



Board Report

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OPERATIONS, SAFETY, AND CUSTOMER EXPERIENCE COMMITTEE NOVEMBER 17, 2022

SUBJECT: METRO 2022 TRANSIT SERVICE POLICY

ACTION: APPROVE RECOMMENDATION

RECOMMENDATION

ADOPT the 2022 Transit Service Policy (Attachment A).

ISSUE

Metro's Transit Service Policy (TSP) is periodically revised to reflect the policy framework for how the agency meets existing and anticipated challenges with providing high quality transit service. This policy is required as part of Federal Title VI compliance. Changes to the Metro TSP were last adopted by the Metro Board in January 2020, reflecting the newly developed framework for the NextGen Bus Plan focused on developing a fast, frequent, and reliable bus network. Since that time, the NextGen Bus Plan has been adopted and the majority of the service plan has been implemented. This 2022 update for the TSP reflects the approved and implemented NextGen Bus Plan and will serve as a fundamental guide for bus route design, scheduling, implementation and evaluation for Metro transit service moving forward based on the principles established in the NextGen Bus Plan.

BACKGROUND

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. These include criteria for service provision including minimum service frequencies, load standards and route and stop spacing. The TSP also includes a formal process for evaluating services, service design guidelines, and a process for implementing service changes.

DISCUSSION

This 2022 update of the Transit Service Policy (Attachment A) incorporates the following changes:

- Critical elements of the NextGen Bus Plan were updated to reflect the plan having been adopted and largely implemented, including:
 - NextGen frequency tiers
 - Toolkit of bus speed and reliability tools,

- Key system principals and design concepts
- Addition of Metro MicroTransit pilot service
- Metro's Equity Platform, recognizing the need in planning service to consider higher need for people to use transit in areas with a higher transit equity score, such as Equity Focus Communities
- Restored documentation of on time performance standards

A redlined version of all of the changes is provided in Attachment B.

DETERMINATION OF SAFETY IMPACT

This Transit Service Policy and all recommendations identified will be implemented with full adherence to established safety policies and procedures.

FINANCIAL IMPACT

Implementation of any of the recommendations, elements, and principles established in the policy document would be reflected in the annual Metro Operating and Capital budgets brought to the Board for approval. The adoption of this updated TSP document does not directly impact the budget.

EQUITY PLATFORM

This 2022 update of the TSP continues to incorporate Metro's Title VI Service and Fare Equity Analysis policy which provides for formal consideration of the impact on people of color (minority) and low-income communities of any Metro major service change. This update also incorporates the 2022 Equity Focus Communities definition and addresses the Four Pillars of the Equity Platform.

The TSP also reflects the NextGen principles of all day frequent service based on a set of frequency tiers, which resulted in more bus service resources in areas with higher Transit Equity scores and in Equity Focus Communities (EFCs), where the need to use the Metro transit system is greatest. The TSP also includes the NextGen Bus Speed and Reliability program of new bus lanes, signal priority, all door boarding, plus bus stop and terminal optimization. The roll out of these enhancements will further improve the rider experience through faster and more reliable travel, especially in areas with higher Transit Equity scores and in EFCs where the most frequent and highest ridership bus services are concentrated.

IMPLEMENTATION OF STRATEGIC PLAN GOALS

The recommendation supports strategic plan goal #1: Provide high quality mobility options that enable people to spend less time traveling. This update to the TSP also encompasses two sub-goals: 1) Target infrastructure and service investments towards those with the greatest mobility needs; and 2) Invest in a world class bus system that is reliable, convenient, safe, and attractive to more users for more trips.

Alternatives_Considered

ALTERNATIVES CONSIDERED

This new version of the TSP updates the January 2020 version to reflect the NextGen Bus Plan implementation. There are no other updates required at this time.

NEXT STEPS

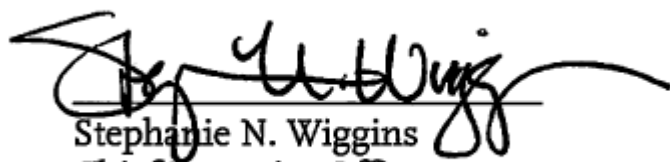
With the adoption of the 2022 Metro Transit Service Policy, staff will continue to work towards the full implementation of the NextGen Bus Plan with the roll out of addition bus speed and reliability improvements. Lessons learned from this process will be included in future updates for the Transit Service Policy.

ATTACHMENTS

Attachment A - December 2022 Metro Transit Service Policies and Standards
Attachment B - The redline version

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Transit Service Policy

December 2022



Metro[®]

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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 10.3 million people live, work, and play within its 1,469-square-mile service area.¹

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

In 2018, the Board adopted MetroVision 2028 as the agency's strategic plan. The Plan outlines five goals to guide the development of transportation in LA County. 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 most effectively serve Equity Focus Communities, 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 resulted in a revised draft NextGen Bus Plan being released ahead of public hearings, Service Council approvals, and Board adoption of this plan in October 2020. Phased implementation of the NextGen Bus Plan occurred beginning in December 2020, with additional phases in June and September/December 2021. Key elements of the NextGen Bus Plan, including a set of frequency tiers and bus speed and reliability goals, are reflected in this update of the Transit Service Policy.

¹ Represents all people living in the Census Tracts covered by Metro's service area per the 2020 Census Data. Service area is calculated from taking a 0.75 mile buffer around all Metro bus line and rail stations.

SECTION 1: INTRODUCTION, PURPOSE & BACKGROUND

Metro first adopted a Transit Service Policy (TSP) in 1986. The TSP is reviewed at least a triennial basis and updated as needed to better reflect agency goals and objectives, major initiatives, 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 October 2020². This document sets forth the policies, principles, and service guidelines that are used by Metro staff in the design and 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 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.

MetroBus

As of December 2021, Metro operates 119 bus routes. Metro's bus operations consist of directly operated and contract operated services: 103 routes are directly operated by Metro and 16 routes are operated by contractors. Metro serves over 12,200 bus stops, including station stops on the G Line (Orange) and J Line (Silver) BRT systems. On week days, Metro operates a fleet of over 1,600 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 on-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 in tiers stratified by the frequency of service. The tiers are assigned to individual routes in accordance with demand and propensity for future growth. Table 1.2 describes the features of each of Metro's bus service types. Tier definitions are:

- **Core (Tier 1):** week day 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
- **Comuter (Tier 5):** Varies by line

² boardagen.das.metro.net/board-report/2020-0617/

Table 1.1 *Service Type Determination*³

Service Type	Corridor	Optimal Characteristics
Heavy Rail (Subway)	Operate 100% within an exclusive right of way.	2,500 boardings per route mile or more than 50,000 boardings per day Ability to construct a fully grade-separated facility.
Light Rail	Operate in mixed flow traffic, semi-exclusive or a fully-exclusive right of way.	1,000 boardings per route mile or more than 25,000 boardings per day Ability to construct a guideway within or adjacent to the corridor.
Commuter Routes (Tier 5)	Operate in mixed-flow traffic in either a High Occupancy Vehicle (HOV) or High Occupancy Toll (HOT) Lane. May operate segments of the route on local streets. Operated using 40', 45', or 60' buses.	300 or more boardings during peak hour and in peak direction of travel.
MetroLin and MetroRapid	Operated using 40', 45' or 60' buses. MetroLin (ERT and JL in MetroLin) operate entirely or partially on a fixed guideway dedicated to transit buses. MetroRapid Lines operate in exclusive peak period or all day bus lanes or mixed flow traffic on local streets with signal priority.	300 or more boardings during peak hour and in peak direction of travel. Daily average of more than 500 boardings per route mile or more than 10,000 daily boardings. Ability to implement operating speed improvements in the corridor.
Care (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), and Community (Tier 4) Local Routes	Operate in mixed flow traffic on local streets by 32', 40', 45', or 60' buses. Care lines to be supported by exclusive peak period or all day bus lanes and signal priority existing and former MetroRapid corridors. Lines are also defined in terms of the frequency of service offered, with Care 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.	The median bus route carries about 4,500 average weekday boardings (pre-COVID, 2019). Care and Convenience services are expected to carry more than the daily median, while Connectivity and Community are anticipated to carry less.

³Capacity limits adapted from TCRP, Research Results Digest, Number 1999- Number 35, High Light of Large Transit Capacity and Quality of Service Manual, Figure 1 Achievable Capacity (Peak direction passengers/hour)

These frequency tiers are especially important to ensure high frequency service is provided on key corridors serving Equity Focus Communities⁴ where the need for high-quality transit is greatest.

Table 1.2 *MetroBus Service Types and Features*

Feature	Bus Service Type			
	ERT and L Iner	Rapid	Commuter (Tier5)	Core (Tier1), Convenience (Tier2), Connectivity (Tier3), Community (Tier4) Local Bus Services
Right of Way	Segregated right-of-way	Major arterials; peak hour all-day bus lanes	Major arterials and freeways.	Major arterials and local streets; peak hour all-day bus lanes for Core Tier1 lines, with bus bulbs as alternative to bus lanes for Tier1 and 2 lines
Target Average Stop Spacing	1.25 miles	0.75 mile	1.25 miles	0.25 mile
Target Travel Market	Intra-community, regional	Intra-community	Intra-community, regional	Intra-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 JL Iner (Silver) Off board pre-pay GL Iner (Orange)	On board	On board	On board, with all-door boarding a goal for Core and Convenience (Tier1 and 2)
Passenger Amenities	Shelters and stations	Shelters and stations	Shelters and stations	Benches and shelters
Real-time Passenger Info	Yes	Yes	Yes	At some stops and via smartphone applications

MetroLiner Transit

⁴ 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 definition for community designations called Equity Focus Communities (EFCs) to help identify where transportation needs are greatest. The EFCs are defined as EFCs, as of 2022, as areas that consist of areas where there are high 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) least 40% of residents are low-income (earning \$35,000 or less per year), and 80% of residents are people of color, or 10% of households do not have a car.

Metro Light Rail 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 Light Rail 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 Express Lanes (freeway toll lanes) as well as surface streets through downtown Los Angeles, so it doesn't 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 Light Rail 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 Light Rail 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) on 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 week day, daytime week day, 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.

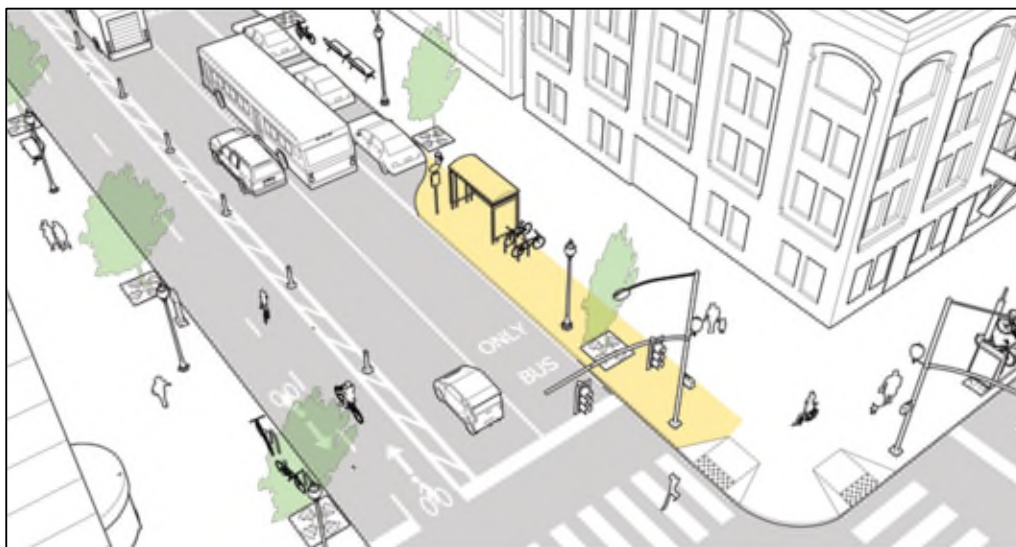


Figure 1.1 Bus bulb

Bus Bulb Outs: On NextGen Core (Tier1) and Convenience (Tier2) 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.⁵

- **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 in incorporated areas, or is being added to NextGen Core (Tier1) and Convenience (Tier2) 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 as a system based on managing headways (or intervals) between trips rather than operating based on time points to regulate service offers the chance to keep service

⁵ 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/

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 cost 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 high 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.

Metro Rail

As of May 2022, Metro operates two heavy rail and four light rail lines serving a total of 96 stations across approximately 101 route miles, with a fleet of 102 heavy rail and 293 light rail cars. Metro Rail operates in heavily congested, high-demand travel corridors and provides

connections to key multimodal transportation hubs. Metro operates two types of rail service to better match the transit mode with specific customer demand and needs. Metro's 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 multimodal transportation centers and destinations together.

Metro's heavy rail is the subway system served by the Band D Lines (Red, Purple) powered by a third rail and operated with 4- or 6-car train sets. Metro's four light rail lines – A (Blue), C (Green), E Line (Exp), and L Line (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 late 2022. And in the new station, the Airport Metro Connector (AMC) Station, should open by the end of 2024. The new 1.9 mile Regional Connector light rail alignment through downtown LA will also open around the same time as the K Line, which will see the L Line (Gold) rail line realigned into the A Line (Blue) and E Line (Exp) 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.

SECTION 2: DESIGNING A WORLD CLASS BUS SYSTEM

As outlined in the Executive Summary, in 2018, the Board adopted MetroVision 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 Metrobus 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 **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 from more trips.

In addition to the Vision 2028 strategic plan, the Board adopted Metric 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

MetroVision 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 aboard 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 (RSH) of bus service per year. The first step in creating a World Class Bus System is to redesign the routes and schedules to attract trips where and when there is the greatest market potential. The lessons learned in Phase 1 of the bus study 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 and 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 midday 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 in both 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 in both the Plan's Service Design Guidelines outlined in Section 3 to "reconnect" routes and schedules with where and when people travel today as the NextGen Bus Plan Reconnect scenario implemented across the December 2020, June 2021, and September/December 2021 service change cycles. Reconnect 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 Reconnect 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 in 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 in more frequent service.

- **Speed and Reliability Improvements** - 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 is 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, such as optimizing stop spacing, 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 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, and to allow for more frequent service to be delivered without adding additional operating costs. New bus lanes have already been rolled out in 2020 and 2021 on 5th and 6th Sts, Grand Av, Olive St, and Aliso St in downtown LA, and on Alvarado St between 7th St and the 101 freeway. These are just the beginning of a program to add over 80 miles of dedicated bus lanes through partnerships with City of LA and other municipalities.

- **Customer Wait Environment** – Through the significant public outreach conducted in Phase 1 of the NextGen Bus Study, as well as other Metro initiatives such as the How Women Travel Study⁶, we learned that an uncomfortable and unsecured wait environment is a significant barrier for customers in using the bus network. This is particularly concerning for women who account for over half of our customers and often travel with young children. Metro completed the Metro Transfers Design Guide in March 2018⁷. 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 bus lines. Other strategies to improve the boarding and riding experience have focused on improved real-time information accuracy.
- **Layer Optimization** – Due to limited curb space, many routes are extended purely to access a suitable layer location. These route extensions are not required for riders and cost several million dollars in operating costs per year. By investing in off-street layer terminals to optimize layer locations, Metro can reallocate wasted 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 on-route Zero Emission Bus (ZEB) charging infrastructure.

⁶ library.archives.metro.net/DE/Attachments/2019-0294/UnderstandingHowWomenTravel_FullReport_FINAL.pdf

⁷ drcpb.ca.com/s/i/iv6ruaxdw5g945b/MetroTransfers_Design_Guide_20184312.pdf?dl=0

This estimated \$1 billion capital program, 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 in to Transit First service improvements, including:

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

Investing "one-time" capital dollars in to transit supportive infrastructure will increase the attractiveness and competitiveness of the bus network, while freeing resources to invest in to 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 can 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 as benefits since most customers would already have been served with in 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: 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 the 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-lit 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

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

Hybrid Local/Rapid Stop Spacing – Past practice was that stop spacing was determined by route classification. For example, Local lines were planned with ¼ mile stop spacing while Rapid lines had ¾ 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 may have been picked up or dropped off much further from their origin or destination. In addition, resources were split between the Local and Rapid lines resulting in less frequency for each service. 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 larger 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 ¼ mile average 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.

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, larger distance trips. Metro Rail, Metro Light Rail [G Line (Orange) and J Line (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 a third of transit service in LA County is provided by municipal bus operators and MetroLink. Their 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. 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 Metrobus 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.

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 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, LAX/Inglewood, North Hollywood/Burbank, El Monte, Highland Park/Glen Dale/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 pick-up 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 on-line reservation system, or via the service's dedicated smartphone application. All pick-up 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 microtransit can be an effective and efficient replacement for Metro fixed route bus service in these hard-to-serve areas.

Table 3.1 Minimum Rail and NextGen Bus Plan Frequency by Service Type

Service Type	Peak	Midday Week day	Weekend	Evening
Heavy Rail	10	12	12	20
Light Rail	10	12-15	15	20
Core Network (Tier 1) MetroLink and MetroRapid	5-10	5-10	15	7.5
Convenience Network (Tier 2)	12-15	12-15	30	10
Connectivity Network (Tier 3)	20-30	20-30	60	15
Community Network (Tier 4)	40-60	40-60	60	30
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 – Corridors 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 will 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 will be focused in areas with high transit propensity, there will be a concerted effort to maintain service in areas of flow 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 bus-only lanes, queue jumpers, bus bulb-outs, traffic signal retiming, transit signal priority, all-door boarding, fare payment technology, and 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.

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				X	X	X
Standardize frequency by service tier	X	X				
Subarea transit hubs				X		X
Shorter route lengths			X			
Optimize stop spacing	X		X			
Municipal operator coordination				X	X	
MicroTransit and other 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 Service Standards

Board-adopted service standards are established to ensure that service levels are maintained to meet a minimum standard of rider experience. These focus on such items as maximum average loads on trips and on time performance and are discussed below.

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. The 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 (Week day)	Off-Peak (Week day/Week end)
Heavy Rail	10	20
Light Rail	12	20
Liner	12	30
Rapid	20	30
Core Network (Tier1)	10	10-15
Convenience Network (Tier2)	15	15-30
Connectivity Network (Tier3)	30	30-60
Community Network (Tier4)	60	60
Comuter Network (Tier5)	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.

- **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 sets the current loading standard for Metro bus to 1.3 as recommended by the 2016 APTA Peer Review Committee. Vehicles used for Micro Transit will have a load standard of 1.0.
- **Rail Passenger Loading Standard** expresses the maximum average ratio of customers to seats by service type and by direction for a one-hour period by time of day and should not be exceeded for at least 95% of all hourly periods.

Table 3.4 Passenger Loading Standards by Vehicle Type

Service Type	Seats per Vehicle	Peak Passengers per Seat	Off-Peak Passengers per Seat	Maximum Passengers On Board
Heavy Rail	52	2.30	2.30	120
Light rail	60-76	1.75	1.75	105-133
Bus - 40 foot	38	1.30	1.30	49
Bus - 45 foot	46	1.30	1.30	60
Bus - 60 foot	57	1.30	1.30	74
Van - Micro Transit	10	1.0	1.0	10

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 wheelchair 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.

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

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 3.4.

- **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 In-urban 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), 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.

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

Decisions regarding bus stop spacing and location call for an analysis of ridership density, customer service requirements such as balancing access to key destinations and impact to onboard 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 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 conditions and/or lack of ridership generators 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 onboard 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 week day).

