- Unlinked passenger trips
- Vehicle revenue miles
- Vehicle revenue hours
- Vehicles operating in maximum service

FTA defines Revenue Service Hours differently for Demand Response than for fixed-route modes. This definition is found in the NTD Reporting Manual for the current year.

DR-PT is also reported during the Annual reporting. Details on the elements required can be found in the NTD Reporting Manual for the current **year, and year** and are much more extensive than the monthly reporting.

## **5.5 Microtransit Performance Evaluation**

The primary performance evaluation measures for Metro Micro are:

**On-Time Performance (OTP):** The percentage of rides which pick up or drop off the passenger within one minute of the time stated at booking. OTP is calculated based on the customer's booking method:

- **Leave Now:** Rides booked as "Leave Now" are given an expected pickup time and ride window. This time will be the earliest time the platform was able to schedule their ride; the ride may be scheduled earlier than original expected pickup time if an earlier ride becomes available. Rides are considered on time if they pick up the customer before one minute past the given window, which is established at booking time and may be any number of minutes.
- **Leave At:** Rides booked as "Leave At" are provided a 10-minute window within which the pickup may occur. Rides are considered on time if they pick up the customer before one minute past the end of the window.
- **Arrive By:** These rides are scheduled to get the customer to their destination by a specific time. Rides are considered on time if they drop the customer off before one minute past the Arrive By time in the booking.

**Validated Complaints per 10,000 Boardings:** This is based on complaints received via Metro's Customer Relations team and in-app feedback. The goal for this metric is at or below 50. The denominator is an order of magnitude below the analogous bus and rail metric because Metro Micro has a lower overall operational footprint, with a monthly total ridership of 50,000-75,000 boardings.

**Passengers per Revenue Service Hour (PRSH):** Number of completed passenger boardings divided by the number of revenue service hours. Expectations vary by zone, but the overall goal is at least 4 PRSH.

**Ride Rating:** Customers using the web app are prompted to rate their ride after drop-off and have an opportunity to provide feedback as well.

**Combined Cancellation and No-Show Rate:** This rate is a proxy measure of how much confidence people have that their ride will arrive, and how well the service matches their transportation needs. People are more likely to cancel or no-show if they are looking for a better option than their Metro Micro booking offers. The service is expected to keep this rate at or below 37% of all bookings.

**Revenue Service Hours (RSH):** Total time that vehicles spend in zones ready to serve customer rides. This metric excludes deadhead and both paid and unpaid breaks but includes standing time where a vehicle is ready for rides but has none scheduled. The Federal Transit Administration National Transit Database reporting uses a different definition that also excludes standing time and categorizes some empty trips as deadhead instead of RSH.

**Micro Real-Time Information:** On-demand transit is heavily reliant on real-time information on dynamic pick up and drop off schedules. Real-time information is used in the following ways:

- Customers who book via the web portal or app can see an ETA, and as the pick-up time approaches, track their vehicle on the app map.
- Customer Call Center agents can check the status of rides for customers who do not have access to the web portal or app.
- Metro staff and Operations Contractor staff have access to real-time data on all vehicle positions and status, which they use to monitor service and troubleshoot performance issues.

**Wheelchair Boardings and Abandoned Rides:** Abandoned rides are those rides that are booked, but that no vehicle arrives to pick up. This may happen due to a mechanical breakdown, excessive operator absences, or unusual traffic conditions that make an area of the zone less accessible or inaccessible. These instances are analogous to cancelled runs in bus service, but another vehicle will not be scheduled to pick up the passenger unless they re-book a ride. Any ride abandonment needs to be investigated and addressed.

Ideally, in a floating 6-month period, Micro service will average no more than 0.5% in pass-ups of customers who use wheelchairs or other mobility devices. For Micro service, a trip is considered to be a wheelchair pass-up if it is unmatched, which is when a ride is booked correctly as an accessible trip but an accessible vehicle is not able to be brought to the customer to pick them up. Operations Contractor staff is responsible for monitoring for unmatched (abandoned) rides and, if one occurs, attempting to contact the customer and assisting them with new travel arrangements. Should the average increase to over the 0.5% threshold, Metro staff will work with the Operations Contractor to adjust service to better serve the ridership patterns of the zone in such a way so as to minimize unmatched/abandoned rides.

⋮

~~\* available seats in each van 0.56 Wheelchair correctly as an accessible trip 0.5 Metro staff will work with the Operations Contractor to zone unmatched/abandoned rides~~

On-Demand transit is heavily reliant on real-time information on dynamic pick up and drop off schedules. Real-time information is used in the following ways:

- Customers who book via the web portal or app can see an ETA, and as the pick-up time approaches, track their vehicle on the app map.

~~Customer Call Center agents can check the status of rides for customers who do not have access to the web portal or app.~~

~~Metro staff and Operations Contractor staff have access to real time data on all vehicle positions and status, which they use to monitor service and troubleshoot performance issues.~~

## **SECTION 6: CUSTOMER INFORMATION AND AMENITIES**

Customer information instructs both regular and infrequent customers 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.

