

Los Angeles County  
Metropolitan Transportation Authority

# FIVE-YEAR TRANSIT SERVICE & CAPITAL IMPROVEMENT PLAN FY2014 - FY2018

JUNE 2014

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## SECTION 1: INTRODUCTION & OVERVIEW

This is the Los Angeles County Metropolitan Transportation Authority (Metro) Five-Year Transit Service & Capital Improvement Plan (TSCIP). This plan was formerly referred to as the Short Range Transit Plan (SRTP). Metro's last formalized five-year SRTP was published in March 2000. In 2005, in lieu of an updated SRTP, Metro was court ordered to develop and implement a five-year New Service Plan (Metro's 10-Year Consent Decree's Last and Final Order) that expanded its Rapid Bus Program, continued the operation of 11 pilot bus lines, and increased service levels. An update to the SRTP was initiated in 2009. It was never finalized because it primarily focused on the Metro Connections Service Restructuring Concept, which ultimately was never implemented. The TSCIP is Metro's updated five-year short range transit plan.

The TSCIP is a five-year implementation plan (FY2014 – FY2018) for new transit services that will be implemented and capital projects that will be completed or initiated during the next five years. This plan is consistent with the goals and strategies of Metro's 2009 Long Range Transportation Plan (LRTP), which lays out a 30-year vision for Los Angeles County's transportation system to 2040.

Metro recognizes that a strategic balanced approach to planning is needed to address traffic and congestion into the future. The range of new transit and highway projects outlined in the LRTP serves as Metro's vision for improving mobility over the next thirty years as we add more residents to the County. In addition, the LRTP addresses non-motorized modes of travel (i.e. walking & bicycling), environmental concerns (i.e. air quality & greenhouse gas emission reductions), and funding requirements (constrained & unconstrained) beyond identified funding sources such as Measure R, Proposition A, and Proposition C (designated funding from sales tax in LA County).

The primary focus of the TSCIP is the transit operations element of the LRTP over the next five years. The following documents contributed to the development of this plan. These documents were developed to address specific components of the LRTP.

- **Metro's Capital Improvement Plan (CIP):** This plan identifies planned improvements to existing transit facilities such a bus and rail divisions, the building of new transit facilities, and bus and rail fleet procurements.
- **Metro's Bus Fleet Management Plan (BFMP):** This plan focuses on bus fleet investment needs based on retirement eligible buses, mid-life overhauls, Congestion Mitigation and Air Quality (CMAQ) regulations, and service requirements. The primary focus of this plan is to develop a 10-year bus fleet procurement schedule that shows the number of buses



being retired, and the number of buses being procured by size and type each fiscal year.

- **Metro’s Rail Fleet Management Plan (RFMP):** This plan focuses on rail fleet investment needs based on retirement eligible rail cars and mid-life overhauls. The primary focus is to develop a rail fleet procurement plan based on new rail projects, age of fleet, and service requirements.
- **Metro’s Office of Management & Budget Department (OMB) Budget Forecast:** OMB developed an operational budget forecast that spans the next ten years based on projected service requirements. The first five years of this forecast has been incorporated into the TSCIP.

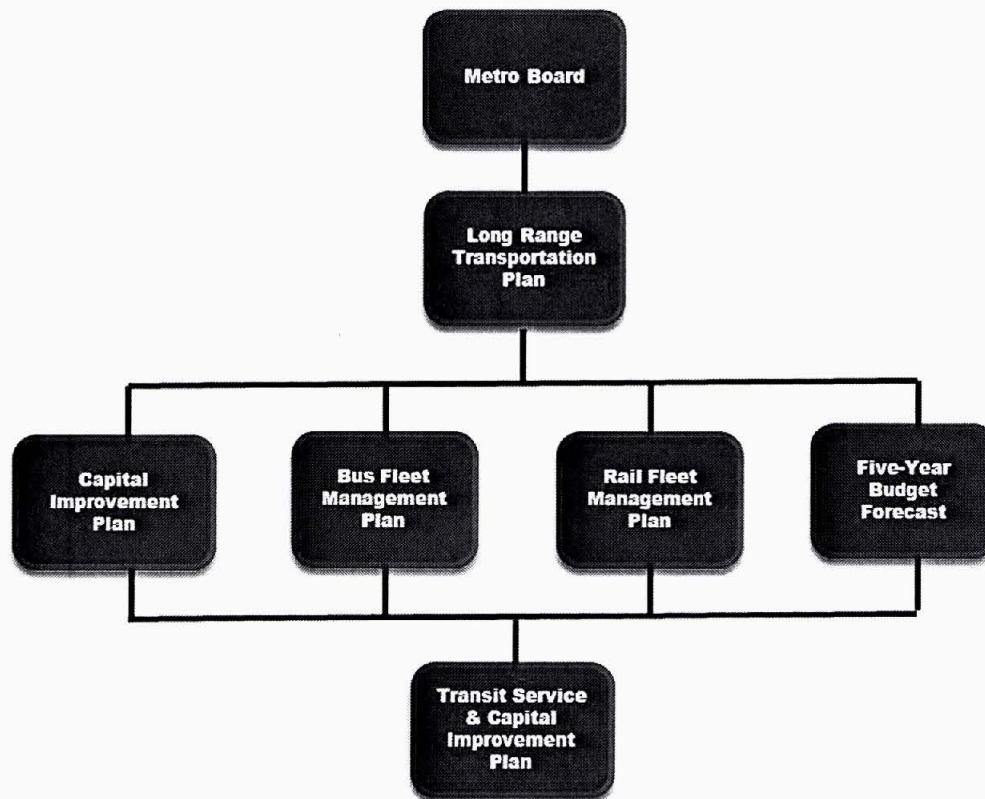


Figure 1.1 Relationship of Contributing Documents to the TSCIP

In addition, there are other coordinating/implementing documents that are concurrently being developed. Some of the elements of the following draft documents have been incorporated into the TSCIP where appropriate.

- **Metro’s Short Range Transportation Plan (SRTP):** The SRTP focuses on the phasing of transportation improvements over the first ten years of

the LRTP. This plan also feeds into the Regional Transportation Improvement Program (RTIP), grant applications, and corridor studies.

- **Metro's Transit Asset Management Plan (TAMP):** The TAMP will aid Metro in maintaining its transit system in a State of Good Repair (SGR). TAMP will allow Metro to follow the most current FTA requirements and guidelines concerning age-based criteria and useful life definitions to determine when assets should be replaced.
- **Metro's Regional Short Range Transit Plan (RSRTP):** As the County's transit network changes (i.e. expansion of Metro's Rail Network) it will provide additional opportunities for Metro and municipal transit operators to enhance connectivity to the rail network, leverage cost efficiencies through a coordinated effort, and increase bus and rail ridership. The RSRTP will be developed through a collaborative process and integrates the County's transit operators' individual Short Range Transit Plans into a Regional Short Range Transit Plan.

The TSCIP takes into account financial constraints, project impacts, and changing demographics to identify threats and opportunities to assist Metro staff in their ongoing decision-making process as this plan is implemented. This plan is organized as such:

Section 1 - Introduction & Overview

This section provides a brief overview of the TSCIP and how it is organized. This section also provides an overview of Metro and its mission, goals, and objectives.

Section 2 - Metro's Current Transit System

This section provides a detailed description of the various transit services Metro operates and identifies the characteristics of each.

Section 3 - Challenges & Opportunities

This section seeks to identify the potential challenges and opportunities Metro may face as this plan is implemented over the next five years.

Section 4 - New Transit Projects & Studies:

This section provides a five-year outlook on new transit projects that will be completed or under construction as well as ongoing transit studies.

Section 5 - Metro's Fare Structure & Policy

This section provides an overview of Metro's current fare structure and a brief discussion on a fare policy study that was initiated in early 2013 by the Office of



Management and Budget. This study investigates alternatives for restructuring Metro's price structure to simplify fare payment, reduce fare evasion, and decrease fare subsidies.

Section 6 - Capital Improvement Projects

This section discusses capital improvement projects on existing transit facilities, new capital projects underway, and planned capital projects; structural as well as fleet replacement (bus & rail).

Section 7 - Operations & Capital Funding

This section discusses operations and capital funding and projected budget forecasts.

**Los Angeles County Metropolitan Transportation Authority (Metro)**

Metro is the 3<sup>rd</sup> largest transit provider in the United States and is the major transit provider in Los Angeles County providing both fixed route bus and rail services to more than 9.6 million residents in its service area. Metro's service area is approximately 1,433 square miles. Metro's transit operations provides essential mobility, helps reduce traffic congestion, and improves air quality. Over 1.1 million board Metro buses and over 350,000 board Metro trains on any given weekday. Metro experiences over 470 million boardings annually. In addition to its transit system, Metro designs, builds and funds a number of transportation projects and administers funds to a number of other transit providers, including Access Services, the principal ADA paratransit provider for the county.

**1.1 METRO VISION, MISSION, AND CORE BUSINESS GOALS**

Vision

Safe, clean, reliable, on-time, and courteous service dedicated to providing Los Angeles County with a world-class transportation system

Mission

Metro is responsible for the continuous improvement of an efficient and effective transportation system for Los Angeles County

Core Business Goals

- Goal 1: Improve Bus & Rail Transit Services
- Goal 2: Provide Excellent Customer Service
- Goal 3: Deliver Metro's Bus & Rail Projects
- Goal 4: Ensure Civil Rights Compliance
- Goal 5: Deliver Metro's Highway & Freeway Projects
- Goal 6: Increase Emphasis On Safety & Security

## 1.2 ORGANIZATIONAL STRUCTURE

Metro is governed by a Board of Directors comprised of:

- Five Los Angeles County Supervisors
- Mayor of Los Angeles
- Three Los Angeles mayor-appointed members
- Four city council members representing the other 87 cities in Los Angeles County
- One non-voting member appointed by the Governor of California

In addition, there are five Metro Service Councils that oversee transit operations in their respective service area as well as a number of committees and sub-committees that assist the Metro Board and staff in Metro’s goals and objectives.

Metro is a functionally organized agency. Each functional unit contains a number of departments that house personnel with related specialized skills grouped by similarities serving a specific service. Metro Operations is responsible for service planning, transit operating schedules, bus and rail operations, bus and rail maintenance, and capital transit projects.

### **Councils and Advisory Committees**

#### **Metro Service Councils**

Metro’s service area is divided into five distinct service areas (Figure 1.2):

- Gateway Cities
- San Fernando Valley
- San Gabriel Valley
- South Bay
- Westside/Central

Each service area is represented by a community-based Metro Service Council (MSC) and provides Metro Staff a regional perspective. All five work closely with Metro’s Service Planning & Scheduling Department to recommend and approve changes that relate to their service area. Their purpose is to help Metro understand the needs of its riders better and provide efficient and effective service.