Table 3.5 Target Average Stop/Station Spacing

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

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 a few minutes early to no more than five minutes late, which is measured at all time points 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 time points along the line. The reliability of this type of service will be based

at the intervals between buses remain in 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), Commuter Bus (Tier 4)	85%

Service Cancellations:

In recent years, both pre-pandemic and during times of significant impacts from the COVID-19 pandemic at the Metro operator work force, 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-card operators as required (OAR) ratios of 1.2 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 precautions.

3.2 Bus/Rail Interface Planning

As the Metro Rail system expands, the surrounding bus system within 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 Commuter 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.

In intersecting bus lines or areas 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

Extended Terminating Lines

Bus routes that end within one mile of a rail station will be extended to terminate at the station. Routes that terminate at distances greater than one mile may be extended if the rerouting will create a valuable link to the rail system 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 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).

3.3 Metro Bus Routing Guidelines

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

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

- Transit Centers / Bus Terminals

Layer zones should be designed to accommodate various sizes of buses.

Layer zones should utilize sawtooth bay configurations where possible to ensure curb space is more efficiently and reliably utilized, and accommodate 60' buses where needed.

Re-striping of layer 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 layer space needed is available. Layer zones should be placed as close as possible to the route terminal. Where not accommodated by the design, the added operating cost to serve the location will be computed and made part of the decision-making process for bus/rail interface.

– **Minimum turning radius clearance required for each type size bus movement**

50 feet for 40-foot buses (Figure 3.1)

47.5 feet for 45-foot buses (Figure 3.3)

44 feet for 60-foot articulated buses (Figure 3.2)

– **Desired street lane widths for bus operations should be 12 feet or more.**

– **Optimal Bus Stop Curb Lengths and Zone** – 40-foot buses should at minimum :

Far-side – 90 feet

Near-side – 100 feet

Mid-block – 150 feet

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

– **60-foot bus should at a minimum :**

Far-side and mid-block – 120 feet

Near-side – 170 feet

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

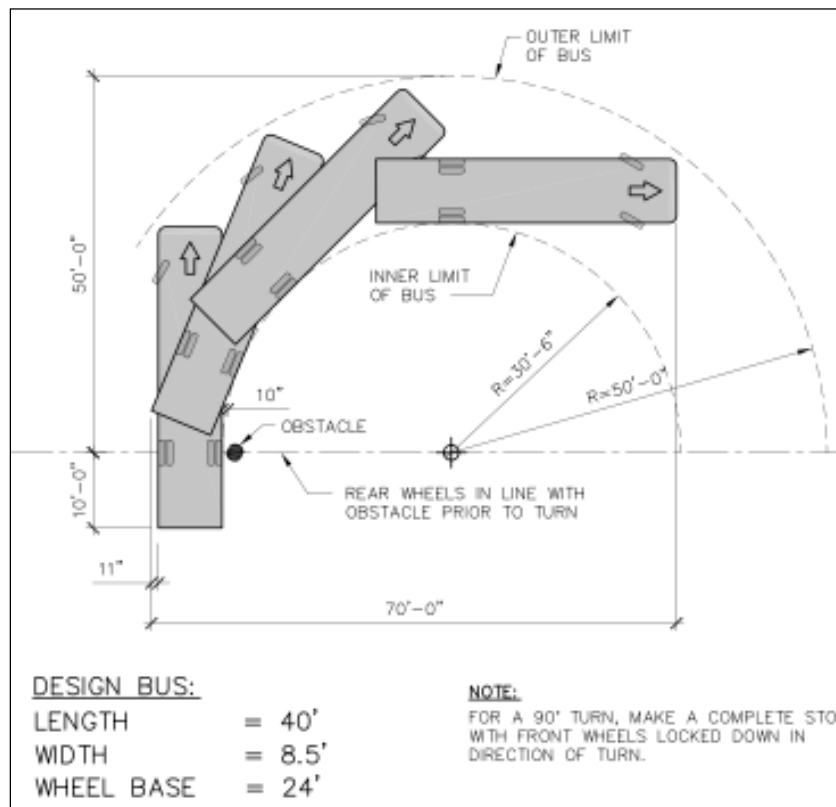


Figure 3.1 40-foot bus turning radius

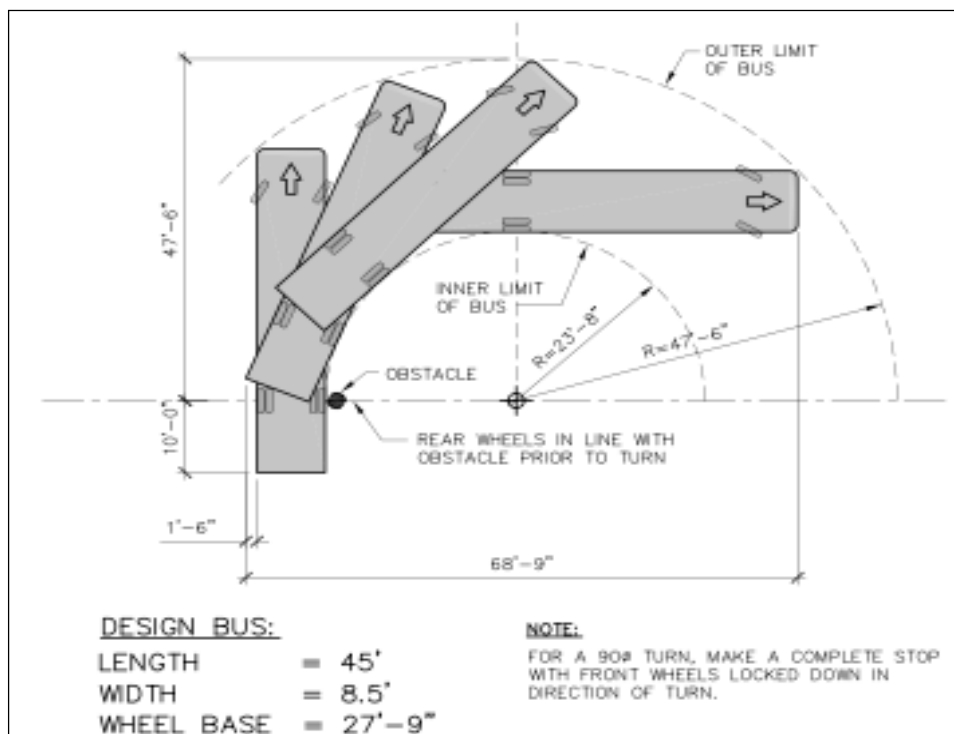


Figure 3.2 45-foot bus turning radius

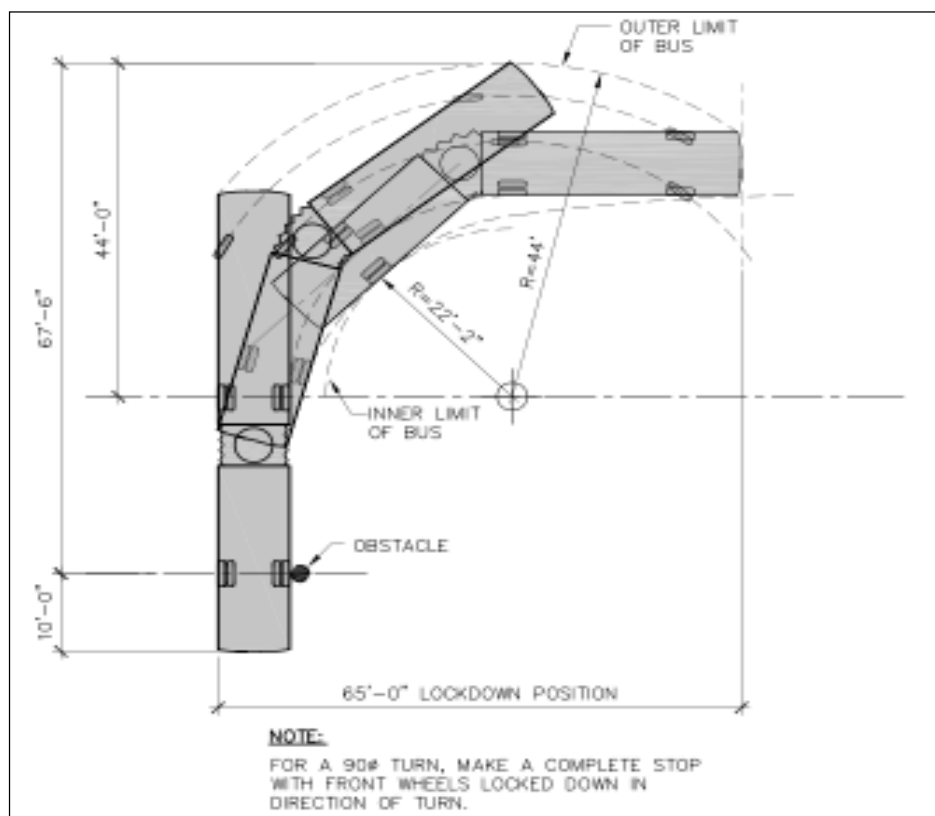


Figure 3.3 Articulated 60-foot bus turn in 90 degree radius

- **Bus Layover Zone** general space requirements based on frequency between scheduled trips:

One space - 20 m in ute service or less frequen t

Two spaces - 12 to 15 m in ute frequen cy

Three spaces - 7.5 to 10 m in ute frequen cy

Four spaces - 5 to 6 m in ute frequen cy

3.4 Vehicle Assignment

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 week day Metro served approximately 925,000 bus boardings and 297,000 rail boardings.⁸

⁸ Figures taken from October 2019 data; selected for seasonal average and adjusted for A Line (Blue) closure.

- **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 same service delivered using the newest buses.
- **Light Rail:** Light Rail cars will be assigned to individual lines based on a variety of factors including facility compatibility, the disposition of the fleet during mid-life modernization programs and age so that no single light rail line must solely 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 on the different fleets. There is also a weight restriction that precludes the P2550 light rail cars from being assigned to the CL line along the I-105 freeway.
- **Heavy Rail:** Assignment policy is not applicable to Heavy Rail. The Metro Blue (Red) and D Line (Purple) operate out of the same division, with the same vehicle type.

3.5 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 60.5). 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 can not on average be accommodated with in 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 an appropriate fee.

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 serving the stop;
- School tripper changes must be provided to the public by a service change notice on the Metro website at 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 in advance.

providing ample time to complete an appropriate analysis of the request and to allow appropriate notification of changes to the public.

School tripper services changes must comply with the following procedures:

- Service Development Managers (SDM) in the Service Planning & Scheduling Department are responsible for ensuring that all school trippers in their respective service area fully comply with Metro's School Tripper Policy as discussed herein.
- Uniform standards for the documentation of daily school tripper arrangements must be employed. This includes standardizing the documentation format 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.
- SDMs are 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 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 all requirements 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 all of the following exceptions apply:

There are now 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 not-for-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 when ever possible.
- The rates for charter service shall equal or exceed the annual fully allocated cost, including depreciation, of providing charter bus operations, and Metro shall deduct the mileage and hours from the useful life of the buses.
- The operation of charter service also must comply with relevant state laws, including Section 30630.5 of the California Public Utilities Code.

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

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

3.6 Special Event Service

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

3.7 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, there are

numerous Local Return fixed route transit providers who are not eligible for FAP funding, but instead are funded through Propositions A and C (1990 sales tax initiative), Measure R (2008 sales tax initiative), and Measure M (2016 sales tax initiative). These Operators are funded as "Local Return" operators (see Appendix B for a list of operators funded as Local Return and/or Included/Eligible Municipal operators).

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

- Existing performance relative to the system average;
- Value to the customer through integration in to 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 existing 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 with in the adopted collective bargaining and other superseding agreements between the affected labor unions and Metro.

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

Any significant service modifications will be subject to review under 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.

3.8 Alternative Service Delivery Options

Alternative service delivery options generally refers to services not directly operated by Metro such as contract services, Municipal and Local Return Operators, taxis, and other flexible destination operations. These alternatives can complement traditional transit service. In addition, Access Services provides mandatory ADA 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 $\frac{3}{4}$ of a mile of any fixed route bus operated by the Los Angeles County public fixed route bus operators and within $\frac{3}{4}$ of a mile around MetroRail 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.⁹

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 Demand and MicroTransit.

The Mobility 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 Demand (MOD) San Diego Demonstration grant from the FTA. The system was operated utilizing private cars. The Mobility Demand pilot concluded in January 2021 and the three Mobility Demand zones were transitioned to become part of the Metro Microtransit pilot program.

Metro's microtransit program, Metro Micro, is a three-year pilot of an 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 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/Glen Dale and Altadena/Pasadena/Sierra Madre). The North West 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.

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

⁹ accessla.org/about_us/overview.html

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 an announcement system for stops and stations as well as other general service information. Mobile device applications and text/SMS messaging have expanded significantly as smartphones 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 website, and via email alerts for customers who sign up to receive them. Information is also provided at signage at major stops and stations.

- **Signage** at transit infrastructure 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 aboard 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:

- o Route maps and timetables, fare information, detour notices, service change information, cancelled service alerts, special event detours, and other service-related information
- o Metro's blogs, "The Source" and "El Pasajero"
- o Specialized guides (Bikes, Riders with Disabilities, Safety & Security)
- o Commuter program information (carpools, vanpools, employer programs, etc.)
- o News and media information
- o Latest information on Metro projects and programs

o 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 an other 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 aboard transit vehicles.
- **Route Signage Conventions** at stops and aboard 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 aboard announcements that may be muffled by 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 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
- **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 Metrobus 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
Shelters:	Heavy Rail:	n/a
	Light Rail:	At least 80 linear ft. per bay
	Bus Facilities:	At least 6 linear ft. per bay
Seating:	Heavy Rail:	At least 12 seats
	Light Rail:	At least 10 seats
	Bus Facilities:	At least 3 seats per bay
Information Displays:	Heavy Rail:	At least 12
	Light Rail:	At least 10
	Bus Facilities:	At least 3
LED Displays:	Heavy Rail:	At least 8 arrival/departure screens
	Light Rail:	n/a
	Bus Facilities:	n/a
TVMs:	Heavy Rail:	At least 2
	Light Rail:	At least 2
	Bus Facilities:	n/a
Elevators:	Heavy Rail:	At least 2
	Light Rail:	At least 2 for elevated/underground
	Bus Facilities:	At least 2 for multi-level terminals
Escalators:	Heavy Rail:	At least 4 (2 Up/2 Down)
	Light Rail:	At least 2 for multi-level terminals
	Bus Facilities:	At least 2 for multi-level terminals
Trash receptacles:	Heavy Rail:	At least 6
	Light Rail:	At least 2
	Bus Facilities:	At least 1 per 3 bays/2 per facility

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 a rider'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 micromobility 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 non-inflated fee, based on demand.
- **Bicycle Storage** may be provided at transit stations where demand exists and space allows, and at 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 aboard 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.
- **Micromobility 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 micromobility devices such as electric scooters. As part of the pilot, Metro has designated parking areas at selected stations and transit hubs for parking of micromobility devices; the private firms seeking to park their vehicles at Metro sites must pay a fee for use of the parking facilities.¹⁰

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.

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

¹⁰ Planning and Programming Committee File # 2019-0085; LACMTA Administrative Code Title 8: Metro Parking Ordinance

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, TVM's 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 have spaces for on-line bus storage and turnaround. 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 measurements, and should be located at a signalized or signed crosswalk to dis-incentive/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 measurements 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 measurements, under the following circumstances:

- Same bus lines will queue up to make a right turn while other lines continue through the intersection (unsafe right turn measurements)
- Lack of space availability and/or non-tolerant lengthen zone due to business owner objection, jurisdictional 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 American 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
Near-Side	<ul style="list-style-type: none"> Minimizes interference when traffic is heavy on the far side of the intersection Customers access buses closest to crosswalk Intersection available to assist in pulling away from curb Buses can service customers while stopped at a red light Provides driver with opportunity to look for a coming traffic including other buses with potential customers 	<ul style="list-style-type: none"> Conflicts with right turning vehicles are increased Stopped buses may obscure curb side traffic control devices and crossing pedestrians Sight distance is obscured for crossing vehicles stopped to the right of the bus. The thorough lane may be blocked during peak periods by queuing buses Increases sight distance problems for crossing pedestrians
Far-Side	<ul style="list-style-type: none"> Minimizes conflicts between right turning vehicles Provides additional right turn capacity by making curb lane available for traffic Minimizes sight distance problems as approaches to intersection Encourages pedestrians to cross behind the bus Requires shorter deceleration distances for buses Gaps in traffic flow are created for buses re-entering the flow of traffic at signalized intersections Allows bus routes that operate with signal priority to reap benefits of the technology at signalized intersections. 	<ul style="list-style-type: none"> Intersection may be blocked during peak periods by queuing buses Sight distance may be obscured for crossing vehicles Increases sight distance problems for crossing pedestrians May increase number of rear-end accidents since drivers don't expect buses to stop again after stopping at a red light
Mid-Block	<ul style="list-style-type: none"> Minimizes sight distance problems for vehicles and pedestrians Passenger waiting areas experience less pedestrian congestion 	<ul style="list-style-type: none"> Requires additional distance for non-parking restrictions Encourages customers to cross street at mid-block (jaywalking) Increases walking distance for customers crossing at intersections and for transferring customers

Source: FTA webpage (http://www.fta.dot.gov/12351_4361.htm)

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.