### **6.1 Customer Information**

Both regular and infrequent 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 services are scheduled to depart and arrive, and how planned and unplanned service changes or disruptions impact travel, especially when they are traveling to a location they rarely visit or that is new to them. Information must be provided in accessible formats. Metro provides customer trip planning information via telephone, through customer service representatives. Metro buses, railcars, and stations also include announcement systems for stops and stations as well as other general service information.

- **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 a day to anyone with Internet access and includes:
  - Real-time information streamed to many mobile devices via transit information applications and displayed on Google, Apple, and Bing Maps trip planners as well as applications such as Transit, Moovit, and Citymapper. Text/SMS messaging have expanded significantly as smart phones have become a common part of life for many. Email alerts are also shared with customers who sign up to receive them.
  - Metro's own website metro.net:
    - Route maps and timetables, fare information, detour notices, service change information, cancelled service alerts, special event detours, and other service-related information
    - Metro's blogs, “The Source” and “El Pasajero”
    - Specialized guides (Bikes, Riders with Disabilities, Safety & Security)
    - Commuter program information (carpools, vanpools, employer programs, etc.)
    - News and media information
    - Latest information on Metro projects and programs
    - Contact information
  - Metro's social media accounts including Facebook, X (Twitter), and Instagram.

- **Bus and Train Real-Time Information Signage:** 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 is a service disruption. It should provide 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. Real-time information is provided within selected transit shelters across the Metro network. Metro piloted e-paper real time information signs at a limited number of bus stops as an amenity in FY23. The ePaper technology provides a low power, better resolution on multi-sized tablets and displays. Metro has since expanded its use of ePaper technology to display real-time information, with ePaper real-time displays installed along Vermont Av, the new LAX/Metro Bus Center, and are in development at Patsaouras Plaza and throughout the Southeast Los Angeles region. The City of LA's Sidewalk and Transit Amenities Program (STAP) is incorporating real-time information within all new bus shelters being installed as part of the program.
- **Printed and Distributed Information** such as timetables, maps, service change notices, customer newsletters, etc., are made available at multiple locations such as Metro's own Customer Service Centers, regional libraries, and recreation and community centers, on board affected and adjacent routes, and by mail.
- **Posted Information** such as system maps, bus cubes posted at stops, stations, and on board transit vehicles.
- **Route Signage 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 as well as direction of travel and location the lines terminate at, as well as names of major corridors served.
- **Wayfinding** is the process of supporting the ability to navigate using informational 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 public service announcements.

### **6.2 Customer Amenities**

Customer amenities are those elements provided at transit stops, centers, and stations to enhance comfort, convenience, and security. Amenities include items such as shelters, benches, trash receptacles, lighting, restrooms, vending machines, and emergency telephones and intercoms. In some instances, Metro coordinates with municipalities to provide appropriate amenities.

**Table 6.1 Customer Information and Amenities**

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

- Benches provide seating for waiting customers, help identify the stop or station, and provide an affordable alternative to shelters. Benches are provided by the local jurisdiction in coordination with Metro.
- Elevator/Escalators provide accessibility for those who otherwise cannot use stairs to elevated or lowered station stops.
- Lighting increases visibility and 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 waiting customers with protection from climate conditions and help identify the stop or station. Metro does not own or install shelters but coordinates with local jurisdictions on placement where appropriate. The NextGen Bus Plan includes an initiative to fund additional shelters across the Metro bus network in partnership with local jurisdictions.

- **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 at bus stop locations and maintained by individual municipalities.

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 6.1.

### **6.3 Rail Stations and Bus/Multi-Modal Transit Center-Facilities**

When transit service is not available near one's trip origin, driving to a Park & Ride lot or utilizing another first-last mile option such as a bicycle or scooter to transit may be a viable alternative. Station parking facilities, bus transit centers and their associated amenities, bicycle storage, and micro-mobility parking areas are important amenities for transit customers.

- **Park & Ride/Station Parking Facilities** are provided in close proximity to major stops and stations for transit customers who use cars to access a bus or train. Park & Ride facilities are usually provided at rail stations or bus transit centers such as the Metro El Monte Station and Harbor Gateway Transit Center. Park & Ride lots in suburbs serve as a staging area for commuter customers. Parking may be provided for transit riders at no cost or for a nominal fee, based on demand. Adjacent development and joint use parking are encouraged.
- **Bus Transit Centers and Stop Amenities:** Stations and shelters provide customers with enhanced comfort and safety. As part of the NextGen Bus Plan, Metro will continue to work with municipalities to maximize the number of bus stops with seating and shelter, as this function is led by municipalities. An emphasis will be made on allocating many of these amenities to Equity Focus Communities where the need for high quality transit is greatest.
- **Streetscape:** Streetscape and other design features such as landscaping, pedestrian countdown signals, bicycle racks, and well-designed crosswalks make it easier for pedestrians and bicyclists to access the stations.
- **Bicycle Storage** such as bicycle racks, lockers, and hubs may be provided at transit centers and stations where demand exists and space allows, and 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 they can be subject to potential damage and theft. Enclosed bicycle lockers and hubs provide added protection from theft and weather but cost more to install and operate, and require more space.
- **Micro Mobility Vehicle Parking:** At their July 25, 2019 meeting, the Metro Board adopted a parking ordinance to regulate parking of micro mobility devices such as electric scooters. Metro operated a two-year pilot where designated parking areas were established at selected stations and transit hubs for parking of micro mobility devices; the private firms seeking to park their vehicles at Metro sites must pay a fee for use of