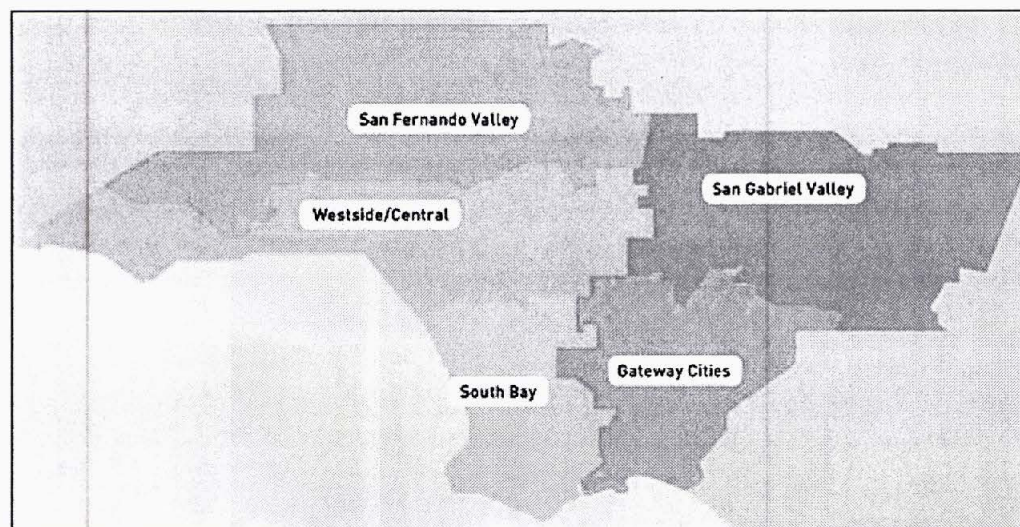


Figure 1.2 Metro Service Areas

### Other Advisory Committees

In addition to the Service Councils there are advisory committees that assist Metro's Board of Directors by providing input on a number of issues such as ADA, technical and policy issues, and public concerns as noted below.

- *Accessibility Advisory Committee (AAC)*: The AAC was created to address the needs of senior citizens and people with disabilities such as potential barriers that may impede accessibility in any way, shape, or manner related to Metro's operations.
- *Citizens Advisory Council (CAC)*: The CAC conducts public meetings collecting public input on matters of interest that concern the community. The CAC makes recommendations to Metro's Board with respect to community concerns. Issues may also be assigned to the CAC by the MTA for its review, comments, and recommendations. The CAC may appoint committees and subcommittees for further review and studies.
- *Technical Advisory Committee (TAC)*: The TAC is a legislatively mandated committee which provides countywide technical assistance by reviewing, evaluating and making recommendations for Metro staff's consideration on various transportation proposals, projects and programs affecting Los Angeles County. Transportation issues discussed include, but are not limited to, funding, operations, construction and maintenance of streets and freeways, bus and rail transit, bikeway and pedestrian improvements, sustainability, demand and system management, air quality improvements and goods movement. The TAC also serves as a communication liaison among jurisdictions and Metro. The TAC has four standing subcommittees that support its functions and responsibilities as noted below. Each Subcommittee reviews, comment upon, and make

recommendations on a variety of transportation issues related to policies, programs, operations, and accessibility.

- *Bus Operations Subcommittee (BOS)*: Membership consists of Metro and 16 other municipal transit operators who receive funding from the Formula Allocation Procedure (FAP).

- |                                      |                               |
|--------------------------------------|-------------------------------|
| 1. Antelope Valley Transit Authority | 9. La Mirada Transit          |
| 2. Arcadia Transit                   | 10. LADOT                     |
| 3. Beach Cities Transit              | 11. Long Beach Transit        |
| 4. Claremont Dial-A-Ride             | 12. Montebello Bus Lines      |
| 5. Commerce Municipal Bus Lines      | 13. Norwalk Transit           |
| 6. Culver CityBus                    | 14. Santa Clarita Transit     |
| 7. Foothill Transit                  | 15. Santa Monica Big Blue Bus |
| 8. Gardena Municipal Bus Lines       | 16. Torrance Transit          |

The BOS provides technical input/assistance to Metro by reviewing, evaluating, and making recommendations on various transportation policies, operating issues, and transportation financing programs in Los Angeles County.

- *Local Transit Systems Subcommittee (LTSS)*: The LTSS provides technical input on issues affecting local transportation systems to include fixed route circulation, commuter services, paratransit, transportation demand management and rail feeder services.
- *Streets & Freeways Subcommittee*: The S&F is a technical subcommittee of Metro’s TAC. The Subcommittee reviews and provides technical input on projects and issues related to seaports and airports access, goods movement, bikeway and pedestrian improvements, traffic systems management, and streets and freeways operations and programming.
- *Transportation Demand Management (TDM)/Sustainability Subcommittee*: The Subcommittee provides technical input on TDM, sustainability and air quality issues, bicycle and pedestrian improvements, and Metro plans and programs which implement a countywide transportation system that increases multi-mobility, fosters walkable and livable communities, and minimize greenhouse gas and environmental impacts.

### 1.3 TRANSIT GOALS AND OBJECTIVES

Metro’s operational goals and objectives are to provide a high quality regionally coordinated transit system that is reliable, fully integrated, convenient, simple to use, and provides maximum benefit to Metro customers in light of scarce resources. In this effort, Metro developed a service concept that defines the roles of Metro bus, rail, and municipal operations, and identifies and prioritizes



essential service quality attributes that serve as policy guidelines. The key principles of its service concept are:

- *Service Priorities:* Service should be focused first in high-density areas and be scaled to fit the overall density and passenger demand in the service area.
- *Service Design:* The network should be coordinated and designed to be simple and user-friendly to increase trip-making by existing riders and attract new riders.
- *Service Attributes:* The system should provide high quality service to better serve existing riders and attract new riders. Service quality priorities include:
  - Reliability
  - Fast travel options
  - Real-time, readily-available information
  - Clean and safe transit vehicles, stops, and all transit facilities (e.g. Transit Centers, Park and Ride, Rail Stations, etc.)
- *Governance:* Metro should serve as a facilitator to coordinate services among operators in the region.

These service concepts served as the foundation for the development of policy guidelines reflected in Metro's 2012 Transit Service Policy (TSP). Metro's 2012 TSP provides quantitative tools to evaluate its transit system that may be used to identify opportunities for service improvements and ensure the regional transit network is adjusted accordingly to achieve the goals and objectives of the service concept.

#### **1.4 TRANSIT SYSTEM**

Metro, the primary transit provider in Los Angeles County, operates approximately 1,900 peak buses and 190 heavy and light rail cars. Metro currently operates 171 bus routes and 6 rail lines: Bus Rapid Transit (BRT), Rapid Bus, Express, Limited, Local, Shuttle, Light Rail, and Heavy Rail.

**Note:** 18 local/shuttle bus routes are operated by private contractors.

##### Law Enforcement

To ensure the safety of its patrons, Metro deploys law enforcement services on its transit system. These services are currently provided by the Los Angeles County Sheriff Department's Transit Services Bureau, via contract, in conjunction with Metro's Transit Security Department.

## **SECTION 2: METRO'S CURRENT TRANSIT SYSTEM**

Metro's service area is over 1,400 square miles and is divided into five distinct service areas. Metro supports transit operation throughout Los Angeles County with an annual budget of \$2.8 billion. Metro spends about \$933.9 million on directly operated bus service and \$322.7 million on directly operated rail service. The remainder of the budget goes toward fare subsidies and funding other local operators.

Metro's transit system consists of light rail, heavy rail, and bus operations. Metro's bus lines consist of both directly operated services and contract services. Metro operates the lion's share of all bus services provided in the region. However, municipal operators provide additional public bus services in areas of the region where Metro provides limited service or no service at all.

Metro operates 171 bus routes, of which 18 routes are contracted out, and 6 rail lines. On weekdays, Metro operates 1,942 peak buses and 190 heavy and light rail cars. On any given weekday, Metro experiences approximately 1.1 million bus boardings and 335,000 rail boardings. Metro has over 15,000 bus stops, including station stops on the Orange Line and Silver Line. On rail, Metro has 16 heavy rail line stations and 66 light rail line stations.

### **2.1 DESCRIPTION OF SERVICE TYPES**

Metro operates four (4) light rail lines (Blue, Green, Gold, and Expo) and two (2) heavy rail subway lines (Red and Purple), a number of Local, Limited, Shuttle, Express routes, as well as twenty (20) Rapid Bus and one (1) BRT bus routes.

#### **Metro Rail**

Metro has several rail expansion projects that will be completed or under construction during the life of this plan. Section 4.2 provides more details.

Metro Rail is a high capacity rapid transit service operating along dedicated right-of-ways powered by electricity. The rail system serves as the backbone of public transportation in the greater Los Angeles region, linking many key multi-modal transportation centers and destinations together.

Metro's four light rail lines are powered by overhead wires, operate a maximum three-car consist, and generally operate at slower speeds than Metro's heavy rail lines. Unlike heavy rail, the light rail lines run along a right-of-way ranging from complete grade separation to at-grade in mixed flow traffic. Metro's two (2) heavy rail lines are powered by a third rail, operate a maximum six-car consist, and operate underground on an exclusive right-of-way. Rail routes are designated with route numbers between 800 and 899.



Figure 2.1 displays Metro’s present rail system, Metrolink Commuter Rail, and Metro’s two premiere Metro Liner Bus Services: Orange Line (BRT) and Silver Line (Dual-Corridor Express Line).