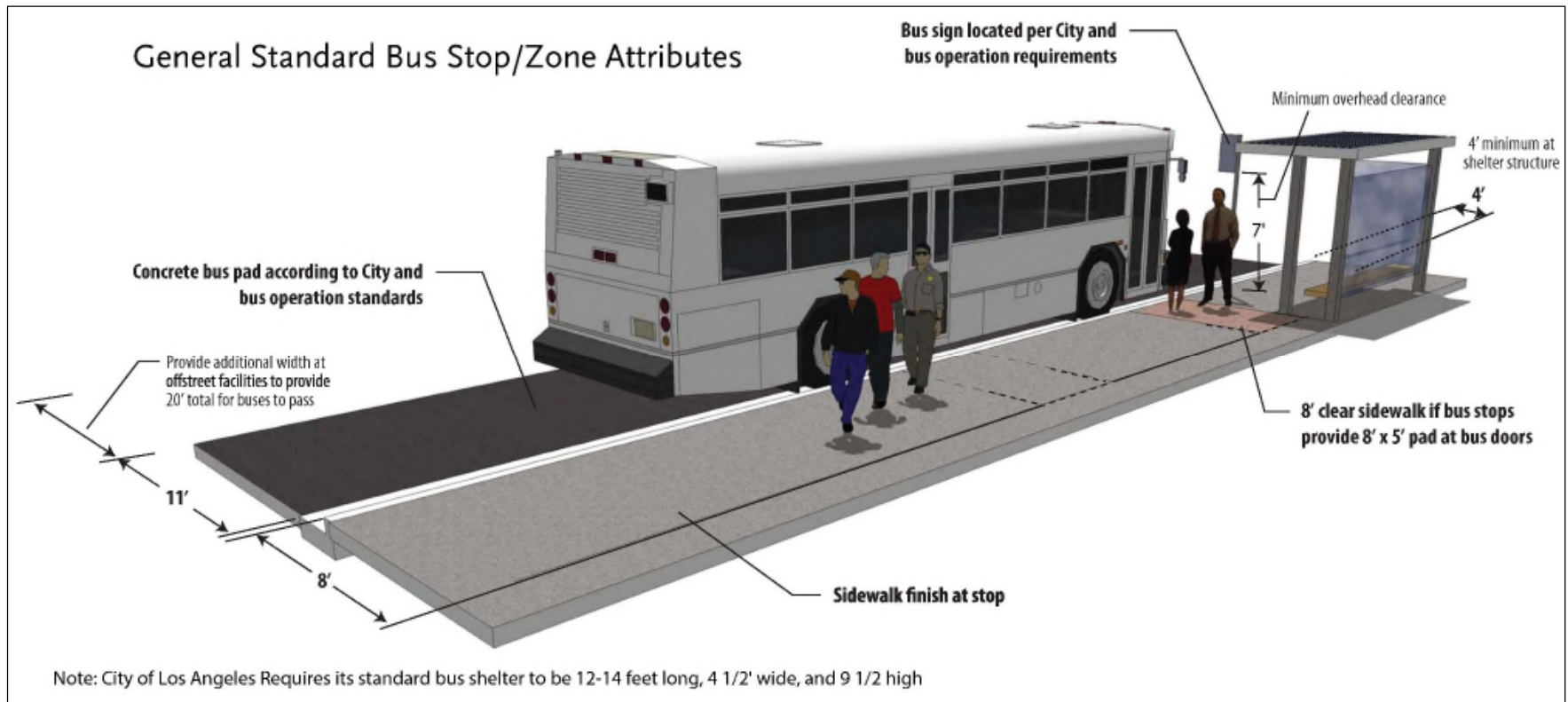


Figure 4.1 General Standard Bus Stop/Zone Attributes

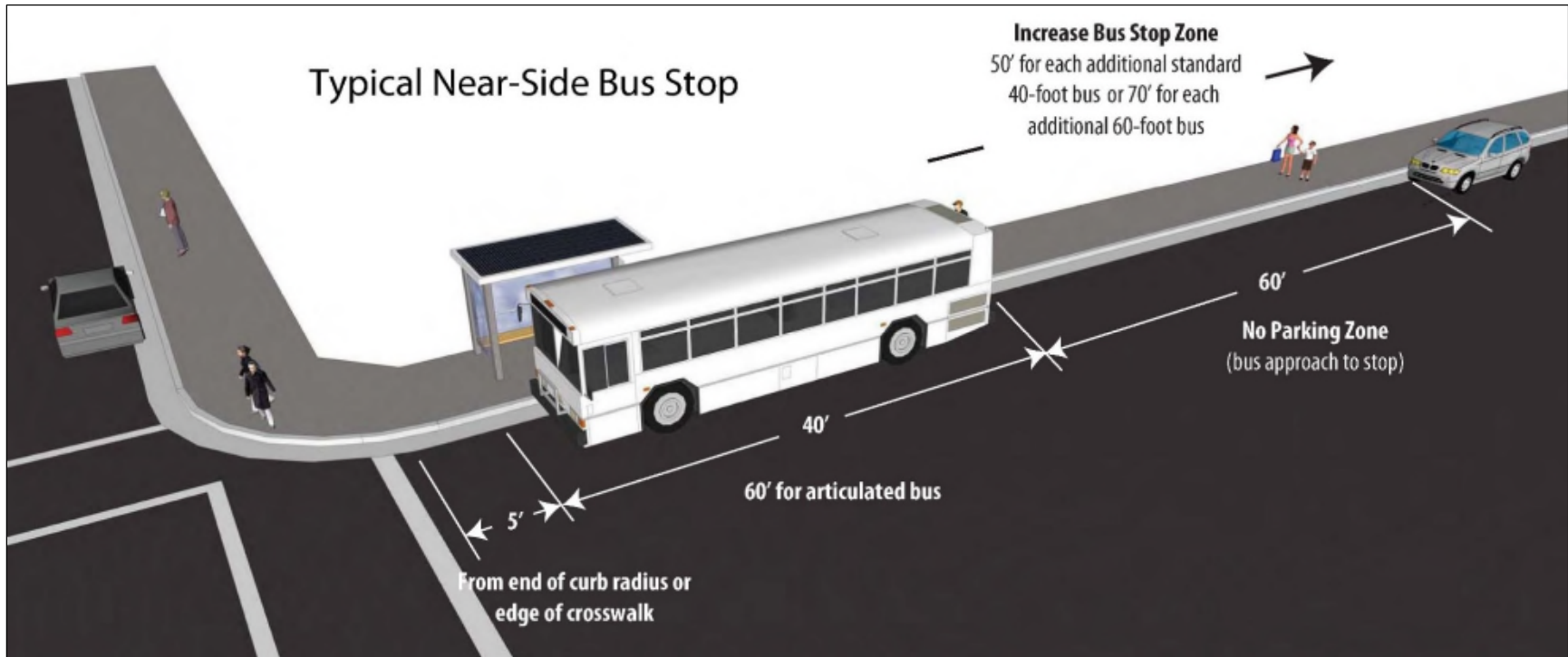


Figure 4.2 Typical Near-Side Bus Stop

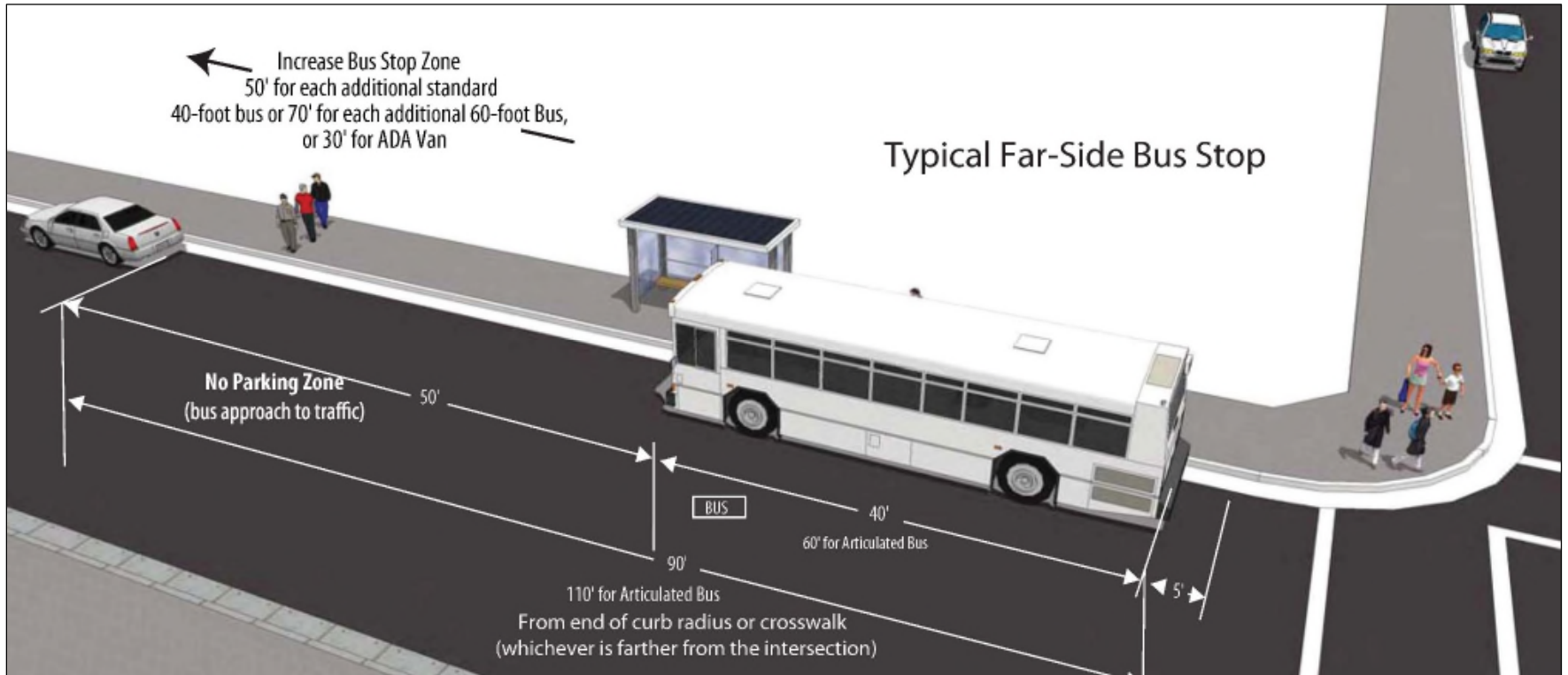


Figure 4.3 Typical Far-Side Bus Stop

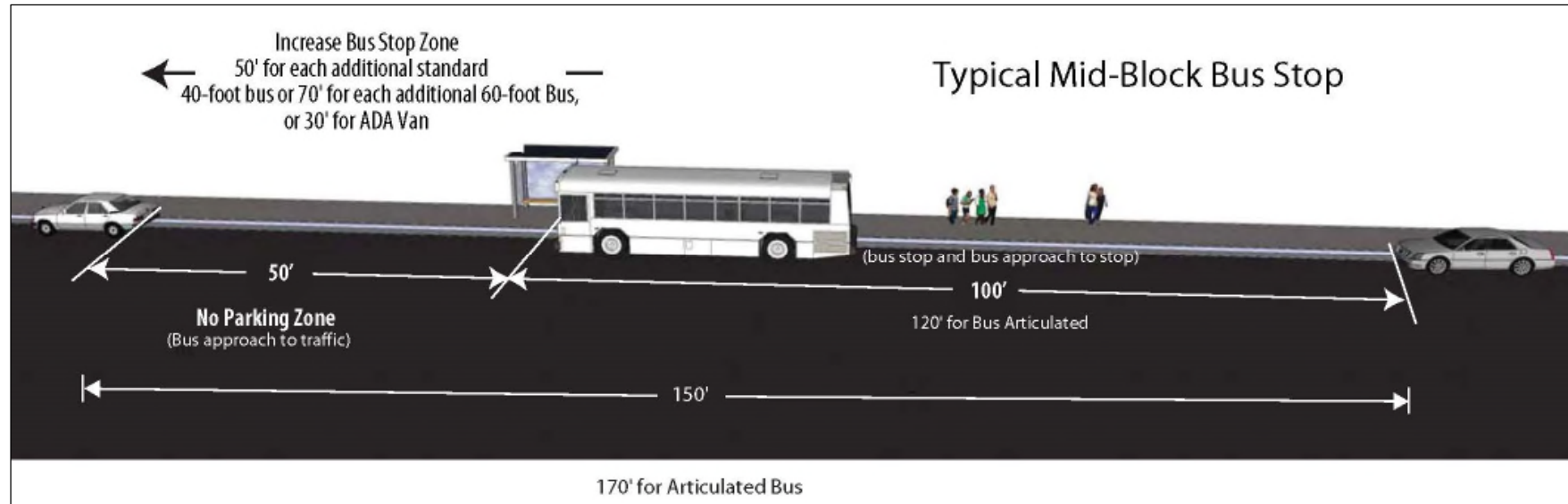


Figure 4.4 Typical Mid-Block Bus Stop

SECTION 5: SERVICE PERFORMANCE EVALUATION

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

5.1 Route Performance Index

The Route Performance Index (RPI) is a conventional industry measure used to ensure 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, implementation of an alternative service, or discontinuation of service.

Defining RPI Variables

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

- **Utilization of Resources:** Passenger Boardings per Revenue Service Hour (RSH) 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 RSHs operated. A route having a higher number of boardings per RSH 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:

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

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

5.2 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 with in 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 trips ends within ¼ mile of transit stop
 - Trip planning apps and website usage rates
 - Percentage 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 (<= 15 min headways)
 - Percentage 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

- Bids system is competitive

Door-to-door travel times

Competitiveness of transit time to drive time

System-wide boardings

- Coverage is adequate

Population within ¼-mile of transit stops by frequency of service

- Transit journeys are simple

Average number of transfers

Percent of trips that are one-seat rides

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

- Bids system is effective and productive

Competitive transit paths for short, even in-g, m idday, and weekend trips

Number of frequent customers

Boardings by time of day and day of week

Boardings per revenue hour and miles

Cost per passenger mile

- Buses are reliable

Headway regularity and frequent routes

On-time performance

Real time arrival accuracy

- Customers are satisfied

Rides per week for frequent and infrequent users

Percentage of customers satisfied with Metro services (survey based)

5.3 Service Evaluation Process

Services are evaluated monthly, quarterly, and biannually based on the network, lines and segments (geographic, time of day, and day of week). Services that are inconsistent with demand or do not meet system standards are identified for restructuring, reduction, or

discontinuation. Services that have potential for exceeding existing performance will be identified for possible enhancements as should markets that are currently not well served. The following priorities will be considered when restructuring the Metro system:

- **Priority 1** – Restructure services to increase system speed, on-time performance, 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 in to 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 about 6 months after service implementation, the performance of the changes should be evaluated relative to the established goals. Remedial actions, if necessary, should be developed and considered for the next service change cycle.

SECTION 6: SERVICE CHANGE PROCESS

In 2003, Metro created five localized service areas (Figure 6.1), each to be overseen by a Governance Council. In 2011, Metro restructured and re-established a centrally managed bus operation to include the service planning and scheduling functions, while maintaining the 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.

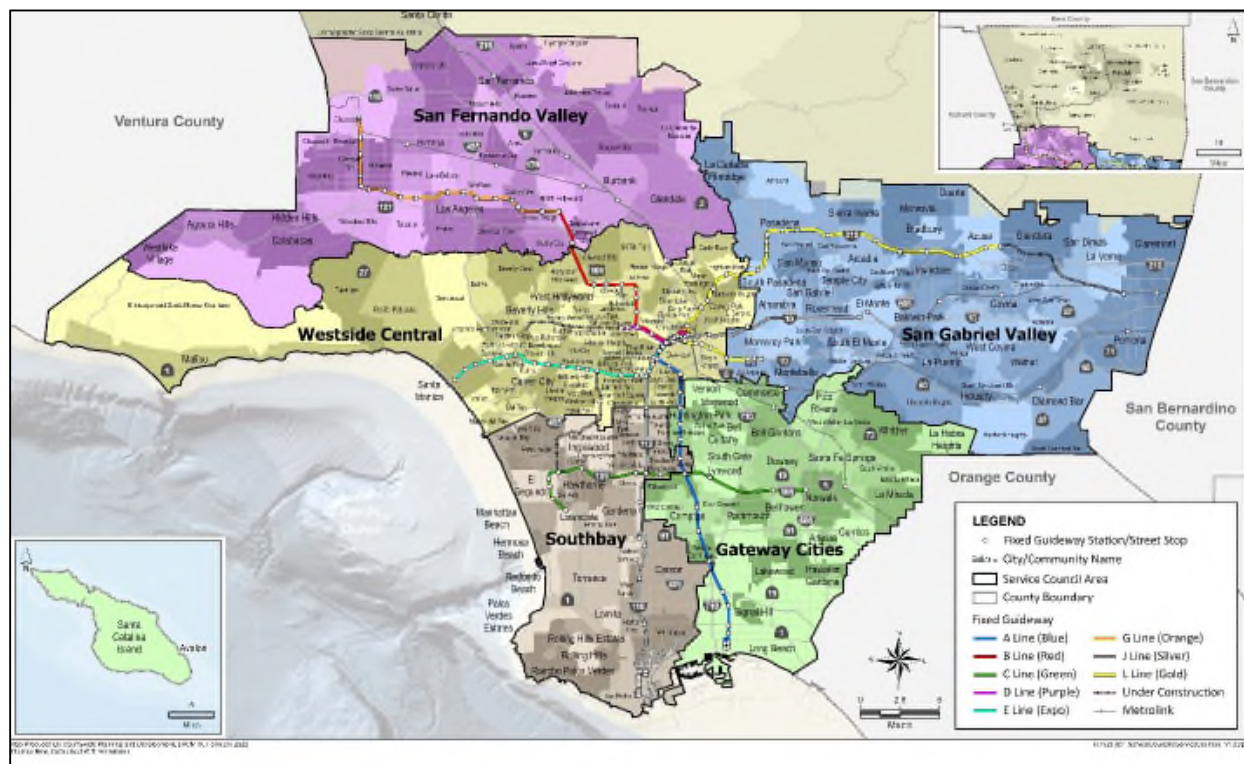


Figure 6.1 Metro Service Council Regions

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 about 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 turn around 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.

Each Regional Service Council is responsible for holding public hearings that relate to major service changes (as defined in Title VI Section 6.3 below) to Metrobus 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 Metrobus 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 of Major Service Change and Fare Change Proposals	5-7
Service Council Review and Input	6-7
Confer with Labor Relations 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 Buses	1-2
Take Ones/Rider Alerts at 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 make 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 meeting. Table 6.1 provides the established service change timeline.

6.1 Service Change Programs

Service change programs are developed based on input generated by a wide variety of sources including 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)¹¹, 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 of a proposed service change 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 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.

6.2 Title VI Equity Analysis and Metro's Equity Platform

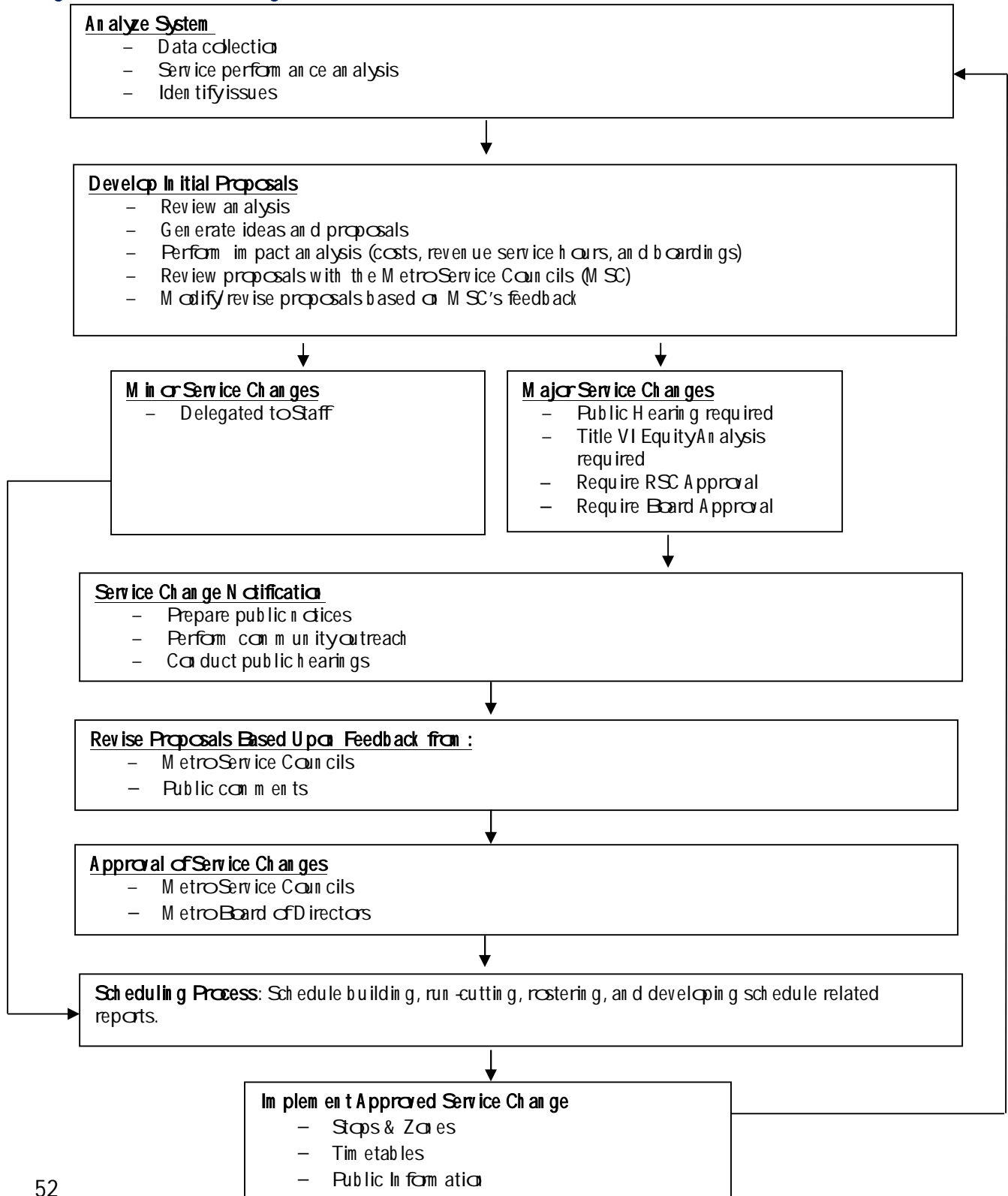
Metro's Equity Platform was adopted in February 2018¹². The framework for equity begins with Title VI of the Civil Rights Act of 1964 which protects minority communities from disparate and disproportionate negative impacts as a result of major transit service changes. Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and

¹¹ The United Transportation Union (UTU) merged with the Sheet Metal Workers Union in 2014 to form SMART.