the parking facilities.<sup>13</sup> A permanent program was established following completion of the pilot and is being operated at the following stations: Wardlow, Willow A Line Stations, and 17th St/SMC, Expo Bundy, Expo Sepulveda, Culver City, La Cienega/Jefferson, 26th St/Bergamot, and Westwood/Rancho Park E Line Stations. The program is currently collecting and analyzing data to inform how we can best scale and manage the updated program moving forward.

### 6.4 Bus Stops and Bus Stop Amenities

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 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 Metro, or in some cases by the local municipality.

Metro has no jurisdiction over a bus stop beyond a bus stop sign post; amenities are installed by the municipality where the stop is located. This function is sometimes contracted to third parties who support installation and maintenance, usually funded by advertising revenues. The NextGen Bus Plan noted the importance of bus stop amenities such as seating and shelter, and Metro will work with municipalities to maximize the number of Metro bus stops with such amenities available. Metro is able to support the municipalities with technical assistance such as ridership data, as well as support obtaining grant funding for such amenities.

Bus stop and transit center facilities 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, which was confirmed in the NextGen Bus Study, it is vital that transit routes and schedules are developed in consideration of the quality, appropriateness, and availability of facilities.

Fixed guideway stations are stops along a fixed guideway segment and have features such as loading platforms, TVMs for pre-loading of TAP cards, shelters, benches, lighting, information displays, trash receptacles, bike racks and/or lockers, public announcement systems, security cameras, and emergency call boxes. Many are located adjacent to Park & Ride lots and customer pick-up/drop off areas.

Transit centers are high-volume transfer points for multiple transit services (bus and/or rail) and layover spaces for end-of-line bus storage and turn around. Features include customer

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<sup>13</sup> Planning and Programming Committee File #2019-0085; LACMTA Administrative Code Title 8: Metro Parking Ordinance

loading and alighting areas, benches, shelters, lighting, information displays, bicycle racks and lockers, trash receptacles, and bus layover bays.

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

Cost and minimization of customer disruptions are significant concerns when locating facilities for bus operations. Metro Operations staff continues to evaluate routes and layovers to reduce costs, improve efficiency, and maintain required access to restrooms for operators. 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 joint development or private projects.

Locating bus layover 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, adds costs to an already budget constrained operation. Metro continues to include such facilities in joint development projects where feasible to maximize the efficiency of bus terminal operations.

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 resulting in expanded line operations to reach suitable alternative layovers.

## SECTION 67: 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 the roles and responsibilities of the five Councils and renamed them as Service Councils, and re-established a centrally managed bus operations were re-established to include the service planning and scheduling functions, while the Service Councils maintained their authority and responsibility of the five Regional Service Councils to help locally coordinate service changes. Metro restructured the roles and responsibilities of these five Regional Service Councils.