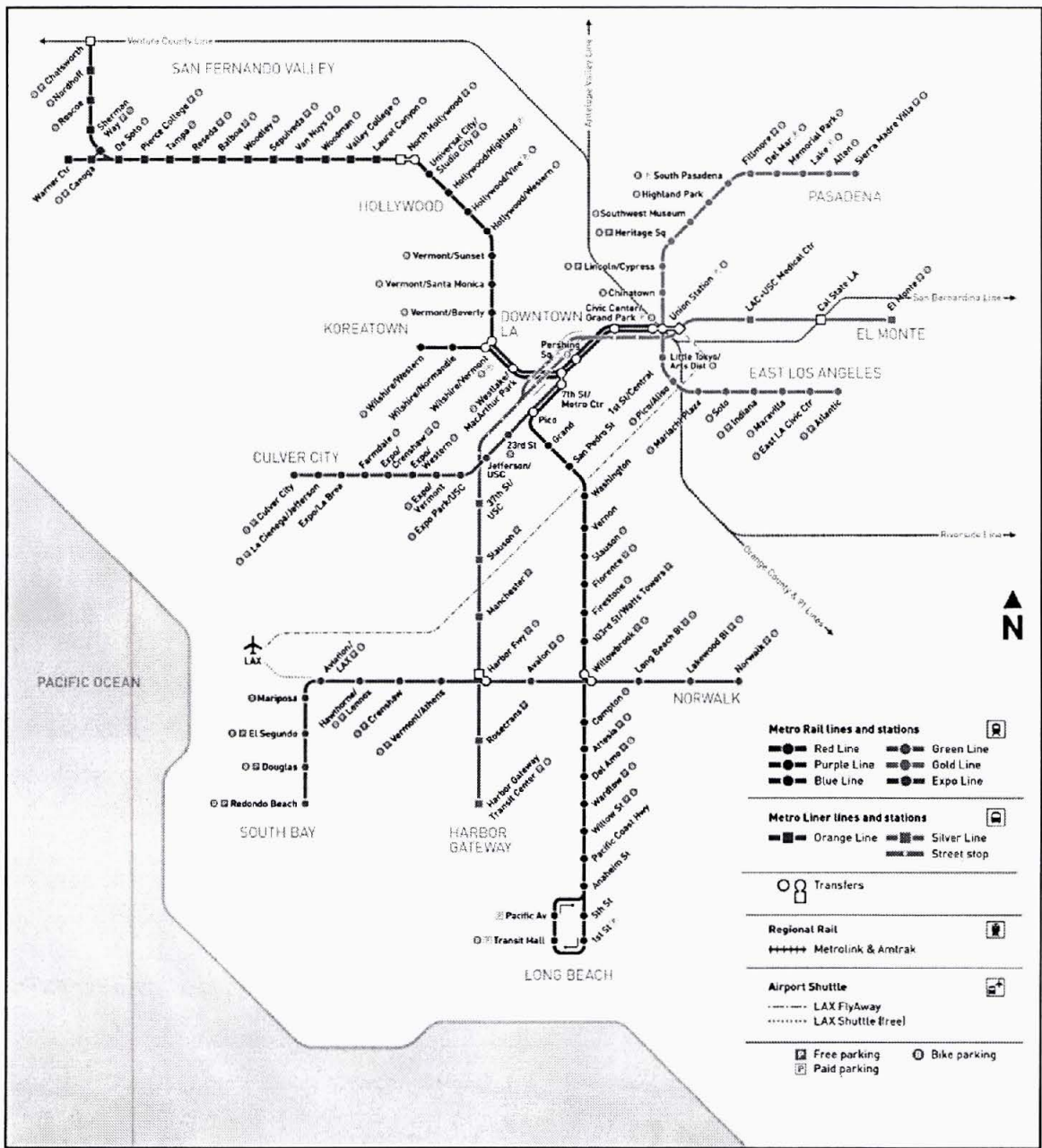


Figure 2.1 Current Metro Rail System Map

## **Metro Bus**

### Local & Limited Routes

Local bus routes provide the bulk of Metro's transit services and operate on city streets serving all stops along their routes. These routes create an interconnected regional network throughout Los Angeles County and provide the bulk of Metro's transit services (Figure 2.2). Some local lines are augmented with limited routes and operate in corridors with high transit demand providing patrons a faster transit option through wider stop spacing and limiting stops at key transfer points and major activity centers. Local routes are designated with route numbers between 1 and 299. Limited stop routes are designated with route numbers between 300 and 399.

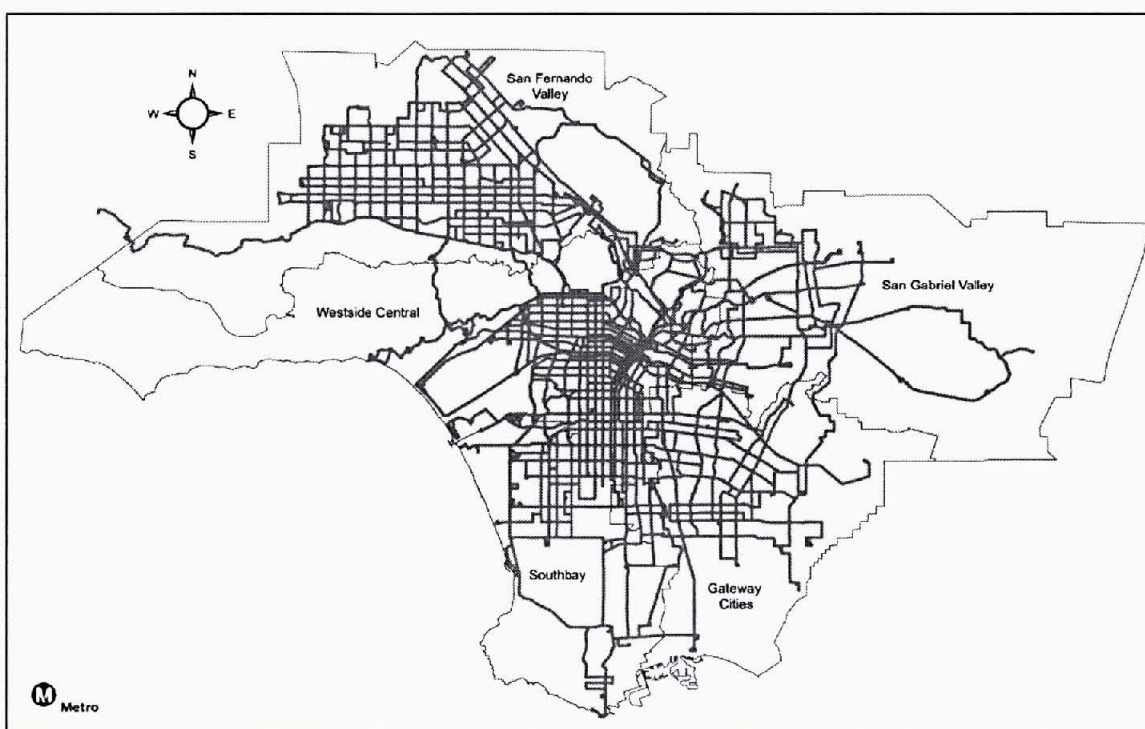


Figure 2.2 Local and Limited Routes

### Shuttle Routes

Shuttle routes operate primarily on secondary streets and serve short-distance trips. Shuttle routes are not an interconnected network but rather serve as local community circulators providing connections to regional bus lines and rail lines. Figure 2.3 displays the various shuttle routes in Metro's service areas. They have route numbers between 600 and 699.



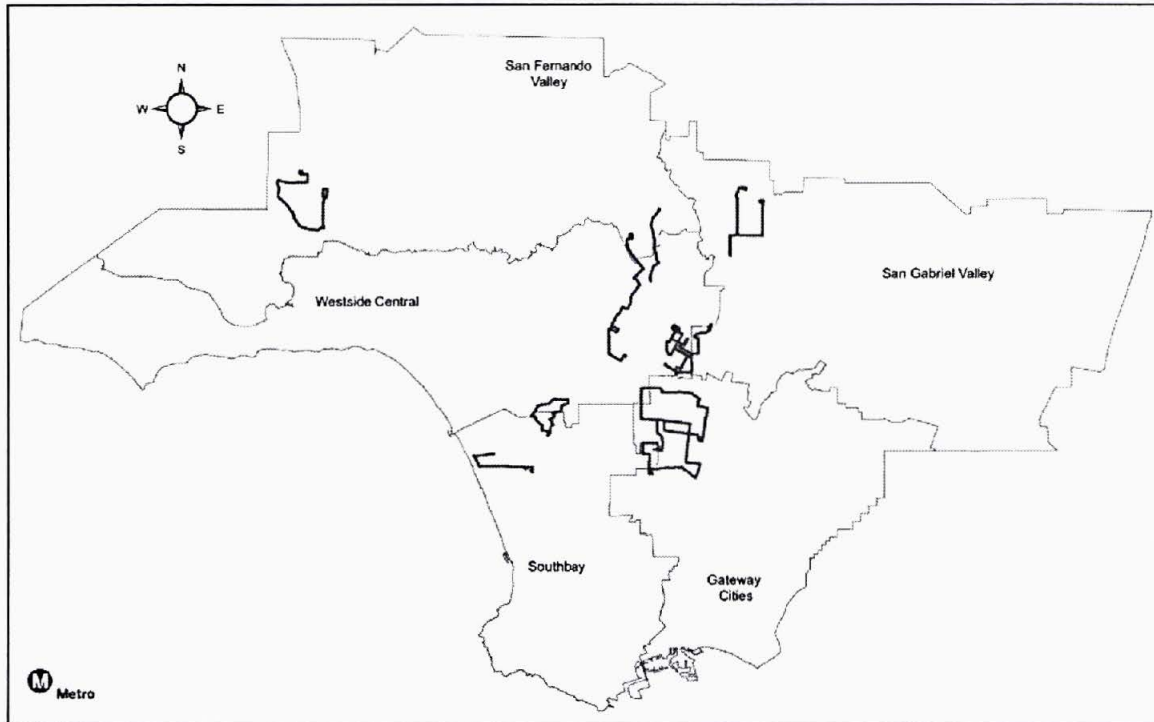


Figure 2.3 Shuttle Routes

Express Routes

Express routes are used for longer distance trips, make fewer stops, and service that typically becomes more localized near the end of their routes. Express services usually originate from a collector area, such as a park and ride location, operating in a particular corridor with stops en-route at major transfer points or activity centers. In addition, these services generally operate a major portion of their routing on freeways either in mixed flow traffic or on HOV/HOT lanes. This service type charges a premium fare and is designated with route numbers between 400 and 599.

The only exception to the Express Route number designation is the Silver Line, which is a specialized dual-corridor express service. It is one of two Metro Liner Services and is designated with Route Number 910. The Silver Line serves two distinct corridors operating predominantly on the I-10 and I-110 high-occupancy toll lanes (ExpressLanes) linking El Monte to Artesia via limited stop service in Downtown Los Angeles. The Silver Line is approximately 26 miles long and operates using 45-foot silver buses. Figure 2.4 shows the Express Routes as well as Metro’s Silver Line.

**Note:** In the past Metro operated more Express Routes than in the present-day network. A number of express lines were canceled as a result of low productivity and/or replaced by new rail lines as Metro continues to expand its rail system. In 2009 Metro restructured four (4) Express routes that overlapped one another into one Express Route simultaneous with the creation of the Silver Line.