¹² <http://metrolegistar1.com/metro/attachements/dabba808-fd7-471-8869-66f2f0d40c7.pdf>³ H A STU S (Horaires et Assignements pour Systèmes de Transport Urbain et Semi-Urbain) refers to the software used to create schedules. A T M S (Advanced Transportation Management System)

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

Figure 6.2 Service Change Process



6.3 — Title VI Equity Analysis 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 470 2.1 B "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* on 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 alternative measures 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 2-50-410 as a 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 a time or cumulatively in a 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 a time or cumulatively in a 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 a time or cumulatively in a 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 a 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 a 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 a 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

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

1. A Fare Equity Analysis shall be prepared for an y 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 an y temporary fare change in to a permanent part of the fare system.

6.4.3 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. ~~but to further improve service for communities with the greatest mobility needs to be served by transit.~~ To do this, Metro's Equity Platform was integrated in to the NextGen Bus Study planning and public engagement process. The Platform provides a framework that guides how the agency works to address inequities and create more equitable access to opportunity.

~~Metro's Equity Platform builds upon Title VI in two distinct ways. First, it goes beyond the Title VI Equity Analysis of disparate impacts and disproportionate burden on minority and low-income populations ethnicity and income to identify determine communities with the greatest mobility needs. The NextGen process started with an analysis of Equity Focus Communities (EFCs) is used to help identify where 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 demographics 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.

The ~~Four Pillars of the Equity Platform~~ were integrated in both the NextGen Bus Study as follows ~~do this, the Four Pillars of the Equity Platform were integrated in to the NextGen Bus Study plan in a public engagement process.~~

- I. **Define and Measure** – Use EFCs Title VI as a baseline for identifying communities with the greatest needs, and supplement those with market research to identify the segments of population and trips with the highest propensity for transit use. Evaluate bus network changes based on 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 security on board buses and at bus stops. These concepts, described below, were used to redesign the routes and schedules for the NextGen Bus Plan.

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 security, 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** – 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. Service Planning has adopted new tools to analyze the potential impacts of service changes on EFCs. In addition, an annual monitoring program will be established to track the progress of achievement towards the goals and objectives, and to inform any necessary adjustments.

6.54 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, 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 whom you do 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 dates of public meetings, publish hearing notices in local newspapers and send LEP and minority community 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 on proposed changes on Metro's website.	5
Operations staff distributes meeting notices on board vehicles. Public outreach at key transportation centers, bus stops, and on-board customer interface occurs as well.	Minimum one month prior to public hearings
Metro Service Councils conduct public hearings.	4
Metro Service Councils approve final service change program.	3
Metro Board receives the Service Councils' approved service change program as a Receive and File item.	2
Communication Department prepares press releases on final program and program brochures are distributed on board Metro vehicles and other outlets.	1

These procedures are in accordance with Metro's Administrative Code in Chapter 2-50 Public Hearings Subsection 2-50-425:

- A. Any public hearing required by Section 2-20-420 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 at 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.

6.56 Public Hearing Process

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

Under Metro's Service Council 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 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 2-50-420, Metro will hold a public hearing on all major service change or fare change proposals that are subject to a Title VI Equity Analysis. These proposals are subject to Metro Regional Service Council and Metro Board approval.

6.67 Implementing Minor Changes on an Interim Basis

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

APPENDICES

APPENDIX A: Metro Line Identification

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

The line identification standards shall be adhered to when identifying MetroBus and MetroRail 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 ATMS³. 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. MetroRail and MetroBRT service which previously used the established operational names (e.g., MetroRed Line, MetroPurple Line, MetroOrange 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. Destination 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 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.
- Electronic customer information includes the line information presented on metronet and underlying electronic databases such as HASTUS and ATMS.

¹³ HASTUS (Horaires et Assignements pour Systèmes de Transport Urbain et Semi-Urbain) refers to the software used to create schedules. ATMS (Advanced Transit and Management System)

- 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 Conventions

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 in 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	MetroLocal 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	MetroRapid bus service
800s	Bus bridges for the rail network
900s	MetroLiner bus service

Vehicle Head Signs

- Head signs will list the destination in which the vehicle is traveling towards in a frame.
- Head signs on Rail and BRT vehicles will list the line letter designation in a frame.
- For short-line trips, the line number and destination shown will be the destination of the 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 cited 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 aboard 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 points or corridors, or where temporary situations are necessary due to construction, temporary service changes, or pilot program deployment. In these limited cases, Service Planning staff and Communications must be in consensus regarding these changes before deciding to deviate from the standards. The Stop and Zones Department may also deploy temporary signage at bus and rail facilities as needed when emergency closures or other service changes impact scheduled service. For detailed guidance on using Metro signage standards, Metro Signage and Environmental Graphic Design Standards documents may be obtained from the Communications Department.

Metro's Rail Line Identification, Naming, and Color Conventions

Rail and BRT lines previously denoted by a color 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 system wide. The service plan for the Regional Connector Project will result in the L designation being phased out and the relevant sections of the Gold Line will become the A Line to Azusa or the E Line to East LA. The Crenshaw Line will be known as the K Line with a pink color.

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

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: Palm Dale Lancaster Portions of Unincorporated Los Angeles County	X	X		
Arcadia				X
Artesia		X		
Avalon		X		
Azusa		X		
Baldwin Park		X		
Beach Cities Transit serves: Redondo Beach Manhattan Beach Hermosa Beach El Segundo	X	X		
Bell		X		
Bell Gardens		X		
Bellflower		X		
Beverly Hills		X		
Burbank		X		
Calabasas		X		
Carslaw		X		
Cerritos		X		
Commerce	X	X		
Compton		X		
Corona		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 Azusa Baldwin Park	X	X		

	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride
Member cities served by Foothill Transit continued				
Badbury				
Claremont				
Corona				
Diamond Bar				
Duarte				
Glenora				
Industry				
Irwindale				
La Puente				
La Verne				
Marina				
Pasadena				
Pomona				
San Dimas				
South El Monte				
Temple City				
Walnut				
West Corona				
Garden a	X	X		
Glen dale		X		
Glen dora		X		
Hawaiian Garden s		X	X	
Hawthorn e		X		
Hermosa Beach		X		
Huntington Park		X		
Inglew ood		X		
La Cañada Flin tridge		X	X	X
La Habra H eigh ts			X	X
La M irada				X
La Puen te		X	X	
La Verne			X	
Lakew ood			X	
Lawn dale		X		
L on ita				X
L on g Beach	X	X		
L os An geles	X	X		
L os An geles Coun ty		X		
L y w ood		X		
M an h attan Beach		X		
M alibu		X		
M ayw ood		X		
M a r i a		X		

	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride
Maribel	X	X		
Mariposa Park		X		
Mariposa	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
San ta Clarita Valley Transit (SCVT) serves San ta Clarita Partia s of Un incorporated L os An geles County	X	X		
San ta Fe Springs		X		
San ta M a r i c a	X	X		
Sierra Madre		X		
Signal Hill		X		X
South El Monte			X	
South Gate		X		
South Pasadena		X		X
Tem ple City			X	X
Torance	X	X		
Walnut				X
West Covina		X		
West Hollywood		X		
Westlake Village		X		
Whittier		X		
Total	13	69		

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.

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Transit Service Policy

December 2022



Metro®

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EXECUTIVE SUMMARY

Los Angeles County Metropolitan Transportation Authority (Metro) serves as transportation planner ~~and~~, coordinator, designer, builder and operator for Los Angeles County. More than ~~8-610.3~~ million people live, work, and play within its 1,469-square-mile service area.¹

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

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

- Goal 1:** Provide high-quality mobility options that enable people to spend less time traveling
- Goal 2:** Deliver outstanding trip experiences for all users of the transportation system
- Goal 3:** Enhance communities and lives through mobility and access to opportunity
- Goal 4:** Transform LA County through regional collaboration and national leadership
- Goal 5:** Provide responsive, accountable, and trustworthy governance within the Metro organization

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 resulted in a revised draft NextGen Bus Plan being released ahead of public hearings, Service Council approvals, and Board adoption of this plan in October 2020. Phased implementation of the NextGen Bus Plan occurred beginning in December 2020, with additional phases in June and September/December-2021. Key elements of the NextGen Bus Plan, including a set of

¹ FY19 National Transit Database- Represents all people living in the Census Tracts covered by Metro's service area per the 2020 Census Data. Service area is calculated from taking 0.75 mile buffer around all Metro bus line and rail stations.

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frequency tiers and bus speed and reliability tools, are reflected in this update of the Transit Service Policy.

~~2020~~2022 Metro Transit Service Policies & Standards

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

SECTION 1: INTRODUCTION, PURPOSE & BACKGROUND

Metro first adopted a Transit Service Policy (TSP) in 1986. The TSP is reviewed on at least a triannual basis and updated as needed to better reflect agency goals and objectives, major initiatives, 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 October 2020². 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 ~~Metro Rail~~Metrolink regional rail and municipal operator services across LA County. Determining the most appropriate transit service in on a corridor depends on several factors such as level of demand, resource availability, site ~~or~~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.

Table 1.1 ~~Service Type Determination~~²

Service Type	Corridor	Optimal Characteristics
Heavy Rail (Subway)	Operate 100% within an exclusive right of way.	–2,500 boardings per route mile or more than 50,000 boardings per day. –Ability to construct a fully grade-separated facility.
Light Rail	Operate in mixed flow traffic or an exclusive right of way.	–1,000 boardings per route mile or more than 25,000 boardings per day. –Ability to construct a guideway within or adjacent to the corridor.
Commuter Routes	Operate in mixed flow traffic in along either an HOV or HOT Lane and may operate a segment of their route on local streets.	300 or more boardings during peak hour and in peak direction of travel.

² boardagendas.metro.net/board-report/2020-0617/

³Capacity 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)

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BRT and Rapid	Operated using 40', 45' or 60' buses. –Metro G Line (Orange) (BRT) operates on a fixed guideway. –Metro Rapid and Hybrid Lines operate in exclusive bus lanes or mixed flow traffic on local streets with signal priority.	–300 or more boardings during peak-hour and in peak direction of travel. –Daily average of more than 500 boardings per route mile or more than 10,000 daily boardings. –Ability to implement operating speed improvements in the corridor.
Core, Convenience, Connectivity and Community Routes	Operate in mixed flow traffic on local streets by 32', 40', 45', or 60' buses.	–The median bus route carries about 4,500 daily boardings. –Core and Convenience services are expected to carry more than the daily median, while Connectivity and Community are anticipated to carry less.

Metro Bus

As of December 2021, Metro ~~currently~~ operates ~~165~~119 bus routes, ~~of which 18~~. Metro's bus operations consist of directly operated and contract operated services: 103 routes are ~~contracted out~~ directly operated by Metro, and 16 routes are operated by contractors. Metro serves ~~nearly 14,000~~over 12,200 bus stops, including station stops on the G Line (Orange) and J Line (Silver) BRT systems. On weekdays, Metro operates a fleet of over ~~2,300~~1,600 buses. ~~Metro's bus operations consist of both directly operated and contract operated services during peak service hours.~~ Metro operates the largest ~~share~~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 ~~service or no service at all 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. Table 1.2 describes the features of each of Metro's bus service types. Tier definitions are:

- **Core (Tier 1):** weekday all day headways of ~~7-5~~10 minutes or better
- **Convenience (Tier 2):** ~~7-5~~12 to ~~10~~15 minutes
- **Connectivity (Tier 3):** ~~10~~20 to ~~15~~30 minutes
- **Community (Tier 4):** ~~15~~40 to ~~30~~+60 minutes
- **Commuter (Tier 5):** Varies ~~by Line~~

Table 1.1 *Service Type Determination*⁴

<u>Service Type</u>	<u>Corridor</u>	<u>Optimal Characteristics</u>
---------------------	-----------------	--------------------------------

⁴Capacity 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)

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Heavy Rail (Subway)	Operate 100% within an exclusive right of way.	<ul style="list-style-type: none"> - 2,500 boardings per route mile or more than 50,000 boardings per day. - Ability to construct a fully grade-separated facility.
Light Rail	Operate in mixed flow traffic, semi-exclusive or a fully- exclusive right of way.	<ul style="list-style-type: none"> - 1,000 boardings per route mile or more than 25,000 boardings per day. - Ability to construct a guideway within or adjacent to the corridor.
Commuter Routes (Tier 5)	Operate in mixed-flow traffic in either a High Occupancy Vehicle (HOV) or High Occupancy Toll (HOT) Lane. May operate segments of the route on local streets. Operated using 40', 45', or 60' buses.	<ul style="list-style-type: none"> - 300 or more boardings during peak-hour and in peak direction of travel.
Metro Liner and Metro Rapid	Operated using 40', 45' or 60' buses. <ul style="list-style-type: none"> - Metro G Line BRT and J Line (Metro Liner) operate entirely or partially on a fixed guideway dedicated to transit buses. - Metro Rapid Lines operate in exclusive peak period or all day bus lanes or mixed flow traffic on local streets with signal priority. 	<ul style="list-style-type: none"> - 300 or more boardings during peak-hour and in peak direction of travel. - Daily average of more than 500 boardings per route mile or more than 10,000 daily boardings. - Ability to implement operating speed improvements in the corridor.
Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), and Community (Tier 4) Local Routes	Operate in mixed flow traffic on local streets by 32', 40', 45', or 60' buses. <ul style="list-style-type: none"> - Core lines to be supported by exclusive peak period or all day bus lanes and signal priority on existing and former Metro Rapid corridors. - Lines are also defined 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. 	<ul style="list-style-type: none"> - The median bus route carries about 4,500 average weekday boardings (pre-COVID, 2019). - Core and Convenience services are expected to carry more than the daily median, while Connectivity and Community are anticipated to carry less.

These frequency tiers are especially important to ensure high frequency service is provided on key corridors serving Equity Focus Communities⁵ where the need for high-quality transit is greatest.

⁵ In 2018, Metro's Board adopted the Equity Platform, a framework that guides how the agency works to address

Table 1.2 Metro Bus Service Types and Features

Feature	Bus Service Type			
	BRT and Liner	Rapid	Commuter (Tier 5)	Core, (Tier 1), Convenience, (Tier 2), Connectivity, (Tier 3), Community (Tier 4) Local Bus Services
Right of Way	Dedicated 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
Minimum Target Average Stop Spacing	1.25 miles	0.75 mile	1.25 miles	0.2–0.3025 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 busbuses	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 (Silver) /Off-board pre-pay G Line (Orange)	On Boardboard	On Boardboard	On Board On board, with all-door boarding a goal for Core and Convenience (Tier 1 and 2)
Passenger Amenities	Shelters and stations	Shelters and stations	Shelters and stations	Benches and shelters
Real-time Passenger Info	Yes	Yes	Yes	At some stops and via smart phone applications

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

inequities and create more equitable access to opportunity. In 2019, under the Equity Platform, the Board adopted a community designation called 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).

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Metro Bus RapidLiner Transit (BRT)

~~To support BRT, Metro incorporates a series of design features to reduce delays, increase reliability and improve customer comfort. Metro operates two high capacity vehicle types: 45-foot buses with 46 seats and articulated 60-foot buses with 57 seats. Ideally, high capacity vehicles should primarily be operated on high-volume trunk service routes with more than 10,000 total daily boardings. Metro BRT services operate on an exclusive right-of-way, major arterials, or in HOV/HOT lanes.~~

~~Metro operates two such routes: the 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)** which operates on its own semi-exclusive right-of-way, and ~~the~~ meets the Federal Transit Administration (FTA) definition of Bus Rapid Transit (BRT)~~
- ~~– **J Line (Silver)** which operates on the I-10 and I-110 ExpressLanes (freeway toll lanes) as well as surface streets through downtown. ~~These are considered Tier 1 services. BRT services charge a premium fare~~ 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.~~

~~— **Dedicated Bus Lanes:** A bus lane is an exclusive lane used by transit on urban streets along a roadway through widening or dedication of one or more existing general traffic or parking lanes for transit use. These lanes can be designated for transit use during peak periods only or all day. Bus lanes typically allow use by general traffic for right turn movements, bicycles, parking, and local access to and from driveway, and are most effective in those areas where there are very high bus or customer volumes and where operational efficiencies can be achieved. Bus lanes should be a minimum of 17 feet wide. This right of way provides fewer traffic conflicts and obstructions and reduces delays and travel time. Metro is currently studying the feasibility of adding bus lanes on several major corridors to further improve travel times.~~

~~— **High Capacity Vehicles:** State of the art high capacity vehicles are used to meet high demand and provide greater customer comfort.~~

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.

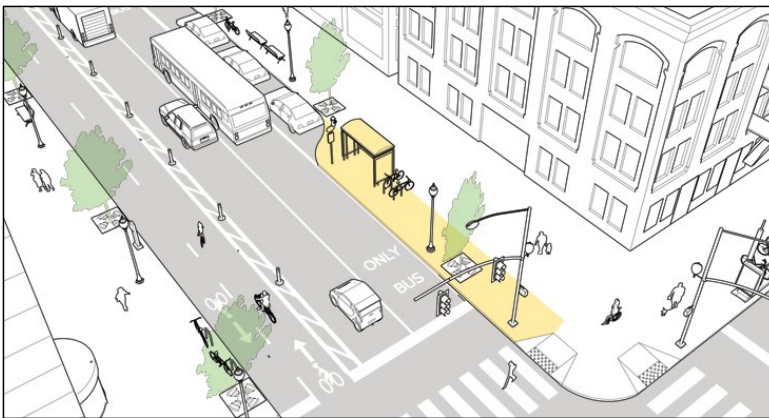


Figure 1.1 Bus bulb

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 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.⁶

- **Transit-Signal Priority:** An operational strategy that facilitates the movements of in-service transit vehicles through signalized intersections to improve transit performance by extending the green phase or shortening the red phase of traffic signals. (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

⁶ 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/

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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.

- **Bus Stations**~~Headway-Based Service Management~~: Operating the most frequent and ~~Shelters~~ 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 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 ~~count-down~~~~countdown~~ signals, bicycle racks, and well-designed crosswalks make it easier for pedestrians and bicyclists to access the stations.
- **Improved Fare Collection Amenities**: For ~~convenience and~~ faster service ~~and convenience~~, major stations have ticket vending machines (TVMs) which allow ~~customer s~~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 ~~travel~~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 ~~thei~~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 ~~less~~better are ideal candidates

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for this type of ~~vehicle~~bus. In evaluating services for higher capacity ~~vehicles~~articulated buses, other factors must be considered including facility compatibility, street design, and ~~potential impacts~~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 ~~services where schedules have been interlined~~convert the Metro fleet to fully zero-emission buses.