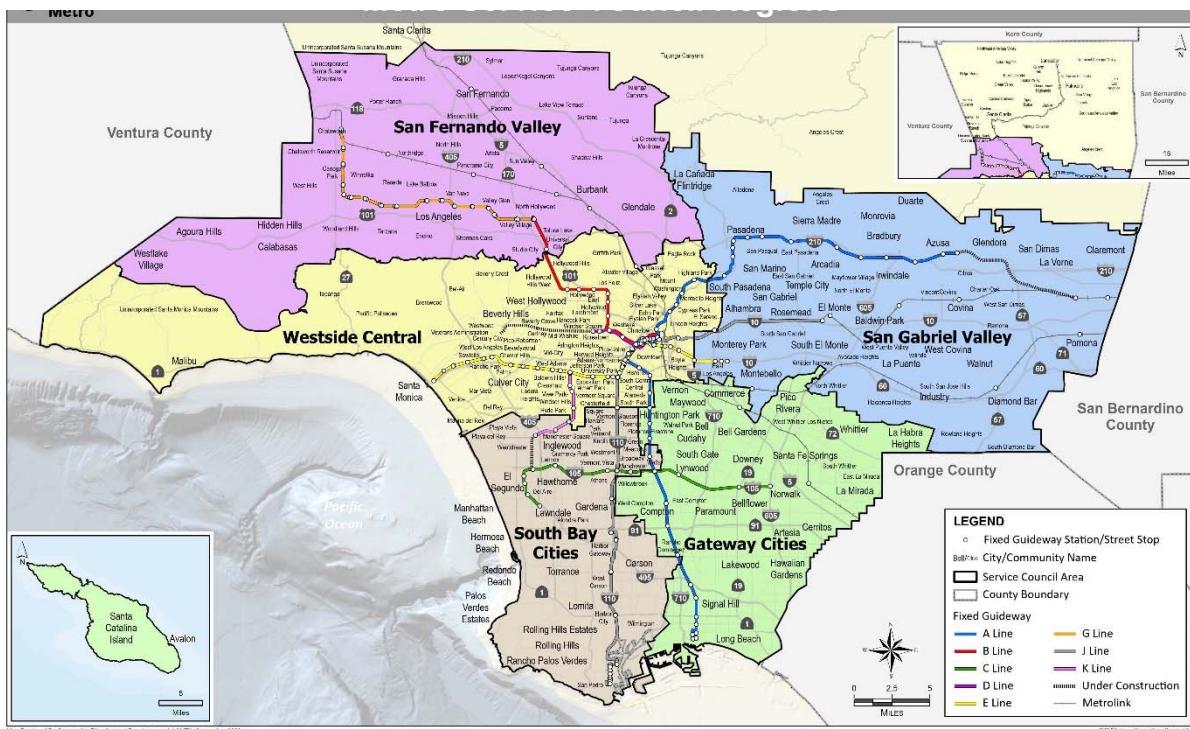


Figure 67.1 Metro Service Council Regions

Metro's five Regional 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 major service changes, excluding turnaround and out of service route modifications. All major service 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. An October 2024 update to the Bylaws clarified that the Service Councils would also convene any required public hearings for the Title VI analyses of new rail service plans. See Table 6.1 to refer to the timeline for a major service change.

Each Regional Service Council is responsible for holding public hearings that relate to major service changes (as defined in the following Title VI Section 6.3-2 Title VI below Equity Analysis) 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 Council 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 is held at a central location, normally at the Metro headquarters building, on an appropriate Saturday.

**Table 6.1 Major 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 <u>and Fare Change</u> 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	0.5-1

All route and major service changes that are approved by the Regional Service Councils 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.

### **67.1 Service Change Programs**

Service change programs are developed based on input generated by a wide variety of sources including rider, community, and employee input, service restructuring studies, coordination with major Metro capital projects such as new rail alignments or joint developments, requests from other local operators, and performance monitoring results such as load levels and on-time performance. 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>14</sup>, bi-annual service changes will be implemented each year in June and December. Metro service changes are conducted to modify service based on ridership and load factors, on-time performance, other performance monitoring results, rider and community input, and budget considerations. A service change process workflow is provided in Figure 6.2.

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 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; and
- Conduct required public hearing for all major service changes (see definition in Section 6.3-2 Title VI Equity Analysis).

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.

### **67.2 Title VI Equity Analysis**

The framework for equity begins with Title VI of the Civil Rights Act of 1964 which protects minority communities from disparate and disproportionate negative impacts as a result of major transit service changes. Executive Order 12898 - Federal Actions to Address

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<sup>14</sup> The United Transportation Union (UTU) merged with the Sheet Metal Workers Union in 2014 to form SMART.

Environmental Justice in Minority Populations and Low-Income Populations provides further protection of low-income communities from disparate and disproportionate negative impacts.