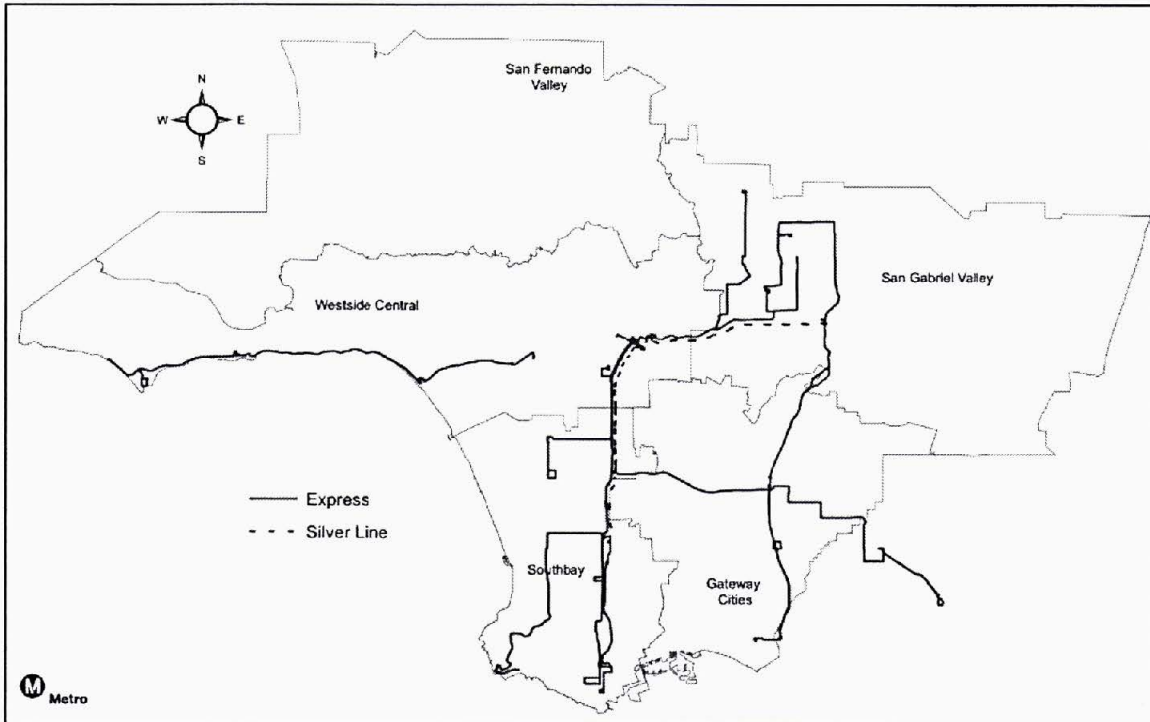


Figure 2.4 Express Routes and Silver Line (Dual-Corridor Express Line)

Rapid and BRT Routes

Metro operates twenty (20) Rapid Bus Lines. Rapid bus is an interconnected regional network and is a form of BRT that operates in mixed-flow traffic on heavily traveled corridors. Time reductions are achieved through the use of a number of key BRT attributes such as fewer bus stops and transit signal priority. Rapid bus routes operate specially branded red buses that distinguish them from local buses, which have a California Poppy color scheme. Rapid routes are designated with route numbers between 700 and 799.

The Orange Line, designated with the route number 901, is Metro’s only full Bus Rapid Transit (BRT) Line. This service provides many of the features expected of rail services such as operating on an exclusive right-of-way, station stops with Park & Ride Lots, and Ticket Vending Machines (TVMs) for pre-paid boarding (buses are not equipped with fareboxes). The Orange Line operates in the San Fernando Valley linking North Hollywood to Canoga Park and Chatsworth. The Orange Line operates 60-foot articulated silver buses and makes 18 station stops along its 18.9 mile route. Figure 2.5 shows the Rapid Bus Lines as well as Metro’s BRT service.



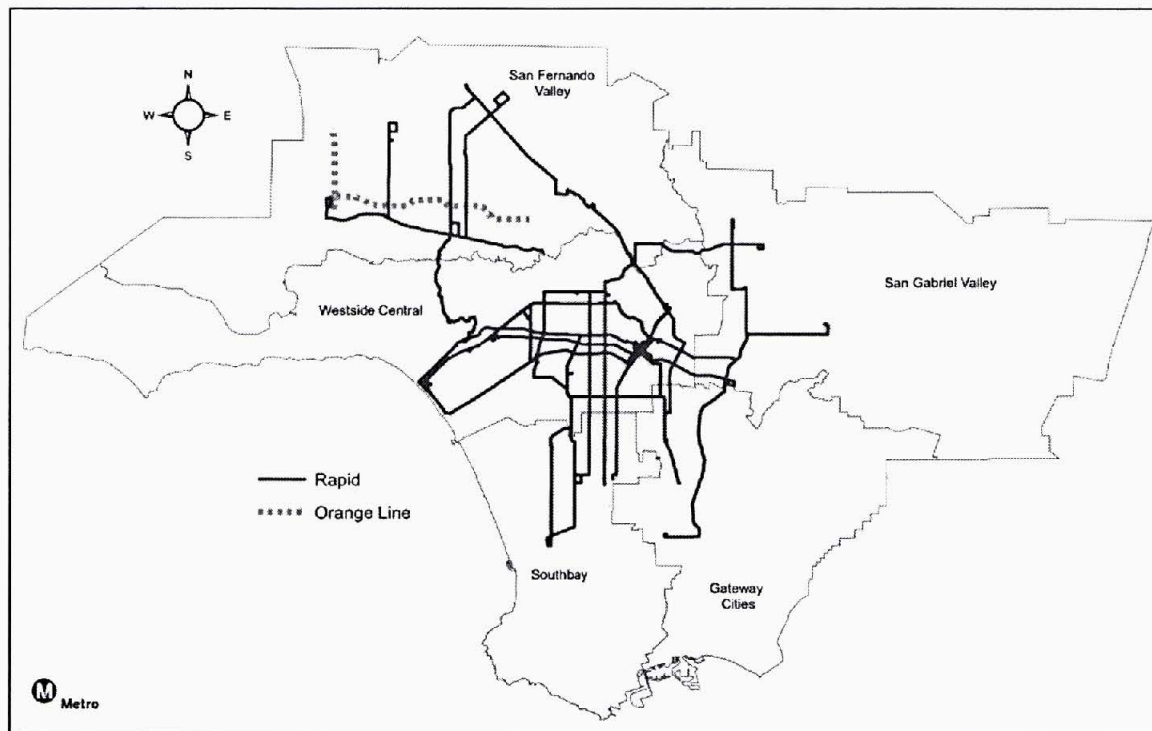


Figure 2.5 Orange Line (BRT) and Rapid Bus Routes

24-Hour Routes

Metro recognizes the need to provide travel options for its patrons who don't have other means of transportation after mid-night and until morning daytime bus service resumes. Therefore Metro operates a core network of 24-hour bus service that operates seven days a week. These services are commonly referred to as "Owl Service". Metro's owl services are much more limited in geographic coverage than its daytime services as shown in Figure 2.6. A large majority of owl routes operate to and from Downtown Los Angeles where they make hourly timed connections to one another.

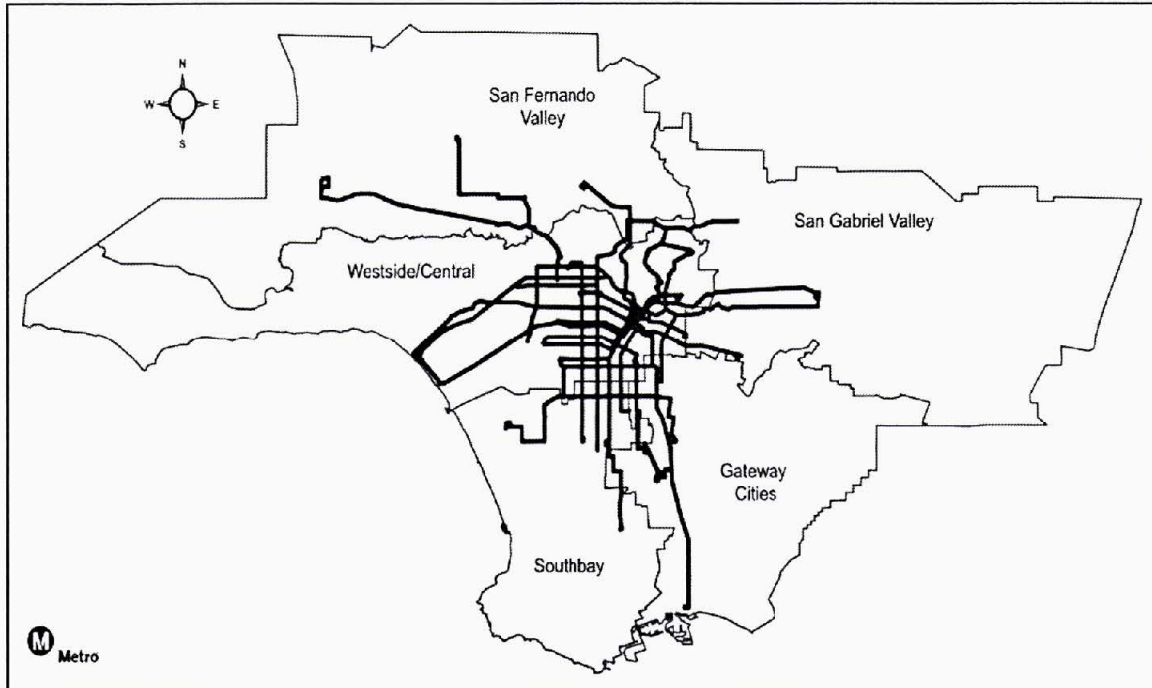


Figure 2.6 24-Hour Bus Routes (Owl Service)

Should 24-hour rail service be implemented, beginning with Metro's Red Line, there will be opportunities to restructure the bus owl network for greater efficiencies, more convenience, and greater geographic reach.



**Table 2.1**

*Bus Service Type & Features*

Features	Shuttle	Local /Limited	Express	Rapid	Metro Liner
Right of Way	Local Streets	Major Arterials	Major Arterials and Freeways	Major Arterials	Right-of-Way or HOT Lanes
Maximum Average Stop Spacing	0.25 mile	0.25 mile/0.60 mile	1.25 miles	0.80 mile	1.25 miles
Target Travel Market	Neighborhood	Inter-Community	Inter-Community Regional	Inter-Community	Inter-Community
Vehicle Type	40-foot bus or smaller	40/45/60-foot buses	40-foot bus	40/45/60-foot buses	45/60-foot buses
Color Coded Buses	California Poppy	California Poppy	California Poppy or Business Blue	Red	Silver
Communities Served	1 - 2	Multiple	Multiple	Multiple	Multiple
Signal Priority	No	No	No	Yes	Yes
Fare Collection	On board	On board	On Board	On Board	On Board/Pre Paid
Passenger Amenities	Benches and Shelters	Benches and Shelters	Shelters and Stations	Shelters and Stations	Shelters and Stations
Real-time Passenger Info	No	No	No	Yes	Yes
Route Number Designations	600-699	1-399	400-599	700-799	900-910

**2.2 EXISTING FLEET (BUS & RAIL)**

Metro has the world largest eco-friendly directly operated fleet of 2,200 Compressed Natural Gas (CNG) buses of varying sizes: 40-foot buses, 45-foot buses, and 60-foot articulated buses. The largest percentage (57.9%) of Metro's bus fleet is 40-foot buses. Figure 2.7 illustrates the age distribution of the various buses in Metro's fleet.