Metro Rail

As of May 2022, Metro operates two heavy rail and four light rail lines serving a total of 96 stations across approximately 101 route miles, with a fleet of ~~406~~102 heavy rail and 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 Rail heavy rail is high-capacity, two line rapid transit ~~services~~services operating along a dedicated subway right-of-way, serving full-scale transit stations, ~~and powered by electricity~~ 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 ~~supports~~is a critical public transportation asset in the greater Los Angeles region, linking many key multi-modal transportation centers and destinations together.

~~Rail service operates in high-demand travel corridors and is offered in two forms— heavy rail and light rail.~~ Metro's heavy rail is the subway system served by the B and D Lines (Red, Purple) powered by a third rail, ~~and operated with 4- or 6-car train sets.~~ Metro's four light rail lines – A (Blue), C (Green), E Line (Expo), and L Line (Gold) ~~and E (Expo)~~—are powered by overhead catenary wires, generally use shorter ~~trains~~2- or 3-car train sets, and operate at slower speeds than heavy rail. ~~Unlike heavy rail, light rail lines run along a right-of-way ranging from complete grade separation to at-grade in mixed flow traffic.~~

Transit Service Policy (TSP)

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

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

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

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The first segment of the new 8.5 mile, 8-station Crenshaw/LAX K Line is expected to open in late 2022. A ninth new station, the Airport Metro Connector (AMC) Station, should open by the end of 2024. The new 1.9 mile Regional Connector light rail alignment through downtown LA will also open around the same time as the K Line, which will see the 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.

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 addresses Bus Plan and Study were completed to address Goal #1: Provide high quality mobility options that enable people to spend less time traveling. The study also encompasses two sub-goals: 1) Target infrastructure and service investments towards those with the greatest mobility needs; and 2) Invest in a world class bus system that is reliable, convenient, safe, and attractive to more users for more trips.

In addition to the Vision 2028 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 Service Bus Plan, including guiding principles for routing, stop spacing, frequency, span of service, and coordination with municipal operators. In addition, a set of performance measures have been defined below to ensure the bus network continues to evolve consistent with the goals and objectives defined by the Board.

intent of NextGen Service 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 is to improve the competitiveness of the bus network. However, through this process, improvements to certain aspects of attractiveness can also be achieved. The following outlines the strategy for how the NextGen will set 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 (RSH) of bus service per year. The first step in creating a World Class Bus System is to redesign the routes and schedules to attract trips where and when there is the greatest market potential. The lessons learned in Phase 1 of the bus study present a path forward for reinventing

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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, ~~we should attempt~~ the NextGen Bus Plan attempts** to maintain coverage throughout the County by minimizing discontinued segments.
- **Fast/~~Frequent~~ frequent/reliable service is key; THEREFORE, ~~we need~~ 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 ~~current~~ pre-NextGen bus system ~~is~~ was not always competitive to get people where they want to go, THEREFORE ~~routing should be~~ NextGen Bus Plan has adjusted routing** to reflect the key origins and destinations identified in ~~the~~ cell phone location data ~~and ridership patterns.~~
- **The greatest opportunity to grow ridership is between midday & evening when many trips are short distance, THEREFORE service levels ~~should be~~ under the NextGen Bus Plan have been** improved for off-peak periods, especially midday, ~~evenings~~ 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 ~~should be prioritized for~~ prioritize** equity-focused ~~focus~~ areas where the need for high-quality transit service is greatest.

These lessons learned to “reconnect” routes and schedules with where and when people travel today were incorporated into the Plan's Service Design Guidelines outlined in Section 3 to develop the NextGen “reconnect” routes and schedules with where and when people travel today as the NextGen Bus Plan Reconnect ~~service plan~~ scenario implemented across the December 2020, June 2021, and September/December 2021 service change cycles. Reconnect is 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: Once the Building upon the Reconnect scenario of NextGen Bus Plan that provides a bus network ~~is reestablished to reflect~~ 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** – As bus system speeds continue have continued to decline over the last decade, Metro must has had to allocate an additional \$10 million cumulatively every year on an annual basis to provide the same amount of service. Not only does this reduce the opportunity to increase service, it degrades our the competitiveness and attractiveness of bus service and is 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, such as optimizing stop spacing, implementing all-door boarding, and piloting headway-based service management. However, other improvements can only be implemented through collaboration with local jurisdictions, including such as transit priorities, signal priority system upgrades and expansion, new bus bulb-outs, and bus-only or bus priority lanes. Under the NextGen Transit First scenario, \$750 million in a major 5-year program of capital improvements are proposed to support speed and reliability improvements for the regional bus network. This investment is anticipated to save 25% - 34% in system speed if fully implemented. - 34% in system speed if fully implemented, and to allow for more frequent service to be delivered without adding additional operating costs. New bus lanes have already been rolled out in 2020 and 2021 on 5th and 6th Sts, Grand Av, Olive St, and Aliso St in downtown LA, and on Alvarado St between 7th St and the 101 freeway. These are just the beginning of a program to add over 80 miles of dedicated bus lanes through partnerships with City of LA and other municipalities.

- **Customer Wait Environment** – Through the significant public outreach conducted in Phase 1 of the NextGen Bus Study, as well as other Metro efforts/initiatives such as the How Women Travel Study⁷, we learned that an uncomfortable and unsecured wait environment is a significant barrier for customers in using the bus network. This is particularly concerning for women who account for over half of our customers and often travel with young children. Metro completed the Metro Transfers Design Guideline in March 2018⁸. Under the Transit First scenario, we plan 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 several lines, including all-door boarding on the G Line (Orange), J Line (Silver), Line and Rapid Lines 720 (Wilshire), and Line 754 (Vermont). Experience on the J Line (Silver) showed that dwell times were reduced by up to 15% on average, on-time performance improved, and cash payment declined with more TAP penetration, and significant customer and operator satisfaction. 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 bus lines. Other strategies to improve the boarding and on-board riding experience include level boarding at key stops and have focused on improved on-board real-time information. These improvements are estimated at \$100 million systemwide. accuracy.

⁷ libraryarchives.metro.net/DB_Attachments/2019-0294/UnderstandingHowWomenTravel_FullReport_FINAL.pdf

⁸ dropbox.com/s/iv6ruaxdw5g945b/Metro_Transfers_Design_Guide_2018-0312.pdf?dl=0

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- **Layover Optimization** – Due to limited curb space, many routes are extended purely to access a suitable layover location. These ~~unnecessary~~ route extensions are not required for riders and cost several million dollars in operating ~~costs~~ per year ~~with little to no benefit to the customer~~. By investing in off-street layover terminals to optimize layover locations, weMetro can reallocate wasted resources ~~and reallocate it~~ to more productive ~~uses~~. In addition, these locations ~~would~~can provide facilities for better regional mobility coordination, ~~a~~ better wait and rest ~~environment~~environments for customers and operators, ~~improve~~improved bus service reliability, and opportunities for new en-route Zero ~~Emissions~~Emission Bus (ZEB) charging infrastructure.

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

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

Investing “one time” capital dollars into transit supportive infrastructure ~~would~~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 can achieve) without additional increases in revenue service hours.

Step 3: Future Funding Scenario: Should future funding be secured through efforts such as ~~de~~ congestion pricing, additional resources can be added to the 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: SERVICE DESIGN GUIDELINES

Key Principles of Network Design

Three key elements ~~are were~~ taken into consideration during the ~~Network Development Process~~ ~~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: 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 ~~and~~, students who use transit for work and school trips, and discretionary customers who choose transit for some or all their trips. ~~Second, 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. ~~A third, a pedestrian-oriented street environment is also critical, including 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 ~~articulates articulate~~ current transit demand. These corridors and routes ~~should behave been~~ optimized through the ~~network development process~~ ~~NextGen Bus Plan~~, and lessons learned ~~should 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, ~~including 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 ~~and~~, land use, barriers to other modes such as limited and costly parking supply, and transit supportive infrastructure ~~including such as~~ bus-only lanes and ~~other transit priorities- 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 ~~Network Development Process~~ ~~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, ~~are guidelines established 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

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- Accessibility to key destinations
- Improved security

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

Hybrid Local/Rapid Stop Spacing – ~~Currently~~ Past practice was that stop spacing ~~is~~ was determined by route classification. For example, ~~local~~ Local lines ~~are~~ were planned with ¼ mile stop spacing while Rapid lines ~~have~~ had ¾ to 1 mile stop spacing. As a result, customers travelling on ~~local~~ Local lines ~~go slower between communities~~ travelled more slowly but ~~have~~ had closer access to origins and destinations. Conversely, Rapid customers ~~travel~~ travelled faster along a corridor, but may ~~behave been~~ picked up or dropped off much further from their origin or destination. In addition, resources ~~are~~ were split between the ~~local~~ Local and Rapid lines resulting in ~~wider headways~~ less frequency for each service. ~~Therefore,~~ Thus overall end-to-end travel time including walking/rolling to ~~the stop~~ from stops, waiting for the bus, and ~~finally the~~ in-vehicle run time may result in longer ~~overall~~ travel times on the Rapid, especially for shorter distance trips.

Consolidating ~~local~~ Local and Rapid resources along ~~a corridor will provide much better headways,~~ 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 ~~customizing,~~ when matched with optimized ¼ mile average stop spacing ~~along the corridor based on changing land use densities along a corridor~~ adopted as part of NextGen Bus Plan and new bus lanes, results in shorter wait times, faster on-board travel times compared to the ~~local~~ previous Local service, and shorter walk/roll compared to Rapid service. In addition, this standardizes the ~~service~~ frequency along the entire corridor, ~~vs as compared to providing~~ inconsistent frequencies between ~~local~~ 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.~~

Shorter Route Lengths and Subarea Transit Hubs – ~~The~~ Location-based cell phone ~~location~~ based data indicates that almost half of all ~~travel~~ 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 ~~regionally~~ 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 ~~a~~ safer and more convenient ~~location~~ 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 ~~BRT~~ Liner [G Line (Orange) and J Line (Silver)], and Metro Bus ~~serve~~ serve

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as the backbone of the urban transit network, ~~which is 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.

~~Roughly~~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. Their coverage is especially strong in Santa Monica, Culver City, South Bay, Gateway Cities, and eastern San Gabriel Valley. ~~Therefore, it is imperative that Metro bus service is closely coordinated with municipal transit service, as well as Santa Clarita and the Antelope Valleys.~~ Given that several ~~of the~~ municipal operators are currently undergoing their own system redesigns, there ~~is an opportunity~~ 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.

MicroTransit and Other On-Demand Services – Some areas of the County are difficult to serve with fixed-route transit due to terrain, narrow streets, ~~and~~ dispersed lower density destinations. ~~In addition, and relatively low travel activity in some areas are low during certain times of day or days of week.~~ To address this, Metro is currently ~~piloting~~ conducting a three-year microtransit pilot program for MicroTransit. These, ~~an~~ on-demand, van-based rideshare service ~~modes may be more appropriate for areas~~ 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 ~~times of day~~ Westwood/UCLA. The service is designed to provide short trips within a zone ~~where fixed route cannot be competitive~~ 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 will be considered for 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 in lieu of.~~ 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 microtransit can be an effective and efficient replacement for Metro ~~fixed route if warranted~~ bus service in these hard-to serve areas.

Table 3.1 *Minimum Rail and NextGen Bus Plan 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>12-15</u>	<u>15</u>	<u>20</u>

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Core Network (Tier 1) Metro Liner and Metro Rapid	5-10	5-10	15	7.5
Convenience Network (Tier 2)	12-15	12-15	30	10
Connectivity Network (Tier 3)	20-30	20-30	60	15
Community Network (Tier 4)	40-60	40-60	60	30
Commuter Network (Tier 5)	varies	varies	varies	varies

Standardize Frequencies by Service Tiers – ~~Currently~~ Prior to the implementation of the NextGen Bus Plan, schedules ~~are~~ were written based on the Board-adopted load standard for frequent services (15 min or better) and ~~based~~ on policy service levels for ~~in-frequent~~ low frequency services (~~wider~~ less than 15 min). To ensure the core network has consistent frequencies and span of service, ~~corridors will be~~ 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 ~~will be~~ has been assigned a frequency ~~designation (e.g. 10 min peak/12 min base)~~ range for each time period to ensure that all services within the tier provide consistent service levels for ease of transfer ~~along~~ across the network ~~if a~~, with minimal adjustment from year to year. These frequency levels are defined in Table 3.1. A line ~~requires better frequencies than the tier designation, it will be set based on the~~ 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 – ~~Currently corridors~~ Corridors are ~~currently~~ being evaluated by segments ~~Based~~ based on the origin—destination travel patterns identified using the cell phone location-based data ~~as well as~~ and regional TAP data, ~~the~~. The segments will be connected together to create lines ~~Better aligning 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 ~~15 min, 30 min, etc~~ a given time frame. While resources will be focused in areas with high transit propensity, there will be a concerted effort to maintain service in areas of low demand but with the greatest mobility needs.

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 bus-only lanes, queue jumpers, bus bulb-outs, traffic signal retiming, transit signal priority, all door-boarding, fare payment technology, and 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.

Table 3.12 Service Design Concepts

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

~~Transit Supportive Infrastructure — The service design will identify transit supportive infrastructure that either improves overall travel time and reliability or reduces inefficiencies in the network. Speed and reliability improvements include bus only lanes, queue jumpers, bus bulb-outs, signal retiming, All Door Boarding, fare payment technology, etc. improves the attractiveness and competitiveness of transit while reducing revenue hours that can be reapplied to better use. Infrastructure that optimizes terminals and layover locations, reduce out-of direction movements, and improves transfer movements will reduce non revenue miles and hours that can be reallocated to revenue service.~~

Table 3.12 illustrates how each service concept will address the various themes expressed by the public and stakeholders.

3.2 Service Standards

~~Service Board-adopted service standards are established to ensure that service levels are maintained based to meet a minimum standard of rider experience. These focus on board adopted standards such items as maximum average loads on trips and on time performance and are discussed below.~~

Headways

The headway standard provides for the maximum scheduled gap (in minutes) between trips in the peak direction of travel at the maximum load point of a line by time of day, and it should not be exceeded for at least 90% of all hourly periods as summarized in Table 3.23. The

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frequencies below are the minimum service levels versus the target frequencies established under NextGen Bus Plan shown in Table 3.1 above.

Table 3.2 ~~Maximum~~ ³ *Minimum Headway by Service Type*

Service Type	Peak (Weekday)	Off-Peak (Weekday-Weekend)
Heavy Rail	10	20
Light Rail	12	20
Liner	12	30
Rapid	20	30
Core Network (Tier 1)	7.5-10	7.5-10-15
Convenience Network (Tier 2)	10-15	10-15-30
Connectivity Network (Tier 3)	15-30	15-30-60
Community Network (Tier 4)	30-60	30-60
Commuter Network (Tier 5)	varies	Varies
Micro-Transit	varies	varies

Passenger Loads

Passenger ~~loading~~ ^{load} standards have been developed to ensure there is sufficient ~~service~~ capacity on Metro Bus and Rail service. The loading standard for bus is based on the maximum average ratio of ~~customer~~ ^{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 ~~customer~~ ^{customers} per seat by service type (i.e. Heavy Rail and Light Rail). Current loading standards are shown in Table 3.34.

- **Bus Passenger Loading Standard** expresses the maximum average ratio of ~~customer~~ ^{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 sets the current loading standard for Metro bus to 1.3 as recommended by the 2016 APTA Peer Review Committee. Vehicles used for MicroTransit ~~or Mobility on Demand~~ will have a load standard of 1.0.
- **Rail Passenger Loading Standard** expresses the maximum average ratio of ~~customer~~ ^{customers} to seats by service type and by direction for one-hour period by time of day and should not be exceeded for at least 95% of all hourly periods.

Table 3.34 *Passenger Loading Standards by Vehicle Type*

Service Type	Seats per Vehicle	Peak Passengers per Seat	Off-Peak Passengers per Seat	Maximum Passengers Onboard
Heavy Rail	5-52	2.30	1-2.30	120
Light rail	60-76	1.75	1.75	105-133
Bus – 40 foot	38	1.30	1.30	49
Bus – 45 foot	46	1.30	1.30	60
Bus – 60 foot	57	1.30	1.30	74

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 Inserted Cells
 Inserted Cells

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Van - MicroTransit	10	1.0	1.0	10
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Wheelchair Boardings and Pass ups.

Ideally, in a floating 6-month period, regular operating bus service will average ~~of 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 of 6%~~, Service Planning will adjust service to better serve the ridership patterns of the route in such a way so as to minimize pass-ups.

Network Route Spacing

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

Bus-Stop/Station Spacing

Stop/Station spacing refers to the average distance between consecutive stops/stations along an entire bus/rail route. The standard is expressed as the maximum average stop/station spacing in miles by type of service and is not to be exceeded by at least 90% of all routes operated. Stop/~~Station~~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 ~~3.4.3~~.

- **Heavy/Light Rail Line** station spacing is greater than bus stop/station spacing to achieve ~~the highest~~ 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.
- **BRT Metro Liner and Commuter Rapid Bus Routes** achieve the highest bus speeds through even greater stop spacing than ~~Rapid, Local Core, (Tier 1), Convenience, (Tier 2), Connectivity, and (Tier 3), Community routes (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~~though there may be exceptions due to geography or existing facility design, ~~such as freeway HOT or HOV lanes.~~ See Table 3.45 for further details.
- **Core, Convenience, Connectivity, and Community Bus Routes** primarily operate on city streets and secondary streets respectively. These route types are designed to provide service closer to a ~~customer’s~~customer’s destination and reduce walking times. Therefore, average stop spacing should be no greater than 0.25 mile for convenient walk access.

Decisions regarding bus stop spacing and location call for analysis of ridership density, customer service requirements, ~~the such as balancing access to key destinations and impact to on board riders, rider and operational safety of customers, operators,~~ 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 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 conditions and/or lack of ridership generators 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 3.4 ~~Maximum Avg.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)	0.3025

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 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
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<u>Heavy Rail</u>	<u>95%</u>
<u>Light Rail</u>	<u>90%</u>
<u>BRT</u>	<u>85%</u>
<u>Rapid</u>	<u>85%</u>
<u>Commuter (Tier 5)</u>	<u>85%</u>
<u>Core (Tier 1), Convenience (Tier 2), Connectivity (Tier 3), Community Bus (Tier 4)</u>	<u>85%</u>

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 extraboard operator as required (OAR) ratio of 1.2 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.

3.2 Bus/Rail Interface Planning

As the Metro Rail system expands, ~~adjustments are made to the~~ surrounding bus system ~~within 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 ~~when~~ 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 ~~customer s exceeds~~ customers is positive i.e. the transfer to rail does not result in overall increased travel ~~for through 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 one mile of a rail station will be extended to terminate at the station. Routes that terminate at distances greater than one mile may be extended if the rerouting will create a valuable link to the rail system 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 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).