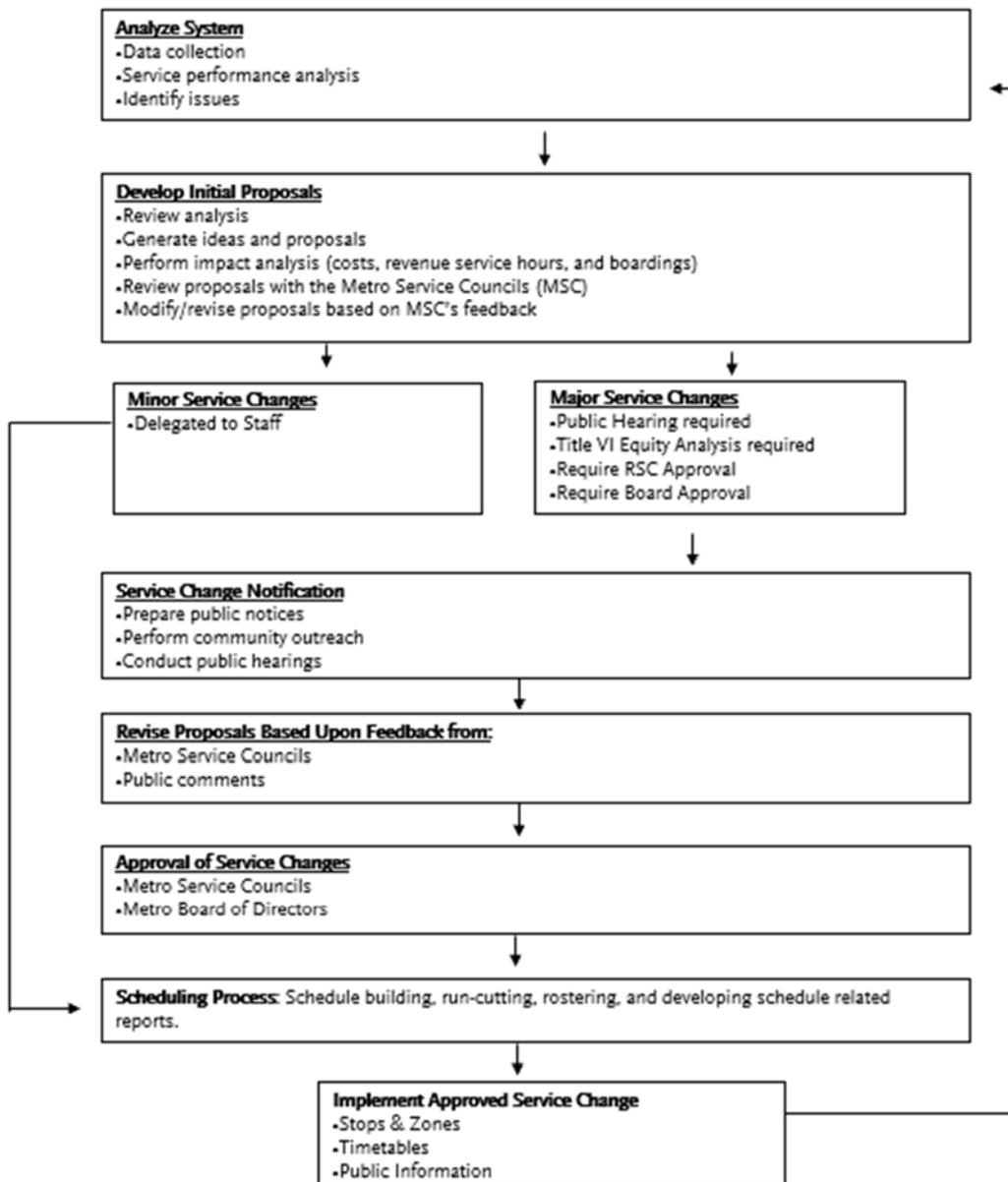
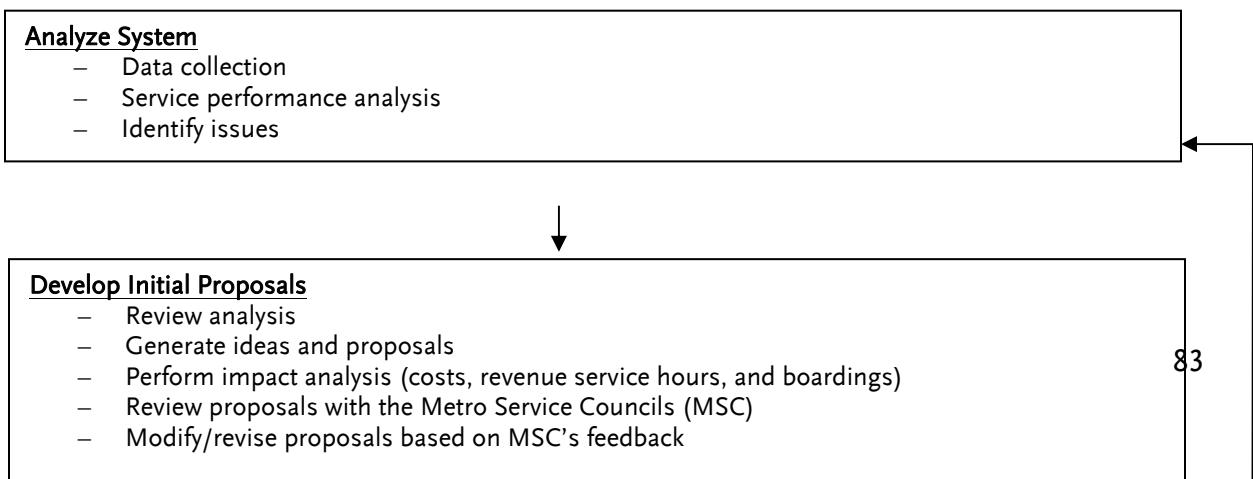
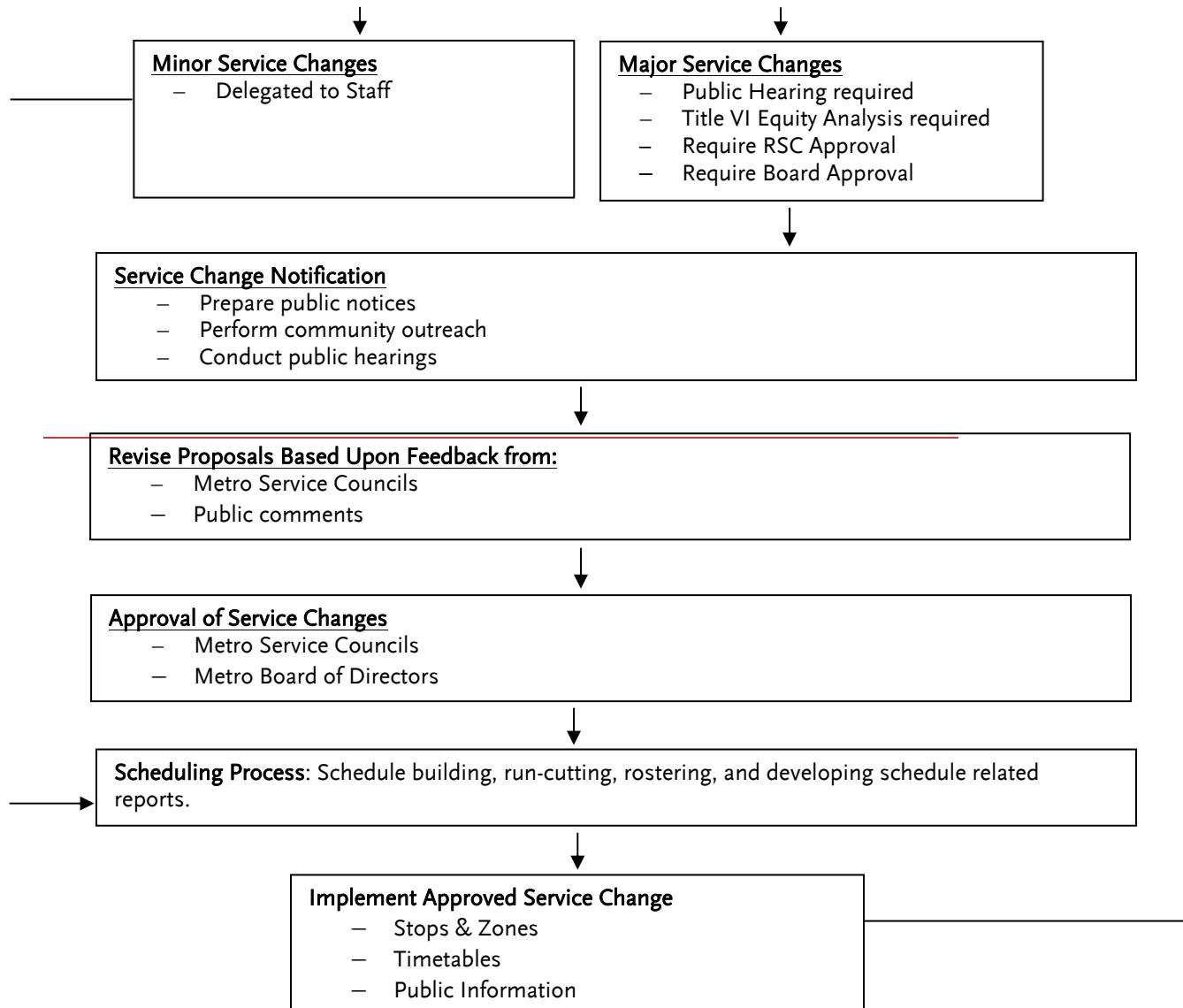