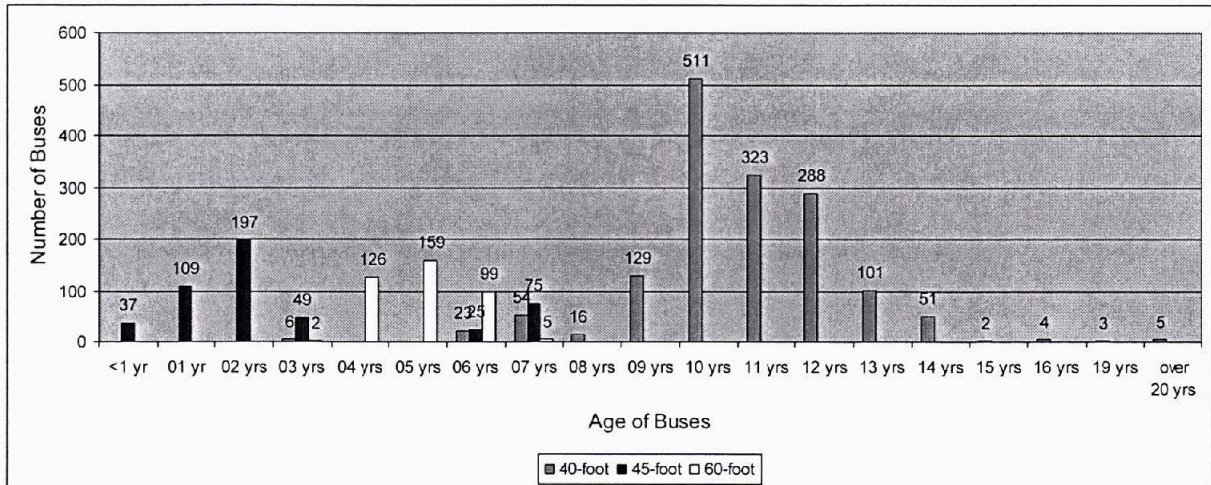


Figure 2.7 Metro Buses by Age and Bus Size

For rail, Metro has a total of 171 light rail and 104 heavy rail vehicles. The Light rail vehicles provide 76 seats per rail car and heavy rail vehicles provide 55 seats per rail car. Metro operates four (4) different light-rail fleet models: Sumitomo P865, SumitomoP2020, Siemens P2000, and Ansaldo-Breda P2550. Heavy rail vehicles operate with the Breda A650 model.

### 2.3 LOAD STANDARDS

Metro’s load standards specify the maximum average load that should occur in any 20-minute period. Metro operates a 130% load ratio (passengers to seats) on its bus system, 175% on light rail, and 230% on heavy rail. These standards ensure there is an appropriate tradeoff between cost of operation and passenger accommodation. Table 2.2 provides additional information.

Table 2.2

Vehicle	Seats Available	Max. Load Ratio	Max. Passenger Load
40-Foot Bus	40	1.3	52
45-Foot Bus	46	1.3	60
60-Foot Bus	57	1.3	74
Light Rail	76	1.75	133
Heavy Rail	55	2.3	127

Load standards for rail are being reassessed due to increasing space requirements to accommodate bicycles, strollers, carts and other large items.



## 2.4 SERVICE PERFORMANCE INDICATORS

Metro’s goal is to minimize costs and maximize productivity in the delivery of its transit services as it continually strives to improve the customer’s experience in terms of comfort, reliability, and speed. It’s a balancing act that requires constant monitoring and implementing a course of action to ensure these are achieved. In this effort Metro’s Service Planning & Scheduling Department provides quarterly system monitoring reports on the performance of the transit system at both the line level and system level. The principal focus of these reports is to evaluate performance and compliance with the adopted service policies and standards.

There are a number of attributes analyzed, but the top three key are: *Cost Effectiveness, Productivity, and Service Quality*. The results of the analysis enable Metro to determine whether or not corrective action needs to be taken, and if so, what appropriate course of actions needs to be implemented.

### Cost Effectiveness

Metro calculates a number of performance indicators to determine the cost of providing service to the outcomes resulting from the provided service (*Farebox Recovery Ratio, Operating Cost per Boarding, Subsidy per Boarding, etc.*). Metro’s main measure in determining the cost effectiveness in the delivery of its transit services is the Operating Expense per Passenger Mile. All transit routes are comparatively evaluated (i.e. local to local, express to express, rapid to rapid, etc.) and the poorest 15% are flagged for further review.

By scheduling to demand Metro’s operating expense per passenger mile has remained relatively constant for both bus and rail despite rising costs (Table 2.3). In comparison to other comparable transit properties Metro’s bus and light rail operating expense per passenger mile is among the lowest and its heavy rail falls mid-range (Table 2.4).

**Table 2.3**

*Metro’s Operating Expense per Passenger Mile*

Service Type	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
All Bus	\$0.62	\$0.64	\$0.63	\$0.60	\$0.61	\$0.59
All Rail	\$0.48	\$0.44	\$0.45	\$0.45	\$0.48	\$0.44

**Table 2.4**

*Operating Expense per Passenger Mile*

CITY	OPERATOR	BUS	LIGHT RAIL	HEAVY RAIL
Los Angeles	Metro	\$0.61	\$0.55	\$0.46
New York City	MTA New York City Transit	\$1.38	n/a	\$0.36
Chicago	Chicago Transit Authority	\$1.06	n/a	\$0.33
Washington DC	WMATA	\$1.36	n/a	\$0.53
Boston	MBTA	\$1.23	\$0.77	\$0.53
New Jersey	NJ Transit	\$0.78	\$1.76	n/a
San Francisco	San Francisco MUNI	\$1.13	\$1.33	n/a
San Diego	San Diego MTS	\$0.75	\$0.32	n/a

NTD 2012 Transit Profile

**Productivity**

Metro calculates a number of productivity indicators to measure how many passengers are served per unit of service (*i.e. Boardings per Revenue Mile, Boardings per employee FTE, etc.*). Metro’s main measure in calculating productivity is *Boardings per Revenue Vehicle Hour*, which measures the level of passenger activity or passenger turnover during each hour of operation. Productivity measures allow an agency to gauge whether or not the consumption of service exceeds a transit property’s minimum productivity standard. For example the Chicago Transit Authority’s (CTA) minimum threshold is 30 boardings per revenue hour on bus lines operating a 30 minute frequency. In Metro’s case bus routes are comparatively evaluated (*i.e. local to local, express to express, rapid to rapid, etc.*) and the poorest 15% of bus lines, in each service type, are flagged for further review.

Metro’s productivity on its bus system has remained relatively constant with consistent improvement over the last three fiscal cycles (Table 2.5). Metro’s rail productivity has seen a significant decline. Unlike Metro’s bus system Metro does not always tailor its rail services to demand off-peak or make use of short-lines as it does with bus (Metro does reduce consist size in some cases). Rather Metro rail operates predetermined frequencies off-peak and continues to operate end-to-end service providing the same level of service to unproductive segments as it does to productive segments such as the Gold Line Eastside Extension from the Union Station to East Los Angeles opened in December 2009. Despite this decline Metro rail productivity ranks very well when compared to its peers. Table 2.6 shows that Metro’s heavy rail transports more passengers per revenue hour than its peers and falls within mid-range for both bus and light rail.



**Table 2.5**

*Metro's Productivity (Boardings per Revenue Vehicle Hour)*

Service Type	FY2008	FY2009	FY2010	FY2011	FY2012	FY2013
All Bus	50.8	51.2	49.5	51.0	52.5	53.6
All Rail	160.1	143.5	140.4	137.3	138.3	123.4

**Table 2.6**

*Productivity (Boardings per Revenue Vehicle Hour)*

CITY	OPERATOR	BUS	LIGHT RAIL	HEAVY RAIL
Los Angeles	Metro	52.5	103.7	177.6
New York City	MTA New York City Transit	65.0	n/a	136.7
Chicago	Chicago Transit Authority	55.6	n/a	64.7
Washington DC	WMATA	35.1	n/a	98.9
Boston	MBTA	48.4	118.9	114.3
New Jersey	NJ Transit	30.2	110.3	n/a
San Francisco	San Francisco MUNI	65.8	80.2	n/a
San Diego	San Diego MTS	34.5	76.4	n/a

NTD 2012 Transit Profile

**Service Quality**

Metro continually strives to improve the quality of its transit services by improving on-time performance and providing sufficient capacity for the comfort of its customers. Metro uses two key performance indicators to measure the customer experience: *On-Time Performance (OTP)* and *Passenger Loads*.

Poor schedule adherence, vehicle breakdowns, missed trips, and lack of manpower negatively impacts On-Time Performance (OTP) as well as Passenger Loads. It requires a coordinated effort to ensure the OTP standard is met or exceeded by scheduling sufficient running times, establishing an effective preventive maintenance program, effective on-street management of transit vehicles, and operator availability. Poor on-time performance will result in uneven distribution of passengers leading to capacity issues and eventually pass-ups.

On-Time Performance (OTP)

On-time performance is a measure of *reliability*. Metro passengers need to know that their train and bus will arrive and depart as scheduled to meet their daily obligations such as getting to work on-time, a medical appointment, school etc.

There is no one methodology or standard used in evaluating OTP between transit properties. For instance Chicago Transit Authority measures on-time performance by evaluating the percentage of big gap intervals and percentage of bunched intervals against a predetermined target. Metro measures on-time performance based on scheduled time points along a bus route. Service is considered on-time if the departure from a designated time point is no more than

one minute early and no more than five minutes late. OTP is measured at all established time points excluding line terminals along the route of individual bus lines.

OTP is calculated by line and time of day and violations of the standard are flagged for further evaluation to determine what the cause(s) may be such as insufficient running times, missing trips, etc. Metro's OTP standard requires that 90% of bus lines achieve at least 90% of the current year's goal. In FY 2013, the objective was 80% on-time for bus operations. At that time only 69% of lines met this standard. The established rail standard is 95% on-time, but monitoring data is not yet available as an interface to the SCADA computer system that governs rail operations needs to be developed.

While the overall objective is 80% on-time, the bus system falls short of that level of performance on a daily basis: 74.8% average on-time on weekdays; 70.8% on Saturdays; and 75.8% on Sundays. Performance tends to decline as the day goes on (Table 2.7).

**Table 2.7**

*Systemwide On-Time Performance*

<b>Time of Day</b>	<b>System On-Time Performance</b>
Early AM (4-6am)	88.90%
AM Peak (6-9am)	80.50%
Midday (9am-3pm)	75.60%
PM Peak (3-7pm)	68.60%
Early Evening (7-9pm)	71.00%
Late Evening (9-Mid)	73.90%
Owl (Mid-4am)	74.20%

Metro needs to improve its OTP after the AM peak. A working group has been investigating actions that Metro can implement to improve OTP.