3.3 Metro Bus Routing Guidelines

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

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

– Transit Centers /Bus Terminals

- Layover zones should be designed to accommodate various sizes of buses.
- Layover zones should utilize sawtooth bay configurations where possible to ensure curb space is more efficiently and reliably utilized, and accommodating 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 3.1)
 - 47.5 feet for 45-foot buses (Figure 3.3)
 - 44 feet for 60-foot articulated buses (Figure 3.2)

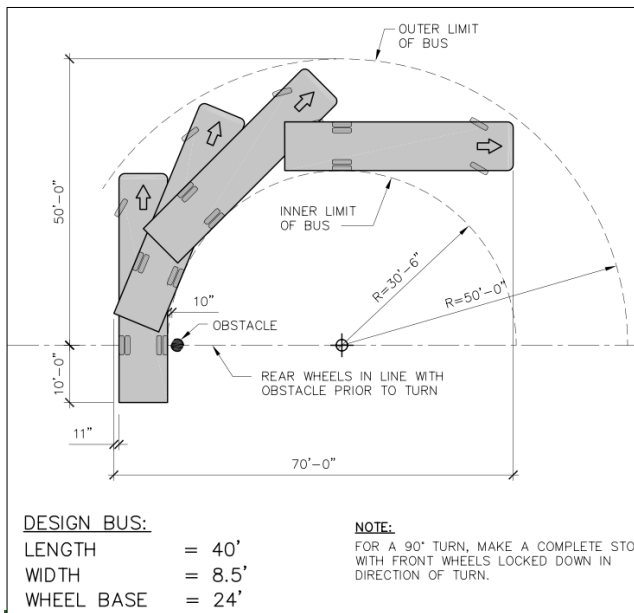


Figure 3.1 40-foot bus turning radius

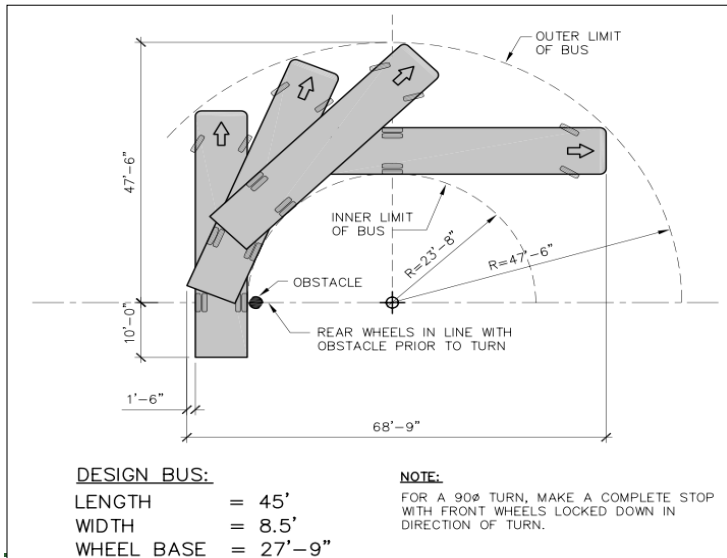


Figure 3.2 45-foot bus turning radius

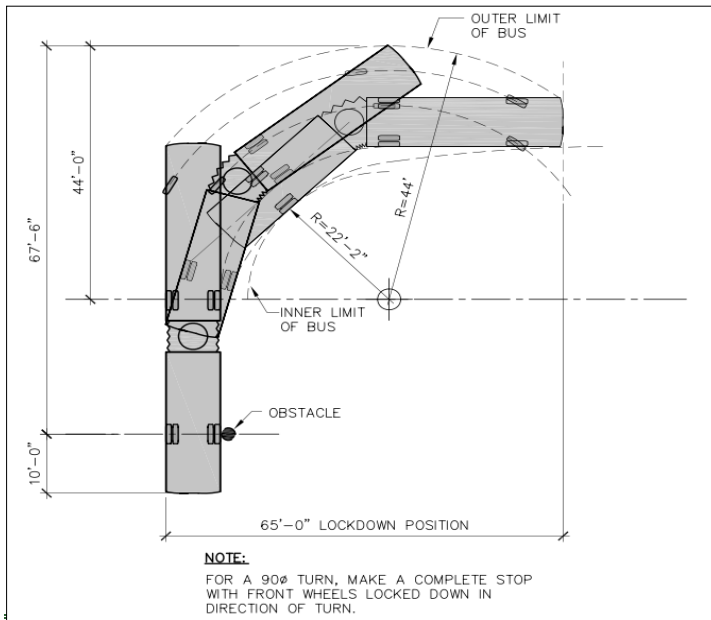


Figure 3.3 Articulated 60-foot bus turning radius

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

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

- **60-foot bus should at a minimum:**
 - Far-side and mid-block – 120 feet
 - Near-side – 170 feet

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

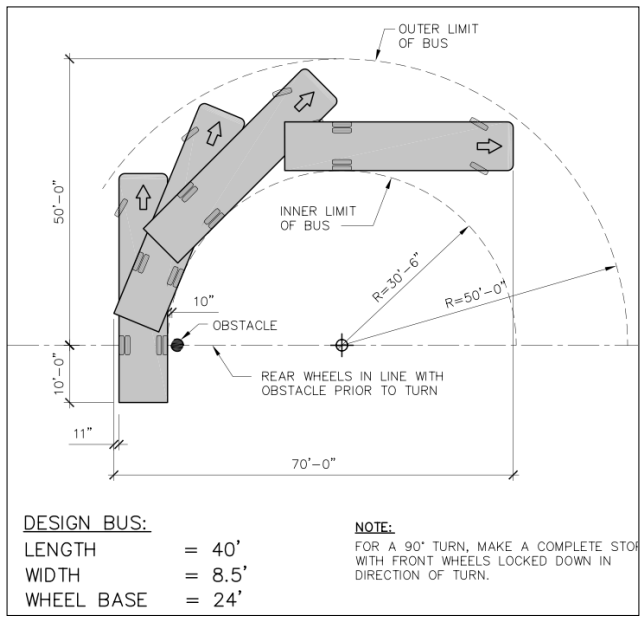


Figure 3.1 40-foot bus turning radius

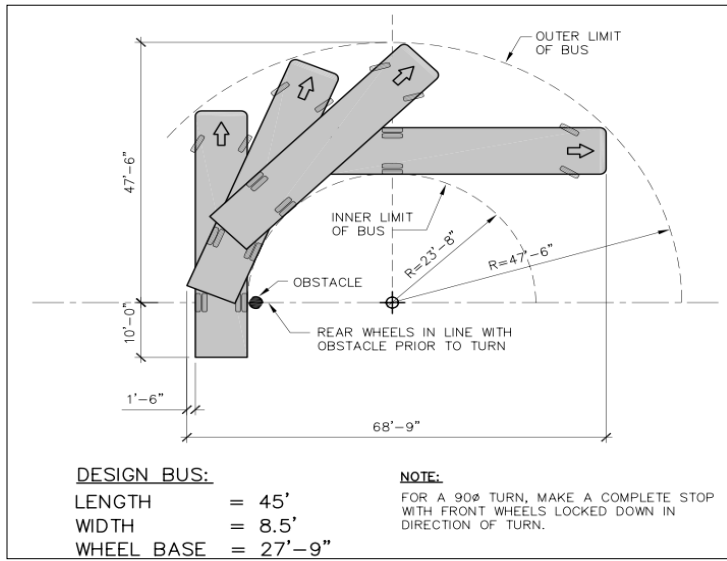


Figure 3.2 45-foot bus turning radius

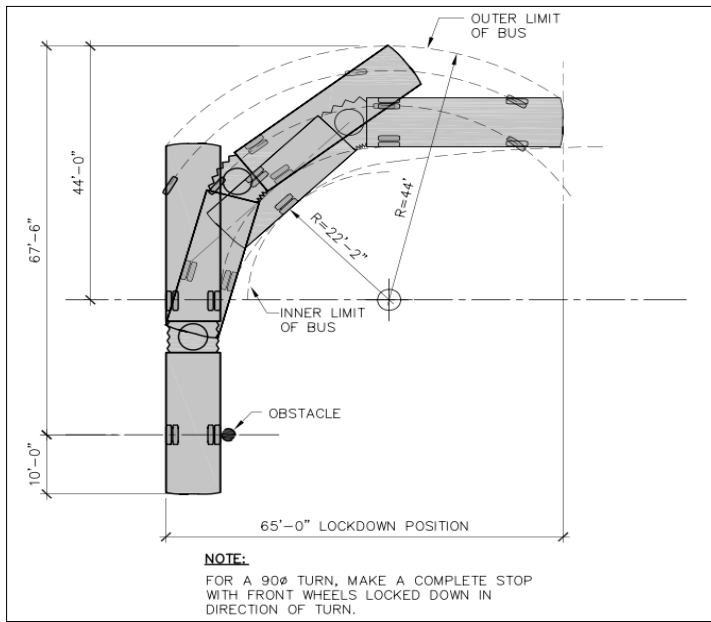


Figure 3.3 Articulated 60-foot bus turning radius

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- **Bus Layover Zone** general space requirements based on frequency between scheduled trips:
 - One space – ~~15 minutes~~ 20 minute service or less frequent
 - Two spaces – ~~12 minutes to 15 minute frequency~~
 - Three spaces – 7.5 to 10 minute frequency
 - Four spaces – 5 to 6 minutes minute frequency

3.4 Vehicle Assignment

Metro's goal is to ensure a consistent basis for assigning vehicles to facilities to meet operating needs ~~at a minimal cost and improve~~ provide equitable access to the newest vehicles across the Metro network to enhance quality of service. ~~This policy ensures that operating needs are met at a minimal cost and improve quality of service.~~

Metro's transit system consists of light rail, heavy rail, and bus operations. ⁹~~On any given As of October 2019 (pre-COVID), for an average~~ weekday, Metro ~~servesserved~~ approximately 925,000 bus boardings and 297,000 rail boardings.¹⁰

- **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.~~
- **Light Rail:** Light Rail cars will be assigned to individual lines based on a variety of factors including facility compatibility ~~of vehicle controllers with each line's signal system, the deposition of the feet during mid-life modernization programs and age so that no single light rail line must solely 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 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 Heavy Rail. The Metro B Line (Red) and D Line (Purple) operate out of the same division ~~and both are operated by, with~~ the same vehicle type.

3.5 School Trippers

School trippers are extra service operated to protect against overcrowding on bus ~~routes~~ lines serving schools. Metro's policy on school trippers is based on FTA regulations (49 CFR Part

⁹Source: lacmta.sharepoint.com/sites/MyMetro/Operations/Pages/Home.aspx

¹⁰ Figures taken from October 2019 data; selected for seasonal average and adjusted for BlueA Line (Blue) closure.

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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 ~~it meets~~ 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 or on the Metro website at www.metro.net;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 ~~two weeks~~30-days in advance providing ample time to complete an appropriate analysis of the request and to allow appropriate notification of changes to the public.

School tripper services changes must comply with the following procedures

- Service Development Managers (SDM) in the Service Planning & Scheduling Department are responsible for ~~certifying~~ensuring that all school trippers in their respective service area fully comply with Metro's School Tripper Policy as discussed herein. ~~Each SDM will submit a report prior to each major service change program that details all existing and proposed school tripper service.~~
- ~~School tripper "pink letters" require notification to the public through use of a service change notice or on Metro's webpage.~~
- Uniform standards for the documentation of daily school tripper ~~pink letters~~arrangements must be employed. This includes standardizing the ~~pink letter~~documentation form and oversight of the ~~pink letter~~documented information being input into the ~~SLS 2000~~scheduling system to ensure accuracy. All requests for new school trippers and modifications to existing school trippers must be logged into the ~~SLS2000~~scheduling system regardless ~~if~~of whether the requested new or modified school tripper is implemented.

- SDMs are responsible for working with school districts in their service area which use school tripper service. ~~For example, a specific protocol has been established with LAUSD in which their monthly Operations Coordinators' Meeting has a standing agenda item, "Metro Coordination," where special events and bell-time changes are disseminated to Metro through communication with district staff and the meeting's minutes.~~
- ~~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 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~~charter service must be approved by the Chief Executive Officer and may require a waiver from the ~~Federal Transit Administration~~FTA. Petition 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

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together under an itinerary either specified in advance or modified after having left the place of origin. Generally, for service not to be considered charter, it must meet the following tests:

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

3.6 Special Event Service

Special event services are bus routes designed to take ~~customer~~ 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](#).

3.7 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 ~~TDA/STA statute~~ [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, there are numerous Local Return fixed route transit providers who are not eligible for FAP funding, but instead are funded through Propositions A and C (1990 sales tax initiative), Measure R (2008 sales tax initiative), and Measure M (2016 sales tax initiative). These Operators are funded as “Local Return” operators (see Appendix B for a list of operators funded as Local Return and/or Included/Eligible Municipal operators).

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

- Existing performance relative to the system average;
- Value to the customer through integration into an established nearby transit provider;

- Net cost to each operator and the region;
- Completion of another operator's route network;
- Provide improved connections to a Municipal Operator's established network;
- Impacts to exiting and projected ridership;
- Generation of a net cost ~~savings~~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 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, ~~spread~~span, and frequency of the ~~existing~~existing Metro service for at least a ~~one~~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.

3.8 Alternative Service Delivery Options

Alternative service delivery options generally refers to services not directly operated by Metro, such as contract services, Municipal and Local Return Operators, taxis, and other flexible destination operations. These alternatives can complement traditional transit service. In addition, Access Services provides mandatory ADA ~~complimentary~~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 $\frac{3}{4}$ of a mile of any fixed route bus operated by the Los Angeles County public fixed route bus operators and within $\frac{3}{4}$ of a mile around Metro Rail stations during the hours that the systems are operational. Complementary paratransit service is not required to complement commuter rail and commuter bus services, since the federal ADA law does not require that these services provide complementary paratransit service.¹¹

¹¹ https://accessla.org/riding_access/overview.html accessla.org/about_us/overview.html

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

The Mobility on Demand pilot launched in January 2019 and ~~will operate~~operated for 12 months. Metro ~~has~~ partnered with Via, a provider of on-demand ~~shared rides~~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 ~~is was~~ funded in part by a \$1.35-million Mobility on Demand (MOD) Sandbox Demonstrations grant from the ~~Federal Transit Administration (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.

~~The MicroTransit Pilot Project~~Metro's microtransit program, Metro Micro, ~~is anticipated~~a three year pilot of on demand ride-source service operated with passenger vans within eight designated zones, intended to ~~launch in late 2019~~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 ~~RideCo, NoMad/Via, and Transdev to develop on-demand~~a third-party vendor for the technology to ~~increase access to Metro's transit system~~. MicroTransit~~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.

Based on experience to date, Metro Micro generally serves short trips ~~will be of~~ approximately 20 ~~mins~~minutes in vehicle time and ~~run~~ one to five miles in distance on average. These short trips ~~may connect customers~~are intended to serve as connections to other transit options such as Metro-operated bus and rail services and ~~to~~ 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 ~~and help~~ information via telephone, ~~through~~ customer service representatives, ~~on-board announcements, mobile~~ 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~~metro.net website, and ~~by~~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:
 - ~~Nextrip's next bus arrival (detour notices should be posted on this service, Metro's website, as well as other~~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:
 - Route maps and timetables, fare information, ~~and Trip Planner~~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.)

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- News and media information
- Latest information on Metro projects and programs
- Contact information
- ~~Special event information~~
- ~~Social~~ 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 ~~them with~~ enough information to help them decide whether to continue to wait for the next transit vehicle, consider alternate routes, or take another mode of transportation to complete their trip. 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., preferably 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 Numbering 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 ~~related to printed and posted information. See Appendix A 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 PSAs public service announcements.

4.2 Customer Amenities

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

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~~rail stations and major Metro-owned off-street bus facilities that allow for boarding at summarized in Table 4.1.~~

- **Benches** provide ~~comfort~~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 ~~comfort for~~waiting customers, with protection from climate conditions, and help identify the stop or station. Metro does not own or install ~~benches and~~shelters but will coordinatecoordinates with local jurisdictions on ~~their~~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 ~~at bus stop locations.~~

Table 4.1 *Customer Information and Amenities*

Amenity	Service Type	Allocation
Shelters:	Heavy Rail:	n/a
	Light Rail:	At least 80 linear ft. per bay
	Bus Facilities:	At least 6 linear ft. per bay
Seating:	Heavy Rail:	At least 12 seats
	Light Rail:	At least 10 seats
	Bus Facilities:	At least 3 seats per bay
Info Information Displays:	Heavy Rail:	At least 12
	Light Rail:	At least 10
	Bus Facilities:	At least 3
LED Displays:	Heavy Rail:	At least 8 arrival/departure screens
	Light Rail:	n/a
	Bus Facilities:	n/a
TVMs:	Heavy Rail:	At least 2
	Light Rail:	At least 2
	Bus Facilities:	n/a

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Elevators:	Heavy Rail:	At least 2
	Light Rail:	At least 1 2 for elevated/underground
	Bus Facilities:	At least 1 2 for multi-level terminals
Escalators:	Heavy Rail:	At least 4 (2 Up/2 Down)
	Light Rail:	n/a At least 2 for multi-level terminals
	Bus Facilities:	n/a At least 2 for multi-level terminals
Trash receptacles:	Heavy Rail:	At least 6
	Light Rail:	At least 2
	Bus Facilities:	At least 1 per 3 bays/2 per facility

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 ~~Major Off-Street-Bus-/Multi-Modal Transit Center-Facilities~~

When transit service is not ~~provided~~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 alternativealternative. Park & Ride lots, bicycle storage, and micro-mobility parking areas are important amenities for transit customers.

- **Park & Ride/Station Parking Facilities** provide parking for transit customers who use their cars to access a bus or train. Park & Ride facilities are usually provided at ~~station stops~~rail stations or bus transit centers such as the Metro El Monte Station, ~~and Harbor Gateway Transit Center, and at various rail stations.~~ Park & Ride lots ~~also can be found~~ in suburbs ~~to~~serve as a staging area for commuter customers. 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 ~~and other similar devices.~~ As part of the pilot, Metro has designated parking areas at ~~select~~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.¹²

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

4.4 Bus Stop Amenities

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

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

Bus stops are locations along the route of a bus line where customers safely wait to board or alight from a bus in service. Bus stops consist of a pole with a sign that includes ~~route line~~ number, destination and service qualification signage, and curb markings or parking restriction signage. Select bus stops also include a bus information cube affixed to the pole. 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 or by Metro.

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 ~~fare pre-payment~~ 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

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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 ~~continues~~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 preferably should be located at a signalized or signed crosswalk to prevent/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 ~~major~~ activity centers to provide access for uses that generally attract transit customers. ~~Hospitals~~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, but this 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. A summary of advantages and disadvantages to each location are provided in Table 4.2. TCRP Report 19 “Guidelines for the Location and Design of Bus Stops” (1996) provides a more detailed discussion.