Figure 67.2 Service Change Process





Metro must ensure a Title VI Equity Analysis is performed on all major service change proposals and any 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 that can meet legitimate program goals with a lesser impact to protected groups.

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 FTA is considering developing an updated circular in 2022.~~ 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.

### **67.3 Metro's Equity Platform**

The NextGen Bus Study aimed to go above and beyond Title VI requirements to analyze disparate impacts and disproportionate burden on minority and low-income populations to identify communities with the greatest mobility needs. To do this, Metro's Equity Platform was integrated into the NextGen Bus Study planning and public engagement process. In 2018, Metro's Board adopted the Equity Platform, a framework that guides how the agency works to address inequities and create more equitable access to opportunity. The Platform provides a framework that guides how the agency works to address inequities and create more equitable access to opportunity.

The NextGen process started with analysis of Equity Focus Communities (EFCs) Metro's community designation that defines areas where transportation needs are greatest. EFCs consider where there are higher concentrations of resident and household demographics associated with mobility barriers (low-income households earning less than \$60,000 per year; Black, Indigenous, or People of Color (BIPOC) populations; and households that do not have a car). Additionally, the NextGen sought to capture other metrics in a Transit Equity Index to identify transit propensity to ensure investment in transit targeted area populations with the most need to use transit. Through market research, surveys, and public input, other groups determined to be 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. Data available for these groups was used in the calculation of the Transit Equity Index.