Passenger Loads

Developing a passenger load standard enables a transit property to determine if crowding is occurring. Passenger load standards vary between transit properties. For instance CTA's passenger load policy is no more than 60 passengers per bus during the peak irrespective of varying seating capacity. Metro established a passenger load standard that states the maximum average load ratio of passengers to seats during any one hour period should not be exceeded at least 95% of the time. Metro's maximum average load ratio value is 2.30 for heavy rail, 1.75 for light rail, and 1.30 for bus. These ratios represent the maximum numbers of passengers per transit vehicle.



Currently rail maximum average load ratios cannot be determined as the data presently collected for overall ridership estimation is not extensive enough to permit establishing maximum loads by hour by individual rail car.

Metro calculates the passenger load ratio on actual service provided rather than scheduled service. This enables Metro to determine why overloads are occurring such as missing trips, poor on-time performance, or insufficient service provided.

The maximum average load ratio is determined by calculating the maximum observed load ratio (passengers divided by seats) during any one hour operated for each line. For example if a 40-seat bus is carrying a maximum average load of 58 passengers in a one hour period it will be experiencing a 1.45 load ratio (58 passengers divided by 40 seats). This exceeds the allowable maximum average load ratio of 1.30 indicating further evaluation is required to determine the cause(s).

On a system level Metro is overwhelmingly meeting its passenger load ratio standard:

- Weekdays (99.5%)
- Saturdays (98.4%)
- Sundays (99.5%)

However more instances of overloads occur on Saturdays than on Weekdays and Sundays combined:

- Weekdays (29 instances)
- Saturdays (70 instances)
- Sundays (20 instances)

Furthermore at the line level a few bus lines experience disproportionate instances of crowding (Table 2.8):

- Weekdays: 6 out of 141 bus lines did not meet the passenger load standard.
- Saturdays: 9 out of 110 bus lines did not meet the passenger load standard.
- Sundays: 4 out of 102 bus lines did not meet the passenger load standard.

**Table 2.8**

*Bus Lines Not Meeting  
Passenger Load Standard*

<b>Weekday</b>	<b>Saturday</b>	<b>Sunday</b>
45	2	4
51	4	45
81	16	51
450	45	733
734	51	
757	105	
	108	
	224	
	234	

**2.5 SERVICE CHANGE PROCESS**

Bi-annual service changes generally occur in June and December. Proposed service changes are taken through a public review process and are subsequently considered for approval by the Metro Service Councils. An equity evaluation is conducted on all major service change or fare change proposals to determine whether or not these proposals will result in a disparate adverse impact on Minority populations under Title VI of the 1964 Civil Rights Act or a disproportionate adverse impact on low-income populations under Environmental Justice (Executive Order 12898). For added details see Metro’s most recent Transit Service Policy.



## SECTION 3: CHALLENGES & OPPORTUNITIES

This section identifies potential threats and opportunities over the life of this plan related to capital projects, new transit services, corridor studies, projected budget, and demographic changes. This section is intended to identify key decisions that will be required during the next five years.

### 3.1 METRO'S OPERATING / CAPITAL FINANCIAL FORECASTS

#### Operating Financial Forecast

This plan assumes a fare increase and shows a balanced operating budget through FY 2017 and a \$34.5M deficit in FY 2018 due to the additional cost of operating a new service in the San Fernando Valley along Van Nuys Blvd. / Sepulveda Blvd. (Project is described in Section 4.3). As discussed in Section 7.1 the operations financial forecast assumes fares as a whole will keep constant with inflation. However, the Board deferred planned fare increases that would have taken effect on July 1, 2013 as discussed in Section 5.1. Without Board action the current fare structure is projected to increase the operating deficit by \$36.8M in FY 2017 and by \$71.6M in FY 2018. Metro must develop a plan that increases fare revenue and reduces operating expense to address the potential shortfalls.

#### Capital Financial Forecast

This plan shows a balanced capital budget through FY 2018. The capital financial forecast assumes no cost overruns and that all bids on capital projects come under budget. However the following two capital projects in this plan are facing budget gaps:

- *East San Fernando Valley Transit Corridor Study*: Measure R, a half-cent sales tax passed by Los Angeles County voters in 2008, provides \$170.1M to fund this project. The two LRT alternatives are estimated to cost from \$1.7B to \$2.3B. All four BRT alternatives are estimated to cost between \$250M - \$440M. All six alternatives exceed current funding availability. Additional funds are required in order to build any of the six alternatives.
- *Patsaouras Plaza Busway Station*: This project was estimated to cost \$16.8M and was to be funded through Prop A & C (\$7.1M) and an FTA Discretionary Grant (\$9.7M). It was originally projected to be completed by 2015. However, this project has been postponed because bids to date have come in higher than budgeted. Metro is in the process of developing a funding strategy that will cover any budget shortfalls should this project cost more than originally estimated.

### **3.2 FAREBOX RECOVERY RATIO**

One of the ratios used to determine the efficiency of the service provided is the farebox recovery ratio. This ratio is computed by dividing the system's total fare revenue by its total operating expenses. The farebox recovery ratio is improved by generating more fare revenue, decreasing operating expense, or a combination of both.

Metro's farebox recovery ratio was at 45% in the 1980s and presently at 27%. One of the major reasons for this is that Metro's fares have not kept pace with inflation. In 1989 the base fare was \$1.10, which would be worth \$2.08 today. The current base fare is \$1.50, which would be worth \$0.79 in 1989 inflation adjusted dollars. The result is a 28% decline in the cost of a base fare. Accounting for inflation it cost less to ride transit today than it did in 1989. Consequently Metro's farebox recovery ratio has declined over the years since peaking at 45% in the 1980s. Without a fare increase Metro's farebox recovery ratio will continue to decline.

### **3.3 NEW BUS DIVISION 13**

Division 13 is located at the northeast corner of Cesar E. Chavez Ave. & Vignes St. This is a heavily congested intersection for two reasons. One, Cesar E. Chavez Ave. provides direct access into Downtown L.A. from the north east region of the city and two, the numerous bus trips that operate through or make turning movements to serve the Patsaouras Transit Plaza via Vignes St. Congestion at this intersection will only increase when Division 13 is in operation.

When completed, Division 13 will temporarily assume Division 2's bus operations while Division 2 is being reconfigured and upgraded. Presently, Division 2 is unable to support high-capacity buses (45-foot and 60-foot buses). Division 13 will have the capability to support 40-foot, 45-foot, and 60-foot buses. As a result, Metro has the opportunity to re-allocate bus lines that operate high capacity buses out of Division 13.

There is an opportunity to both minimize the traffic impact of additional bus trips and to reduce deadhead hours by sharing the operations of bus lines with other divisions that serve the Patsaouras Transit Plaza as well as other bus lines whose starting point may be nearer to Division 13 than from the other bus divisions. Table 3.1 shows a list of bus lines that serve the Patsaouras Transit Plaza that are candidates for operating out of Division 13.



**Table 3.1**

<i>Division 13 Candidates</i>	
Bus Line	Current Division(s)
33 (Owl Service Only)	1, 6, & 10
40	18
442	18
704	7
728	3
733	7 & 10
745	1

**Note:** Metro’s Dodger Stadium Express Line is contract-operated and serves the Patsaouras Transit Plaza only during baseball season.

### 3.4 LOS ANGELES CITY PROPOSED BICYCLE / TRANSIT LANES

In their 2010 Bicycle Plan, the Los Angeles Department of City Planning is proposing a number of bicycle or bicycle/transit lanes throughout the City of Los Angeles during AM and PM peak hours (Table 3.2).

**Table 3.2**

#### *1<sup>st</sup> Year Proposed Bicycle Lanes – Street Segments*

Street / Facility Type	Limits	Length (Miles)	Area/Connection
Venice Blvd.	San Vicente Blvd. to Main St.	4.5	Central City, Westlake, South, and West Adams
Cesar E. Chavez	Figueroa St. to Mission Rd.	1.3	Central City, Central City North,
7th St.	Figueroa St. to Main St.	0.6	Central City
Vermont Ave.	Venice Blvd. to Wilshire Blvd.	1.2	Wilshire, South
Martin Luther King Jr. Blvd.	Marlton Ave. to Figueroa St.	3.2	West Adams - Leimert, South
2nd St.	Beverly Blvd./Glendale Blvd. to Broadway	1	Central City, and Westlake
Grand Ave.	Washington Blvd. to 30th St.	0.7	Southeast
Virgil Ave.	Santa Monica Blvd. to Melrose Ave.	0.5	Hollywood
<b>Total</b>		<b>13</b>	

Source: City of Los Angeles, LADOT, 2012.

Metro met with the Los Angeles City Planning Department to discuss potential issues if the City moves forward with implementing dedicated bicycle lanes or dedicated bicycle/transit lanes on streets where a high volume of transit bus service operates. On March 4, 2013 Metro wrote the City Planning Department about their concerns on the following corridors: Cesar E. Chavez Ave., Figueroa St., and 7<sup>th</sup> St.

Metro’s concerns are related to safety and maintaining effective transit bus service operations. Operating a dedicated bicycle lane or dedicated bicycle / transit lane in a corridor that experiences high volumes of transit bus service, as

well as auto trips, could prove to be problematic due to an increased risk of accidents and reduced operating speeds for buses.

Of particular concern is the proposed route along Cesar E. Chavez Ave. between Mission Rd. and Alameda St. and its impact at the intersection of Cesar E. Chavez Ave. and Vignes St. due to the high volume of bus trips that operate through that intersection or make turning movements to serve the Patsaouras Transit Plaza. Under current conditions more than 120 buses per hour during the peak will operate along Cesar E. Chavez Ave, which is an average of 2 buses every minute. When Division 13 is opened it is estimated to add 40 to 60 additional buses during peak hours pulling out or into the division, which will significantly impact traffic at the intersection of Cesar E. Chavez Ave. and Vignes St.

Metro reviewed current research on shared bicycle/bus facilities. A Summary of Design, Policies and Operational Characteristics for Shared Bicycle/Bus Lanes (State of Florida Department of Transportation, July 2012) includes a literature review and case study summary of shared bicycle/bus lanes in the United States as well as internationally. The bus frequency found on this particular segment of Cesar E. Chavez Avenue, is dramatically higher than any of the facilities documented in the study. The highest bus frequency cited in the study was the Stewart Street shared bicycle/bus lane in Seattle, WA, with 77 buses per hour. Every other facility detailed in the study has bus frequencies of 30 per hour or less. The study cites design guidance from Ottawa, Canada that indicates that bicycle and bus facilities should be separated in locations with more than 20 buses per hour.