Table 4.2 Comparative Analysis of Bus Stop Locations

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

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

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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 ~~negatively impact bus operations~~ 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
Near-Side	<ul style="list-style-type: none"> - <u>Minimizes interference when traffic is heavy on the far side of the intersection</u> - <u>Customers access buses closest to crosswalk</u> - <u>Intersection available to assist in pulling away from curb</u> - <u>Buses can service customers while stopped at a red light</u> - <u>Provides driver with opportunity to look for oncoming traffic including other buses with potential customers</u> 	<ul style="list-style-type: none"> - <u>Conflicts with right turning vehicles are increased</u> - <u>Stopped buses may obscure curbside traffic control devices and crossing pedestrians</u> - <u>Sight distance is obscured for crossing vehicles stopped to the right of the bus.</u> - <u>The through lane may be blocked during peak periods by queuing buses</u> - <u>Increases sight distance problems for crossing pedestrians</u>
Far-Side	<ul style="list-style-type: none"> - <u>Minimizes conflicts between right turning vehicles</u> - <u>Provides additional right turn capacity by making curb lane available for traffic</u> - <u>Minimizes sight distance problems on approaches to intersection</u> - <u>Encourages pedestrians to cross behind the bus</u> - <u>Requires shorter deceleration distances for buses</u> - <u>Gaps in traffic flow are created for buses re-entering the flow of traffic at signalized intersections</u> 	<ul style="list-style-type: none"> - <u>Intersections may be blocked during peak periods by queuing buses</u> - <u>Sight distance may be obscured for crossing vehicles</u> - <u>Increases sight distance problems for crossing pedestrians</u> - <u>May increase number of rear-end accidents since drivers do not expect buses to stop again after stopping at a red light</u>

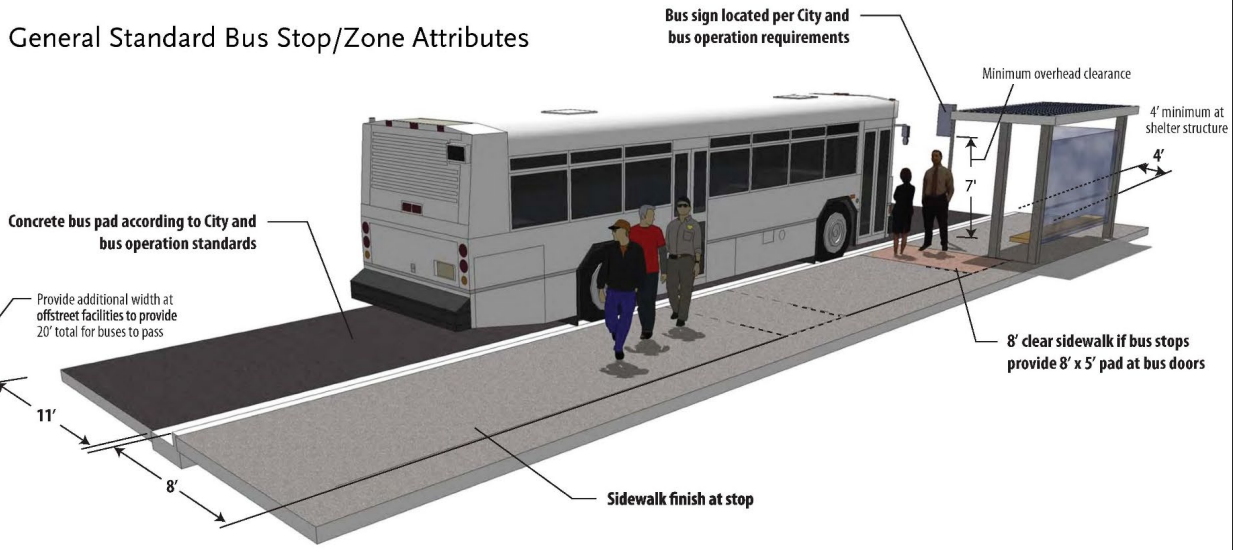
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	<ul style="list-style-type: none"> - <u>Allows bus routes that operate with signal priority to reap benefits of the technology at signalized intersections.</u> 	
Mid-Block	<ul style="list-style-type: none"> - <u>Minimizes sight distance problems for vehicles and pedestrians</u> - <u>Passenger waiting areas experience less pedestrian congestion</u> 	<ul style="list-style-type: none"> - <u>Requires additional distance for no-parking restrictions</u> - <u>Encourages customers to cross street at mid-block (jaywalking)</u> - <u>Increases walking distance for customers crossing at intersections and for transferring customers</u>

Source: FTA webpage (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. TCRP 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.

General Standard Bus Stop/Zone Attributes



Note: City of Los Angeles Requires its standard bus shelter to be 12-14 feet long, 4 1/2' wide, and 9 1/2 high

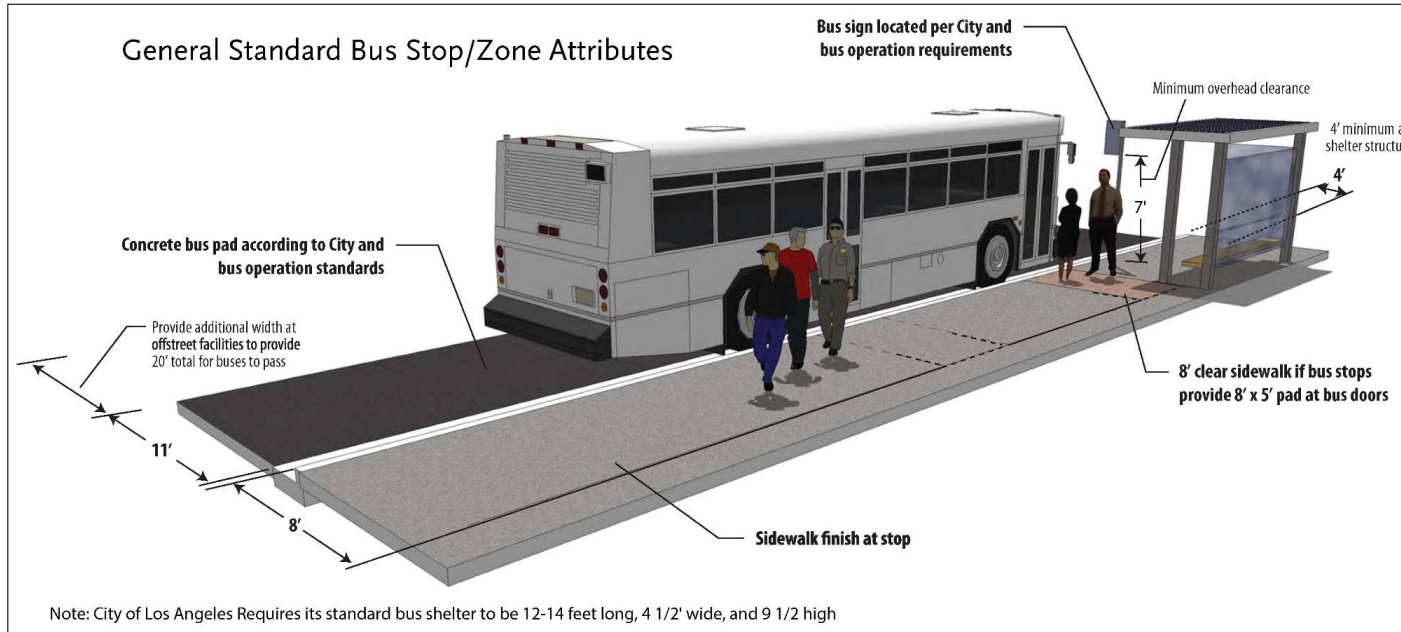


Figure 4.1 General Standard Bus Stop/Zone Attributes

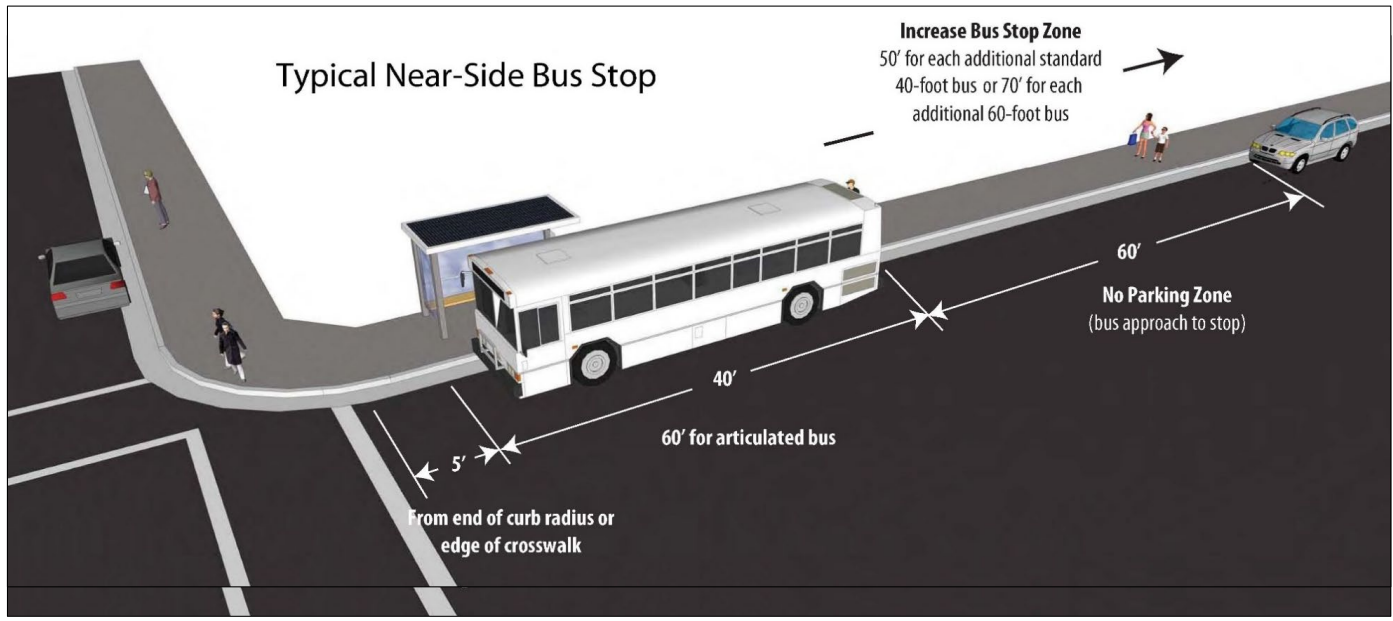


Figure 4.2 Typical Near-Side Bus Stop

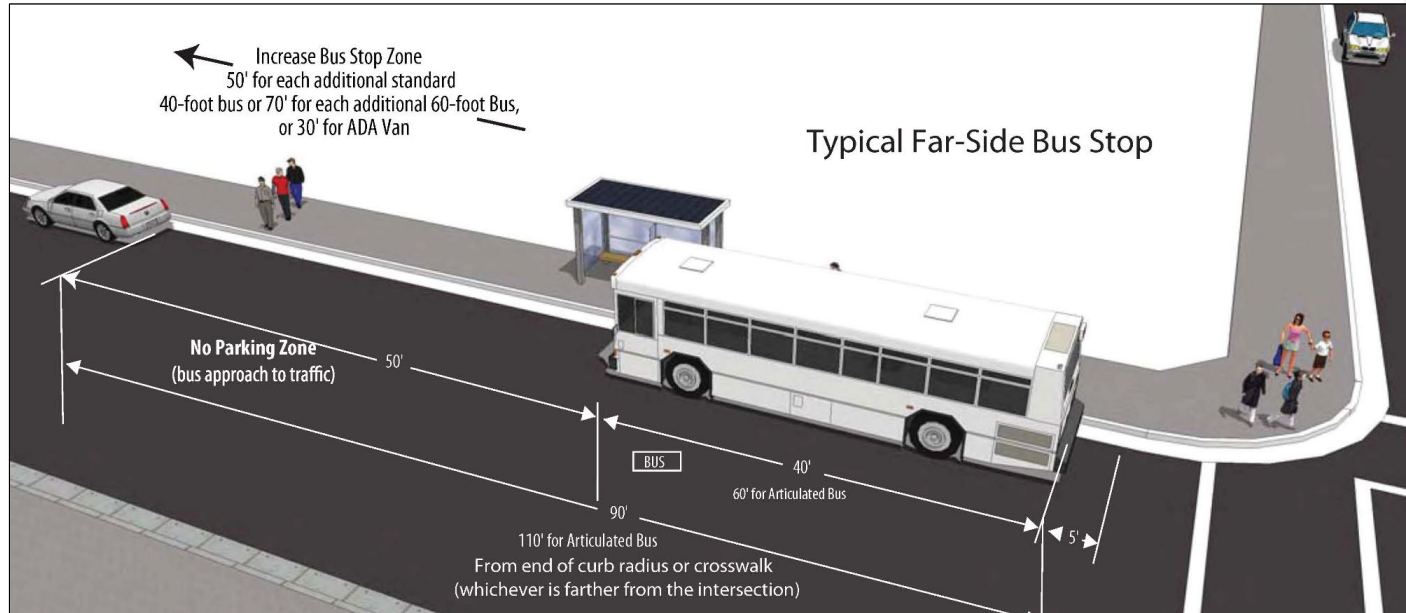


Figure 4.3 Typical Far-Side Bus Stop

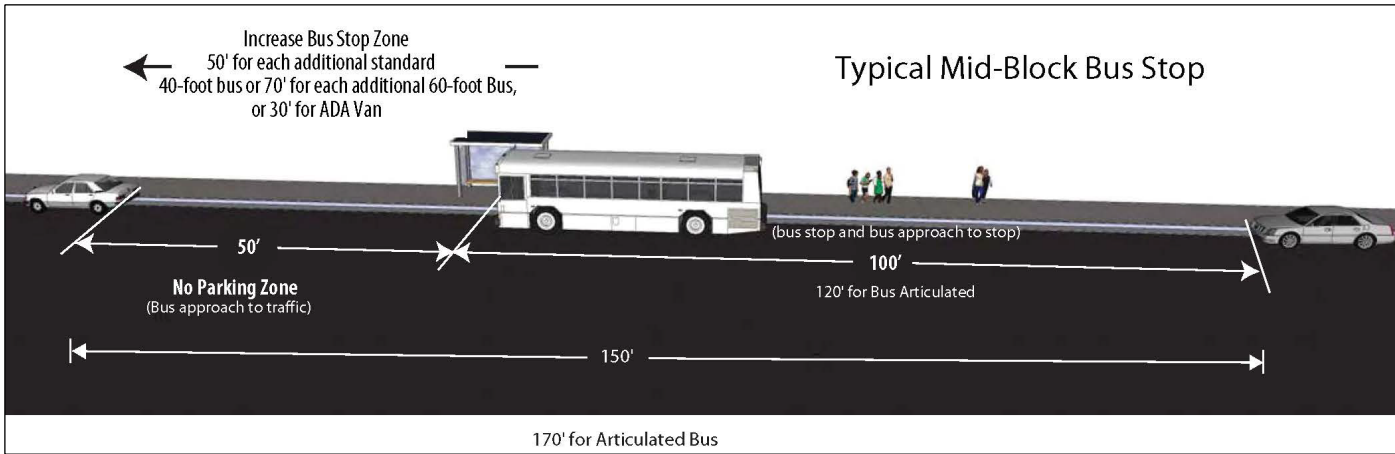


Figure 4.4 Typical Mid-Block Bus Stop

SECTION 5: SERVICE PERFORMANCE EVALUATION

~~The 2019~~This Metro TSP establishes a set of performance criteria and standards that balance 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~~ criteria measure how well the transit system can attract customers to use the system more often and for new trip purposes.

5.1 Route Performance Index

The Route Performance Index (RPI) is a conventional industry measure used to ensure ~~Metro~~transit services are effective and provide a reasonable return on investment. ~~The 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 (RSH) ~~is a~~ is used as a measure to determine how effectively resources are used on a given line. This measure is determined by dividing the total number of boardings by the RSHs operated. A route having a higher number of boardings per RSH represents a better utilization of ~~resources such as buses, operators and fuel~~ 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 ~~system~~ 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:

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

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

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

5.2 Customer Experience

Providing high quality mobility options that enable people to spend less time traveling on the transit network requires that ~~we are~~ service be available when and where ~~our~~ customers want to travel, ~~we are~~ that service be competitive enough to have ~~them~~ customers be willing to try ~~us~~ transit over other options, and ~~we are~~ that service be attractive enough to ensure ~~they~~ riders return for the same trip and ideally for more trips. Therefore, ~~our~~ the recommended measures of success are aimed at evaluating the bus network implemented under the NextGen Bus Plan within these three ~~stages of~~ elements, referred to as Find, Try, and Rely. These customer-focused measures help to balance ~~our~~ 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 ~~is Readily Available~~ are readily available
 - Percentage of trip ends within ¼ mile of transit stop
 - Trip ~~planner, app, planning apps~~ and website usage rates
 - *Percent of public considering transit (survey-based)*
- ~~The Bus System~~ system is ~~Easy~~ easy to ~~Understand~~ understand and ~~Use~~ use
 - Percentage of out-~~of~~ direction travel
 - Percentage of route miles with all-day frequent service ~~(≤15 min headways)~~
 - *Percent of public ~~understand~~ 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:

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~~Bus Goes Where/When Customers Want~~

~~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~~competitive
 - *Door-to-door travel times*
 - *Competitiveness of transit time to drive time*
 - System-wide boardings
- Coverage is ~~Adequate~~adequate
 - *Population within ¼-mile of transit stops by frequency of service*
- Transit ~~Journeys~~journeys are ~~Simple~~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~~system is ~~Effective~~effective and ~~Productive~~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~~reliable
 - Headway regularity on frequent routes
 - On-time performance
 - Real time arrival accuracy
- Customers are ~~Satisfied~~satisfied
 - Rides per week for frequent and infrequent users
 - *Percentage of customers satisfied with Metro services (survey-based)*

5.3 Service Evaluation Process

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

- **Priority 1** – Restructure services to increase system speed, on-time performance, service frequencies consistent with NextGen Bus Plan, productivity, and balance loads.
- **Priority 2** – Restructure services that are duplicative with Metro Rail, other Metro Bus routes 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.

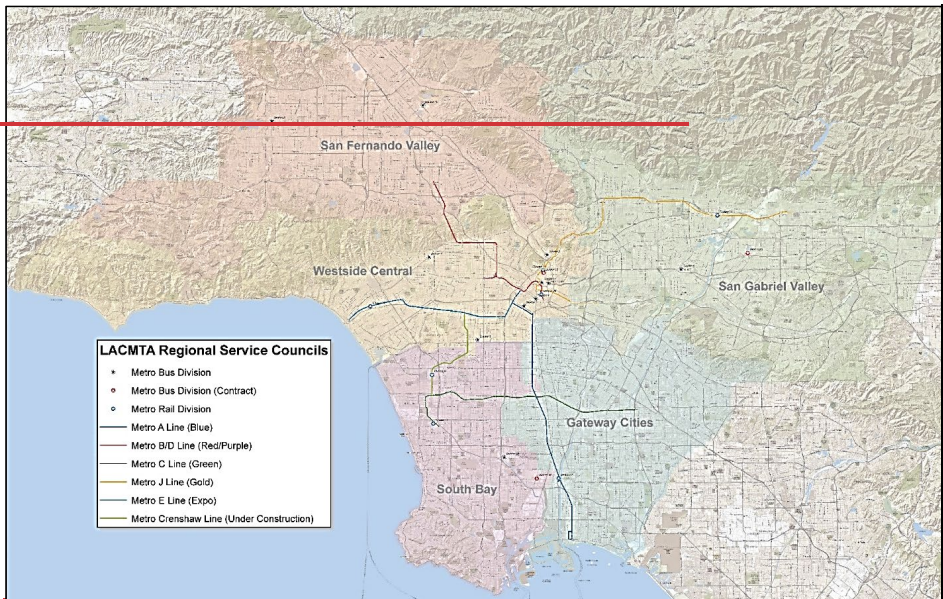
Service Change Performance Evaluation

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

SECTION 6: SERVICE CHANGE PROCESS

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



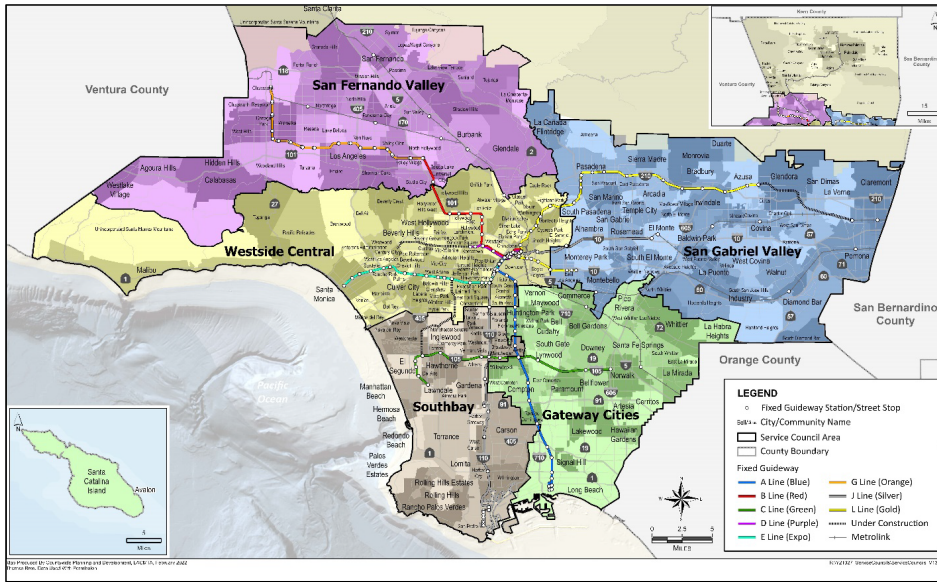


Figure 6.1 Metro Service Council Areas/Regions

~~Metro~~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 ~~route~~major service changes, excluding turnaround and out of service route modifications, ~~which exceed a cumulative \$100,000 annual operating cost change.~~ All major service-level changes that require public hearings will be brought to the MSCs who will conduct public hearings then vote to approve, modify, or deny the service change proposals. Any significant temporary service change should be brought to the Council for their information but not approval.