The Four Pillars of the Equity Platform were integrated into the NextGen Bus Study as follows

- I. **Define and Measure** – Use EFCs 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 customer-focused performance metrics established within this Transit Service Policy document with particular focus on Equity Focus 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 a robust countywide public engagement effort that included engaging customers on board buses, at outreach sessions at community events, stakeholder briefings, interactive public workshops, digital engagement, and print advertising. Comments received were incorporated into the systemwide service design as well as individual route changes.
- III. **Focus & Deliver** – Service design concepts established within this Transit Service Policy document are intended 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 safety on board buses and at bus stops. These concepts were used to redesign the routes and schedules for the NextGen Bus Plan.

As part of the NextGen Bus Study process~~In addition~~, a Transit Propensity Index score was 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 safety, accurate real time arrival information, cleanliness, and improved first/last mile service are critical to attracting customers to use transit.

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 the framework referenced for balancing tradeoffs in consideration of Metro's Equity Platform.

- IV. **Train & Grow** – Service Planning has adopted new tools to analyze the potential impacts of service changes on EFCs. Ridership in EFCs is tracked on a monthly basis~~An annual monitoring program will be established to track the progress of achievement towards the goals and objectives, and to inform on necessary adjustments.~~

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### 67.4 Public Outreach

Prior to a public hearing, public outreach is conducted 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. 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.

**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 <del>dates of public hearing dates, meetings, publish h</del> Hearing notices <del>published</del> in local newspapers, <del>S-and-</del> 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 <del>on-board</del> Metro vehicles and other outlets.	1

These procedures are in accordance with Metro's Administrative Code in Chapter 2-50 Public Hearings Subsection 2-50-025:

- A. Any public hearing required by Section 2-20-020 shall be conducted as set forth in this section.
- B. 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.

- C. 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.
- D. 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.
- E. 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.

## **67.5 Public Hearing Process**

Once Metro Service Planning Staff develops 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 are will then ~~be~~ summarized and presented in an informational report to the Metro Board of Directors.

Under Metro's Service Council bylaws, 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 so as in order to be more accessible to those customers who would be affected by the proposed service changes. When a major service change program requiring the associated Councils to hold public hearings affects three or more service regions, thus, 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. Major service change ~~These~~ proposals are subject to Metro Regional Service Council and Metro Board approval, while fare change proposals are under the purview of the Metro Board.

## **67.6 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.

**Metro Micro MicroTransit and Other On-Demand Services** Some areas of the County are difficult to serve with fixed route transit due to terrain, narrow streets, dispersed lower density destinations, and relatively low travel activity. To address this, Metro is currently conducting a three year Metro Micromicrotransit pilot program, an on demand, van based rideshare service branded as Metro Micro. The service launched in December 2020 and the final eighth zone was implemented in December 2021. The zones are: Watts/Compton, LAX/Inglewood, North Hollywood/Burbank, El Monte, Highland Park/Glendale/Eagle Rock, Pasadena/Altadena/Sierra Madre, Northwest San Fernando Valley, and Westwood/UCLA. The service is designed to provide short trips within a zone where each rider would have to wait no more than 15 minutes from the time a reservation is made to when they are picked up at a designated pickup location. Reservations can be made the same day and up to a week in advance. Riders can reserve rides by calling Metro's Call Center, through an online reservation system, or via the service's dedicated smart phone application. All pickup and drop-off locations are located within the zone and must be ADA accessible, but are not limited to bus stops. The pilot program will operate for three years, after which Metro will determine whether to make the service permanent or not. A number of lower ridership fixed route services have been discontinued within the new Metro Micro zones as part of the NextGen Bus Plan implementation, to determine if Metro Micromicrotransit can be an effective and efficient replacement for Metro fixed route bus service in these hard to serve areas.

## 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, HASTUS and ATMS<sup>15</sup>. The descriptions and chart below help explain the standards, and how and when they should be implemented.

### General Standards

- Transit 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 **BRed** Line, Metro **Purple-D** Line, Metro **Orange-C** Line) are being transitioned to a letter-based 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 its 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>15</sup> HASTUS (Horaires et **Assignments****Assigments** pour **Systems****Systèmes** 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](http://metro.net) and underlying electronic databases such as HASTUS and ATMS.
- Trip Planners and mobile applications providing real-time data to riders 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.

### **Bus Route Numbering Convention**

Bus line numbers are assigned to indicate the type of service provided and where the line travels.

Line Numbers	Type of Service
1-99	Travel into downtown Los Angeles, referencing general corridors consecutively in a counterclockwise rotation
100s	Operate from east to west and travel outside of downtown Los Angeles
200s	Operate from north to south and travel outside of downtown Los Angeles
300s	Metro Local buses with limited stop service
400s	Arterial express bus services to/from downtown Los Angeles
500s	Freeway express bus services outside of downtown Los Angeles
600s	Operate local shuttle bus service
700s	Metro Rapid bus service
800s	Bus bridges for the rail network
900s	Metro Liner bus service

### **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.

- Name abbreviations, street extensions and other topics will be dictated by the Metro Signage Guidelines.