Given both current and projected conditions Metro has serious concerns over the frequency of bus-bicycle conflicts that would be inherent in bicycles sharing a facility with buses on Cesar E. Chavez Ave. As a result Metro's Service Planning & Scheduling Department is identifying streets currently experiencing high volumes of bus transit trips and guaranteed to continue to do so over the next 30 or 40 years. The purpose of this study is to identify streets and corridors where implementing either a bicycle lane or a bicycle / transit lane will be most problematic.

### **3.5 LIGHT RAIL**

#### **Light Rail Operations**

Overall, the light rail system lacks adequate tail tracks and nearby crossovers for many of the terminals. This is the case with the Sierra Madre Villa Station of the Gold Line, the Culver City Station and Santa Monica Station of the Expo Line and the Redondo Beach Station of the Green Line. As a result, track movement is restricted and prevents the use of certain headway combinations. In addition, the tail tracks at the Atlantic Station of the Gold Line can only handle two-car



consists which will be problematic when Gold Line service switches to three-car consists.

#### Rail Vehicles

Currently the Metro Light Rail system does not have practical interchangeability of rail vehicles between the Gold, Green and Blue/Expo Lines. This is due to the following reasons:

- The isolation of the Gold Line from the remaining system
- The Green Line train control is unique to the line
- Ansaldo-Breda P2550 vehicles may be too heavy to operate on the Green Line
- Ansaldo-Breda P2550 vehicles cannot be coupled with the Sumitomo or Siemens rail car.

**Note:** The isolation of the Gold Line will be resolved when the Regional Connector is in operation in FY 2020 (See 2012 Rail Fleet Management Plan for more details).

#### Expo Light Rail Extension to Santa Monica

The Expo Line will terminate in Downtown Santa Monica (Colorado/4<sup>th</sup> St. Station) when Phase 2 construction is completed. Metro operates a number of bus lines in Santa Monica (Lines 4, 33, 534, 704, 720, and 733), which can potentially be rerouted to serve this station to improve the bus/rail interface and regional connectivity. Line 534 will be shortened and terminate at the Colorado/4<sup>th</sup> St. Station. Metro Lines 4, 33, 704, 720, and 733 will be reviewed to determine if additional realignments are necessary to optimize connections to the Expo Line facilitating transfer connections. Metro staff is working with Santa Monica Big Blue Bus and the City of Santa Monica to resolve layover space limitations at the Colorado/4<sup>th</sup> St. Station.

### **3.6 DEMOGRAPHICS**

Changing demographics in Los Angeles County present both a challenge and an opportunity for Metro. In order to gauge the potential impacts for the future, it is important to identify and understand the demographics and behaviors of our customers and how those characteristics compare to the current population. Metro's customer base will undoubtedly be impacted as Los Angeles County's demographics continue to change. Metro performed a comparable analysis on the following five demographic categories:

- Motor Vehicles Available to Households
- Household Annual Income Distribution
- Trip Purpose
- Ethnicity Share of Population

- Age Distribution

In 2011, Metro conducted an On-Board Transit Survey of its customers. The purpose of the survey was to study the travel behavior and socio-economic characteristics of Metro riders. Metro then collected the most recent, as well as projected, travel behavior and socio-economic characteristics of Los Angeles County residents from the following sources:

- Southern California Association of Governments (SCAG):  
<http://www.scag.ca.gov/resources.htm>
- 2010 US Census: <http://www.census.gov/2010census/California>  
Department of Finance Demographic Research Unit (2010)
- 2000 Post-Census Regional Travel Survey
- 2011 American Community Survey:  
[http://www.dof.ca.gov/research/demographic/state\\_census\\_data\\_center/american\\_community\\_survey/](http://www.dof.ca.gov/research/demographic/state_census_data_center/american_community_survey/)
- CLRsearch.com website: <http://www.clrsearch.com/Los-Angeles-Demographics/CA/Number-of-Vehicles-per-Household>

In order to see how socio-economics may change over the next five years, Metro compared existing data to projected data and assumed a proportional relationship between Metro riders and LA County demographics as an indicator to determine potential impact to ridership into the future. Understanding the potential impacts allows Metro to be proactive as LA County's residents' travel behavior and socio-economic characteristics change over time.

**Motor Vehicles Available to Households**

According to CLRsearch.com, 15.2% of LA County households did not own a motor vehicle in 2010, whereas Metro's 2011 On-board Survey showed that 49.5% of Metro rider households do not own a motor vehicle (Figure 3.1). This strongly indicates that a significant share of Metro riders are transit-dependent. In 2020, SCAG projects that the number of households that don't own a car will decrease from 15.2% to 8.5% (Figure 3.2). An increase in car ownership suggests a decrease in transit dependency, which means Metro will have to do a better job in developing services that attract more choice riders.



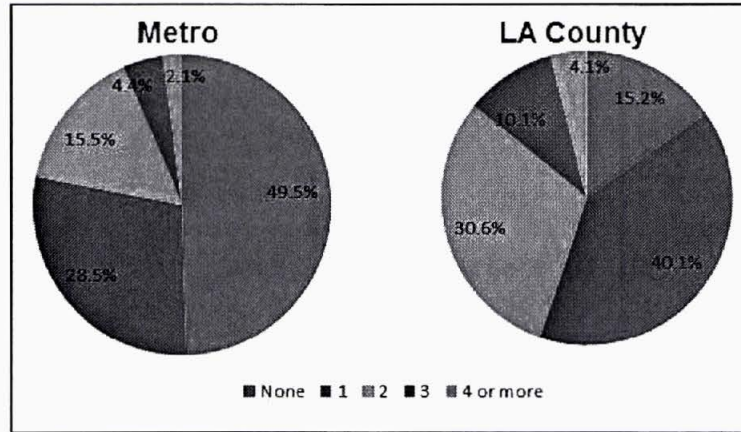


Figure 3.1 Motor Vehicles Available To Household

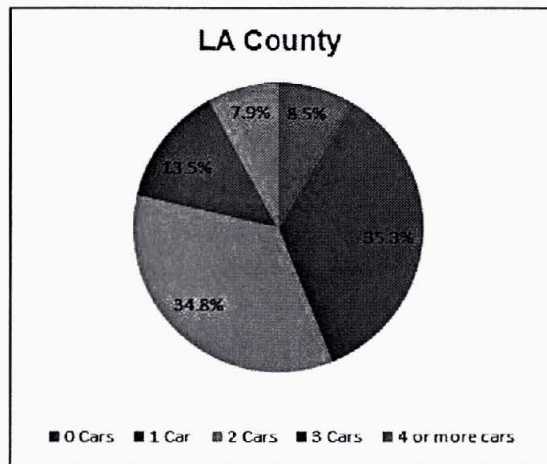


Figure 3.2 Projected LA County Motor Vehicles Available to Households in 2020

**Household Annual Income Distribution**

According to the 2011 American Community Survey, 20% of LA County households had an annual income under \$25,000. This subgroup accounts for 75.5% of Metro’s riders (Figure 3.3). SCAG projects the percentage of households earning less than \$25,000 to increase from 20% to 32.9%, which suggests the percentage of Metro riders from this subgroup may increase by 2020 (Figure 3.4). Interestingly during this same period, SCAG projects an increase in car ownership, indicating there may be a lower correlation between low-income households and transit dependency than originally thought. As the majority of Metro riders are transit-dependent, Metro will need to provide transit services that appeal to choice riders in an effort to continually improve ridership.

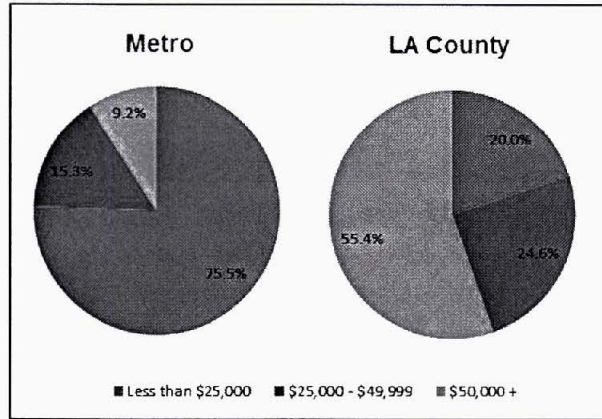


Figure 3.3 Household Annual Income Distribution

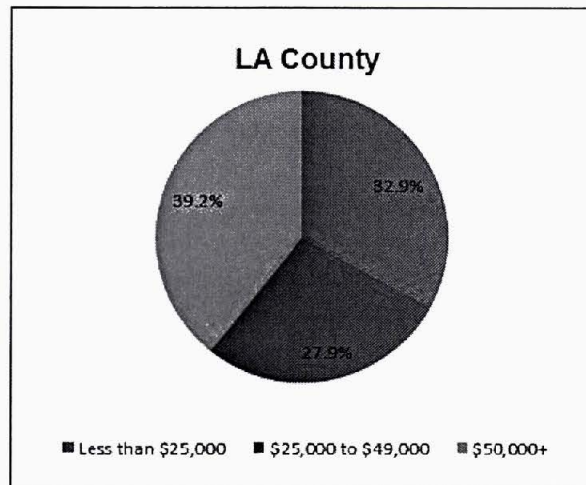


Figure 3.4 Projected Household Annual Income Distribution in 2018

**Trip Purpose**

According to Metro’s 2011 On-Board Survey, the majority of Metro riders use transit for the purpose of commuting from home to work, whereas data from the 2000 Post-Census Regional Travel Survey shows a smaller percentage (18.3%) in LA County (Figure 3.5). SCAG’s trip purpose projection for LA County remains relatively constant over the next five years (Figure 3.6). As the majority of Metro riders rely on transit to commute to and from work, it is imperative that Metro continue to improve both reliability and schedule adherence.



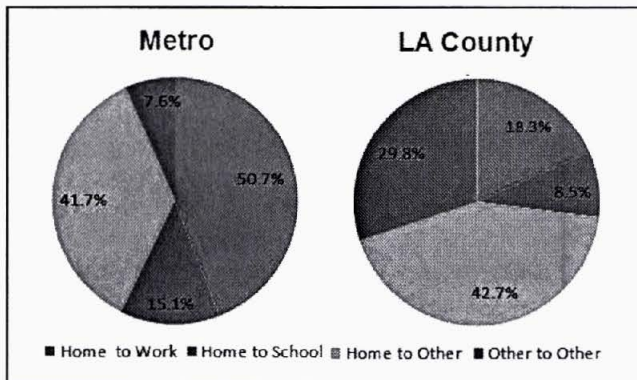


Figure 3.5 Current Trip Purpose

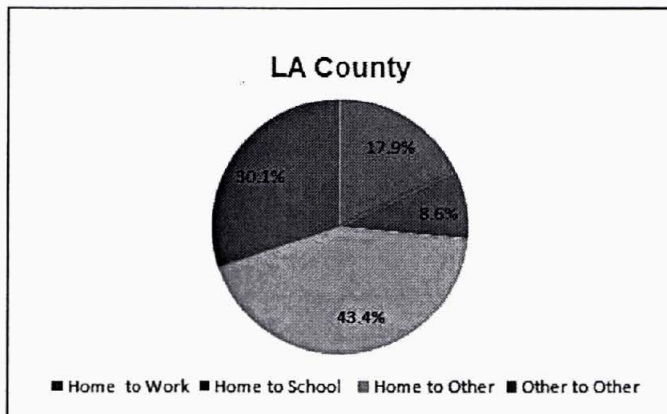


Figure 3.6 Projected Trip Purpose for LA County

**Ethnic Distribution**

According to Metro’s 2011 On-Board Survey, the ethnic distribution of Metro riders shows that Hispanics and Blacks represent the majority of transit users (Figure 3.7). Based on the 2010 US Census, 33.4% of the population in Los Angeles County is Hispanic. However, on Metro, Hispanics account for 66.8% of total riders. Similarly, Blacks account for only 6.1% of the county’s population, but make up the second largest ethnic subgroup using Metro transit services (16% of total riders).