Each ~~MSC will be~~Regional Service Council is responsible for holding public hearings that relate to major service changes (as defined in Title VI Section 6.3 below) to Metro bus and rail lines

that provide significant service within their ~~Region~~region, consistent with State and Federal law and with Metro policies pertaining to public hearings. Following receipt of public input, the ~~Councils~~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 ~~will be~~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 and Fare Change Proposals	5-7
Service Council Review and Input	6-7
Confer with Labor Relation and Union Representatives	6-7
Public Review and Input	5
Finalize Service Change Program	4-5
Program Approval	3-4
Develop New Service Schedules	2-4
Print Public Timetables and Operator Assignments	1-2
Fabricate Decals for Bus Blades	1-2
Take Ones/Rider Alerts on Buses	0.5-1

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

6.1 Service Change Programs

Service change programs are developed based on input generated by a wide variety of sources including ~~customer~~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~~

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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)¹³, bi-annual service changes will be implemented each year in June and December. Metro service changes are conducted to modify service based on customer demand, running ridership and load factors, on-time adjustments, performance, other performance monitoring results, rider and community input, and budget considerations. A service change process workflow is provided in Figure 6.2.

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

- Define and evaluate the impact on customers;
- Determine whether a proposed major service change or fare increase will have disparate adverse impact on minorities or a disproportionate burden on low-income individuals by performing a Title VI Equity Analysis;
- Consider alternatives if a disparate adverse impact to minorities or disproportionate burden on low-income individuals are identified;
- Develop appropriate mitigation measures if needed; and
- ~~– Determine whether a public hearing is required~~
- Conduct required public hearing for all major service changes (see definition in Section 6.3 Title VI Equity Analysis).

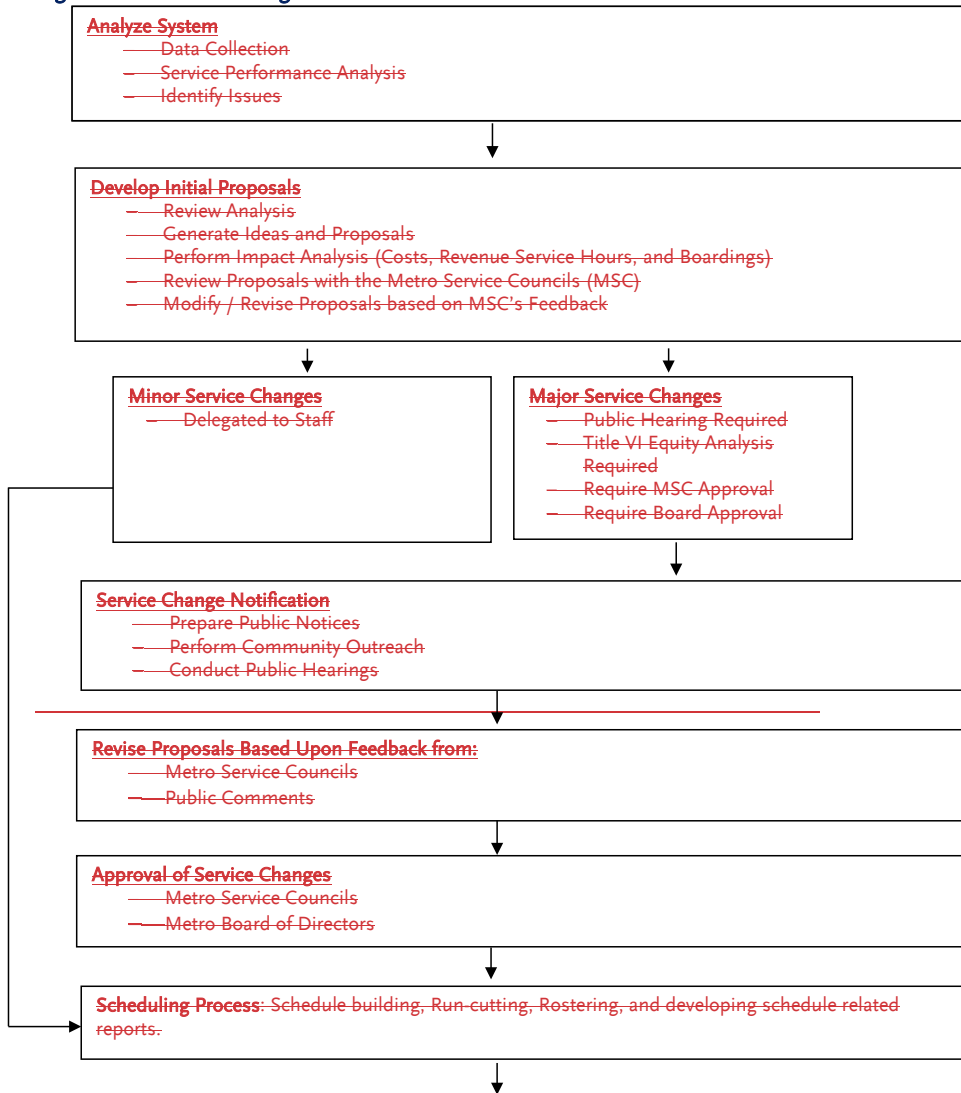
Changes to the rail system occur less frequently. They generally relate to the opening of a new line or adjustments to the frequency or hours of operation for existing service. Changes in rail and bus service follow the same planning and implementation process.

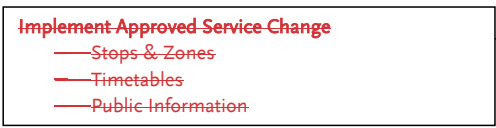
6.2 Title VI ~~and Metro's Equity Platform~~ Analysis

~~Metro's Equity Platform was adopted in February 2017.~~ The framework for equity begins with Title VI of the Civil Rights Act of 1964 which protects minority and low income communities from disparate and disproportionate negative impacts as a result of major transit service changes. Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations provides further protection of low-income communities from disparate and disproportionate negative impacts.

¹³ The United Transportation Union (UTU) merged with the Sheet Metal Workers Union in 2014 to form SMART.

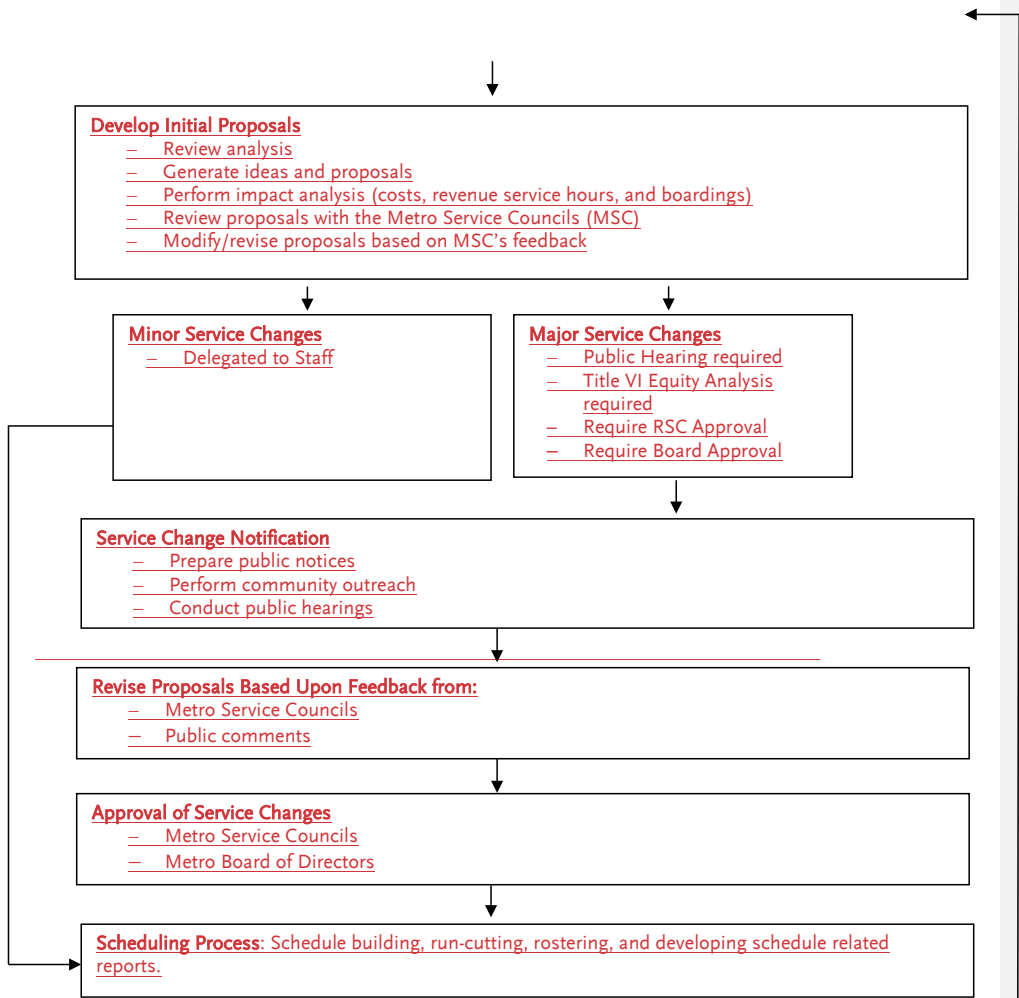
Figure 6.2 - Service Change Process





6.3 Title VI Equity Analysis

In addition,





Metro ~~will~~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.

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

In accordance with FTA’s Title VI Circular 4702.1B “Title VI Requirements and Guidelines for Federal Transit Administration Recipients” (Effective October 1, 2012), Metro’s Administrative Code was revised to incorporate FTA’s requirements under Title VI. The Metro Board adopted the updated Administrative Code in January 2013. Based on this Circular, Metro is required to perform a Title VI Equity Analysis on all proposed major service changes or fare changes prior to implementation. The goal is to ensure there is no *disparate adverse impact* to minorities or *disproportionate burden* on low-income individuals created by a major service or fare change.

The following definitions and criteria were updated and adopted by the Board in September 2019. The 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.

6.43 Metro's Equity Platform

~~Metro's Equity Platform builds upon The NextGen Bus Study aimed to go above and beyond Title VI in two distinct ways. First, it goes beyond ethnicity and requirements to analyze disparate impacts and disproportionate burden on minority and low-income populations to determine 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.~~

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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.

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

- I. **Define and Measure** – Use Title VI 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 the customer-focused performance metrics established within this report Transit Service Policy document with particular focus on communities 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 thea robust countywide public engagement effort, including that included engaging customers onboard on board buses, at outreach sessions at community events, stakeholder briefings, interactive public workshops, digital engagement, and print advertising. Comments received will be were incorporated into the systemwide service design as well as individual route changes.
- III. **Focus & Deliver** – Service design concepts (discussed above) have been 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 security safety on board buses and at bus stops. These concepts, described below, will be were used to redesign the routes and schedules for the NextGen Bus Plan.

In addition, a Transit Propensity Index score has been 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 ~~security~~safety, accurate real time arrival information, cleanliness, and improved first/last mile service are critical to attracting customers to use transit.

~~Train & Grow~~—The Board-adopted Transit Service Policy will be updated to reflect the Regional Service Concept as adopted by the Board, including the goals and objectives of the bus network, measures of success, route and network design concepts based on public input and data analysis, and ~~the~~ framework ~~referenced~~ for balancing tradeoffs in consideration of Metro’s Equity Platform. ~~In addition, an~~

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

6.4 Public Outreach

Prior to a public hearing, ~~several~~ public outreach ~~efforts are made~~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*

<u>Activity</u>	<u>Months Prior to Service Change</u>
<u>Service Planning staff reviews preliminary proposals.</u>	<u>7</u>
<u>Metro Service Councils set dates of public meetings, publish hearing notices in local newspapers and send LEP and minority communities written notification to elected officials, other operators and key stakeholder groups. Confer with Labor Relations and Union representatives.</u>	<u>5-6</u>
<u>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.</u>	<u>3</u>
<u>Communication Department posts information proposed changes on Metro’s website.</u>	<u>5</u>

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<u>Operations staff distributes meeting notices on board vehicles. Public outreach at key transportation centers, bus stops, and on-board customer interface occurs as well.</u>	<u>Minimum one month prior to public hearings</u>
<u>Metro Service Councils conduct public hearings.</u>	<u>4</u>
<u>Metro Service Councils approve final service change program.</u>	<u>3</u>
<u>Metro Board receives the Service Councils' approved service change program as a Receive and File item.</u>	<u>2</u>
<u>Communication Department prepares press releases on final program and program brochures are distributed on-board Metro vehicles and other outlets.</u>	<u>1</u>

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.

Table 6.2 — *Timeline for Public Notification Activities*

Activity	Months Prior to Service Change
Service Planning staff reviews preliminary proposals	7

Metro Service Councils set dates of public meetings, publish hearing notices in local newspapers and send LEP and minority communities written notification to elected officials, other operators and key stakeholder groups. Confer with Labor Relations and Union representatives.	5.6
Service Planning staff provides information on proposed changes to the Metro Bus Operators Subcommittee and at quarterly meetings held with the region's municipal and local operators.	3
Communication Department posts information proposed changes on Metro's website.	5
Operations staff distributes meeting notices on board vehicles. Public outreach at key transportation centers, bus stops, and on board customer interface occurs as well.	Minimum one month prior to public hearings
Metro Service Councils conduct public hearings.	4
Metro Service Councils approve final service change program.	3
Metro Board receives the Service Councils' approved service change program as a Receive and File item.	2
Communication Department prepares press releases on final program and program brochures are distributed on board Metro vehicles and other outlets.	1

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

6.5 Public Hearing Process

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

Under Metro's Service Council ~~by laws~~ 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 ~~at their discretion in order to be more accessible to those customers who would be affected by the proposed service changes.~~ When a major service change program ~~requires three or more requiring the associated~~ Councils to hold public hearings ~~affects three or more service regions.~~

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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. These proposals are subject to Metro Regional Service Council and Metro Board approval.

6.6 Implementing Minor Changes on an Interim Basis

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

APPENDICES

APPENDIX A: Metro Line Identification

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

The line identification standards shall be adhered to when identifying Metro Bus and Metro Rail lines by name. The standards shall be implemented across all internal and external mediums including but not limited to, rail station signs, bus stop signs, bus station signs, vehicle head signs, vehicle destination signs, timetables, ~~the Metro Transit Trip Planner,~~ HASTUS and ATMS¹⁴. The descriptions and chart below help explain the standards, and how and when they should be implemented.

General Standards

- Transit ~~service~~ lines will be identified using a combination of line number, destinations (both terminals) and the corridor(s) the line travels along. Metro Rail and Metro BRT service which previously used the established operational names (e.g., Metro Red Line, Metro Purple Line, Metro Orange Line) are being transitioned to ~~names based on~~ a letter-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.

¹⁴ HASTUS (Horaires et Assignments pour Systems de Transport Urban et Semi-Urban) refers to the software used to create schedules. ATMS (Advanced Transportation Management System)

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- Electronic customer information includes the line information presented on ~~metro.net~~[metro.net](#) and underlying electronic databases such as HASTUS and ATMS.
- ~~The Metro Transit Trip Planner~~[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.](#)

<u>Line Numbers</u>	<u>Type of Service</u>
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.

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- 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.

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

Metro's Rail Line Identification, Naming, and Color Conventions

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

~~The current planned designations follow:~~

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

The Gold Line has been assigned the letter L for clarity and consistency systemwide ~~while. The service plans are being developed~~plan for the Regional Connector Project. ~~When will result in the Regional Connector is completed, L designation being phased out and the appropriate~~relevant sections of the Gold Line will become the A Line ~~to Azuza~~ or the E Line.

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to East LA. The Crenshaw Line will be known as the K Line with a pink color.

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

Operator	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride	Municipal	Local Return	General Dial a Ride
		• Baldwin Park		X			
	Member cities served by Foothill Transit continued						
Orange Valley Transit Authority (AVTA)		• Bradbury					
		• Claremont					
		• Covina	X				
		• Diamond Bar	X				
City of Unincorporated Los Angeles		• Duarte					
		• Glendora					
		• Industry		X			
		• Irwindale	X				
		• La Puente	X				
		• La Verne	X				
		• Monrovia	X				
Transit serves:		• Pasadena					
Orange Beach		• Pomona					
San Juan Capistrano Beach		• San Dimas	X				
Temecula Beach		• South El Monte					
Yuba		• Temple City					
		• Walnut	X				
		• West Covina	X				
		Gardena	X		X	X	
		Glendale	X			X	
		Glendora	X			X	
		Hawaiian Gardens				X	X
		Hawthorne	X			X	
		Hermosa Beach	X			X	
		Huntington Park	X			X	
		Inglewood	X			X	
		La Cañada Flintridge	X			X	X
		La Habra Heights	X			X	X
		La Mirada	X				X
		La Puente		X		X	
		La Verne	X				
		Lakewood	X				
		Lawndale	X			X	
		Lomita	X				
Transit serves member cities of		Long Beach			X	X	
		Los Angeles	X		X	X	
		Los Angeles County				X	

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Operator	Municipal	Local Return	General Dial a Ride	Special Purpose Dial a Ride	Municipal	Local Return	Gen Dial a Ride	Inserted Cells
	Santa Clarita Valley Transit (SCVT) serves							Inserted Cells
Beach	• Santa Clarita	X			X	X		Inserted Cells
	• Portions of Unincorporated Los Angeles County	X						Inserted Cells
	Santa Fe Springs					X		Inserted Cells
	Santa Monica	X			X	X		Inserted Cells
ark	Sierra Madre	X				X		
	Signal Hill	X				X	X	
s Estates	South El Monte	X					X	
	South Gate	X				X		Inserted Cells
	South Pasadena	X				X		Inserted Cells
	Temple City	X					X	X
	Torrance	X			X	X		Inserted Cells
each	Walnut	X						Inserted Cells
s Estates	West Covina	X				X		Inserted Cells
	West Hollywood					X		Inserted Cells
	Westlake Village		X			X		Inserted Cells
do	Whittier	X				X		Inserted Cells
Gabriel	Total	X	X		1213	6269		Inserted Cells
				X				Inserted Cells

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.

Los Angeles County
Metropolitan Transportation Authority

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