### **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**

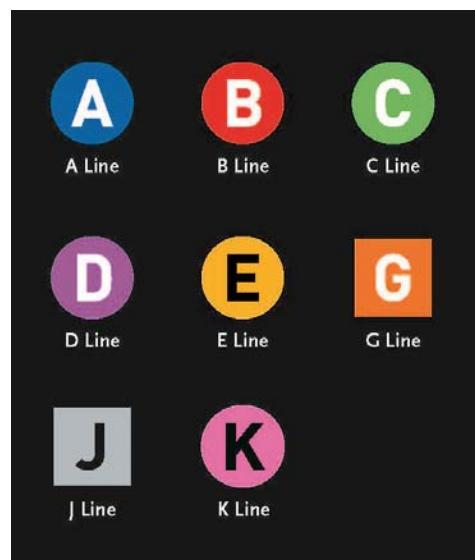
It is expected that the standards will be easily applied to the majority of lines; however, it is also understood that exceptions will have to be made for some lines due to unfamiliar end points or corridors, or where temporary solutions are necessary due to construction, temporary service changes, or 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**

Prior Designation	Updated Designation	Updated Line Badge
Blue Line	A Line	<span style="color: blue; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">A</span>
Red Line	B Line	<span style="color: red; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">B</span>
Green Line	C Line	<span style="color: green; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">C</span>
Purple Line	D Line	<span style="color: purple; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">D</span>
Expo Line	E Line	<span style="color: cyan; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">E</span>
Orange Line	G Line	<span style="color: orange; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">G</span>
Silver Line	J Line	<span style="color: gray; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">J</span>
Gold Line	L Line	<span style="color: yellow; border: 1px solid black; border-radius: 50%; padding: 2px 5px;">L</span>

Rail and BRT lines previously denoted by a color transitioned to a letter/color combination beginning in November 2019. The letters assigned to each rail line generally conform to the order in which each line went into operation. The current ~~planned~~ designations are depicted in the adjacent chart.

~~The Gold Line has been assigned the letter L for clarity and consistency systemwide. The service plan for the~~ Regional Connector Project ~~service plan will resulted~~ in the L designation being phased out and the relevant sections of the L Gold Line ~~will becomi~~ng the A Line to Azusa or the E Line to East LA. The Crenshaw Line ~~is will be~~ known as the K Line with a pink color.



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

	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride
Agoura Hills		X		X
Alhambra		X	X	
Antelope Valley Transit Authority (AVTA) serves:				
• Palmdale	X	X		
• Lancaster				
• Portions of Unincorporated Los Angeles County				
Arcadia				X
Artesia		X		
Avalon		X		
Azusa		X		
Baldwin Park		X		
Beach Cities Transit serves:				
• Redondo Beach	X	X		
• Manhattan Beach				
• Hermosa Beach				
• El Segundo				
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		
Diamond Bar				X
Downey		X		
Duarte		X		
El Monte		X		
El Segundo		X		
Foothill Transit serves member cities of				
• Arcadia	X	X		
• Azusa				
• Baldwin Park				

	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride
<b>Member cities served by Foothill Transit continued</b>				
• Bradbury				
<b>Member cities served by Foothill Transit continued</b>				
• Claremont				
• Covina				
• Diamond Bar				
• Duarte				
• Glendora				
• Industry				
• Irwindale				
• La Puente				
• La Verne				
• Monrovia				
• Pasadena				
• Pomona				
• San Dimas				
• South El Monte				
• Temple City				
• Walnut				
• West Covina				
Gardena	X	X		
Glendale		X		
Glendora		X		
Hawaiian Gardens		X	X	
Hawthorne		X		
Hermosa Beach		X		
Huntington Park		X		
Inglewood		X		
La Cañada Flintridge		X	X	X
La Habra Heights			X	X
La Mirada				X
La Puente		X	X	
La Verne			X	
Lakewood			X	
Lawndale		X		
Lomita				X
Long Beach	X	X		
Los Angeles	X	X		
Los Angeles County		X		
Lynwood		X		
Manhattan Beach		X		
Malibu		X		
Maywood		X		

	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride
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		
Rolling Hills Estates		X		
Rosemead		X		
San Dimas			X	
San Fernando		X		
San Gabriel			X	
San Marino				X
Santa Clarita Valley Transit (SCVT) serves <ul style="list-style-type: none"> <li>• Santa Clarita</li> <li>• Portions of Unincorporated Los Angeles County</li> </ul>	X	X		
Santa Fe Springs		X		
Santa Monica	X	X		
Sierra Madre		X		
Signal Hill		X		X
South El Monte			X	
South Gate		X		
South Pasadena		X		X
Temple City			X	X
Torrance	X	X		
Walnut				X
West Covina		X		
West Hollywood		X		
Westlake Village		X		
Whittier		X		
<b>Total</b>	<b>13</b>	<b>69</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.