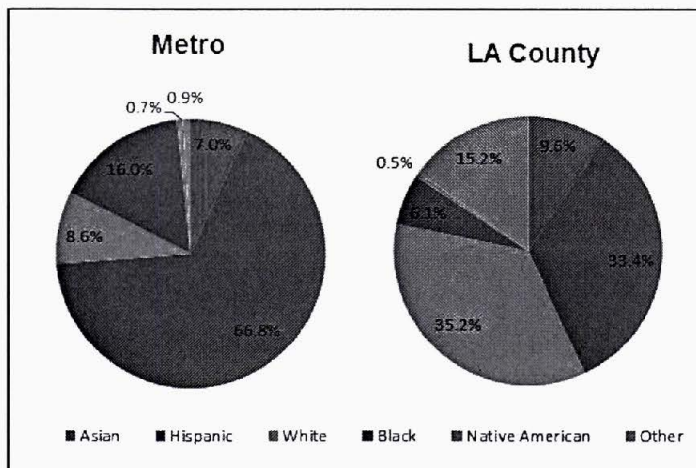


Figure 3.7 Ethnicity Share of Population

SCAG projects the Hispanic population will make up the majority of the population in LA County increasing from 33.4% to 50.9% by 2020 (Figure 3.8). SCAG’s projection suggests that Hispanics not only will continue to be the largest ethnic subgroup riding on Metro transit services, but their substantial increased presence in the overall population will mean increased demand for transit.

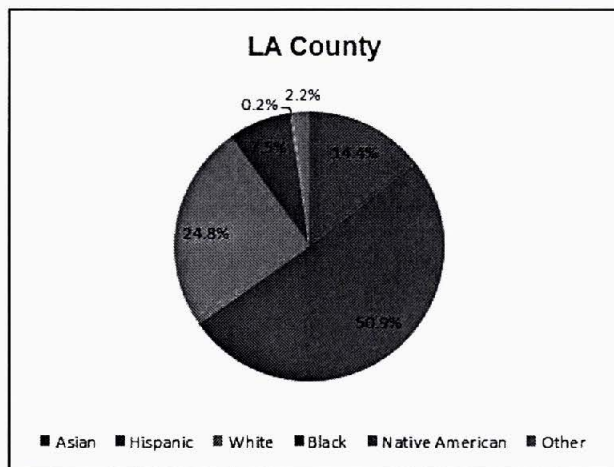


Figure 3.8 Projected LA County Ethnicity Share of Population in 2020

**Age Distribution**

Based on Metro’s 2011 On-Board Survey, people 25-49 years old represent nearly one-half of Metro riders. According to the 2010 Census, people 25-49 years old represent approximately one-third of LA County’s residents. When comparing Metro riders and LA County demographics, people aged 25-49 years old are much more likely to use public transit over other modes of transportation (Figure 3.9). SCAG projects this segment of the population will continue to increase (Figure 3.10). This indicates the percentage of Metro riders that are 25-49 years old will continue to increase as well as their demand for transit. On the



other hand, elderly patrons (age 65 +) are underrepresented on Metro transit services, making up only 5.6% of Metro’s total riders (compared with their presence in LA County’s population at nearly 14%). According to SCAG’s projection, there will be a slight decrease in the percentage of residents age 65 and older by 2018.

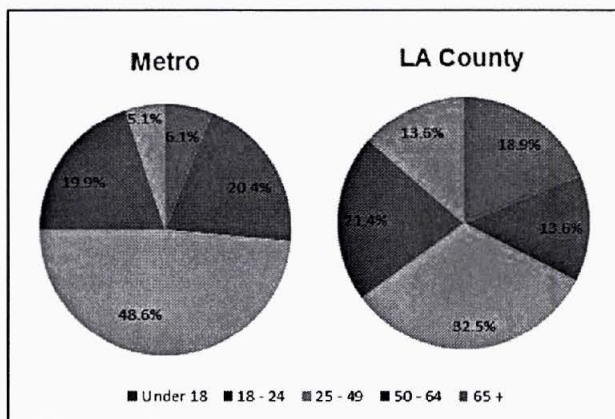


Figure 3.9 Age Distribution

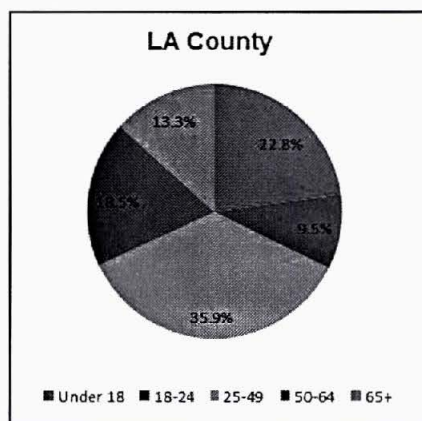


Figure 3.10 Projected LA County Age Distribution in 2018

In summary, the majority of Metro riders is Hispanic, transit-dependent, between 25-49 years of age, and must use transit to commute to and from work. Despite a SCAG projection that the number of households owning one or more cars will increase by 2020, the Hispanic composition of the population, the share of low income households, and the 25-49 year old age group are all expected to increase in relation to the other elements of the County population. As a result we can anticipate an increased demand for transit over the next several years that must be accommodated through increased capacity. As noted in Section 7.1 an 8% increase in revenue vehicle service hours is planned over the next five years.

## **SECTION 4: NEW TRANSIT PROJECTS & STUDIES**

Metro's 2009 LRTP identifies a list of new transit projects and studies designed for the continuous improvement of its bus and rail system over the next 30 years. Metro's current robust transit system is well positioned to continue to provide safe, reliable transit services that provide an array of transportation alternatives and maximizes mobility as these new services are implemented.

Over the next five years Metro will initiate the construction of a new rail line, extend two existing rail lines, build a regional connector which will link three light rail lines through Downtown, open up a bus lane on one of its busiest corridors, initiate two transit corridor studies, and build new bus and rail divisions to support a growing transit infrastructure. In addition, Metro is developing a funding strategy to fund the development of a new station stop on the I-10 ExpressLanes adjacent to the Patsaouras Transit Plaza that will facilitate transfers to bus and rail services at the Union Station. All are an integral part of an overall strategic balanced approach to addressing traffic and congestion. Section 3 describes the transit projects and studies that will be completed or initiated over the next five years.

### **4.1 WILSHIRE BRT PROJECT**

The Wilshire BRT Project was approved by the Board in May 2011. The Wilshire BRT Project will convert existing curb lanes to bus lanes through re-striping and some select street widening along Wilshire Blvd. The Wilshire BRT project spans approximately 12.5 miles along Wilshire Blvd. from Valencia St. to Centinela Ave. Almost 10 miles of street improvements will be made, including almost 8 miles of dedicated peak-period bus lanes along Wilshire Blvd. (Figure 4.1).



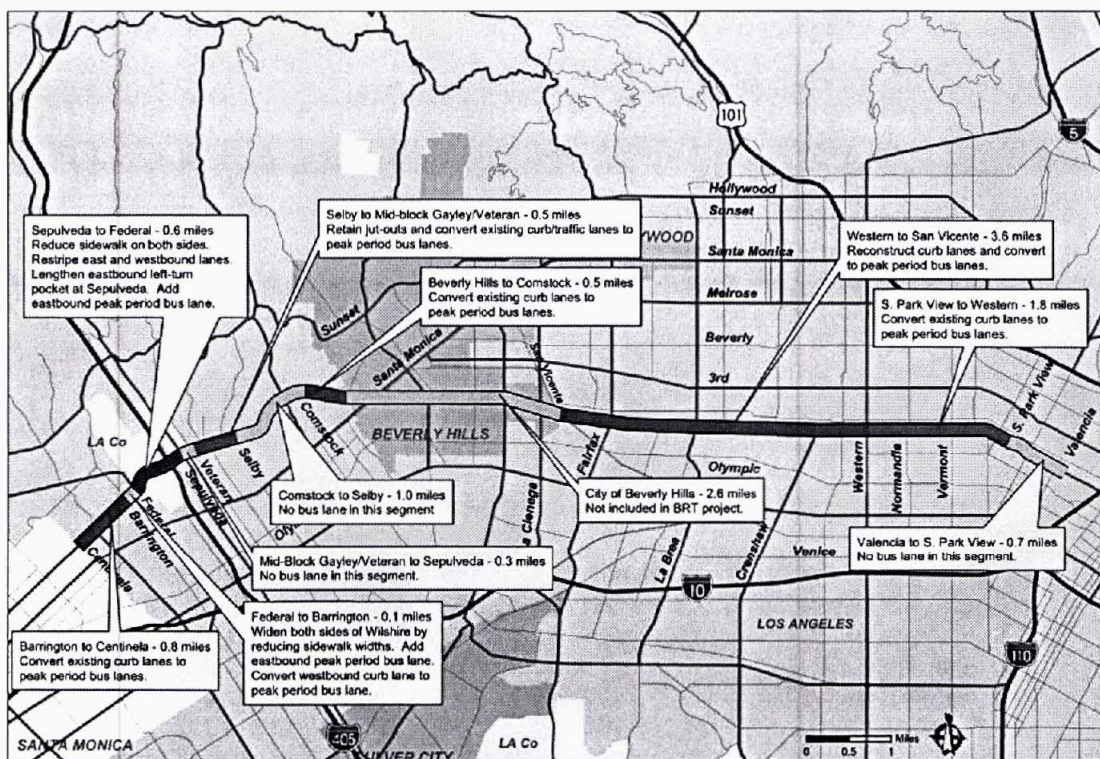


Figure 4.1 Wilshire Bus Rapid Transit Project

Wilshire Blvd. is the heaviest traveled bus corridor in Los Angeles County with 80,000 boardings on an average weekday. Metro Rapid Line 720 is one of Metro’s highest frequency bus lines with operating peak frequencies of two to four minutes along Wilshire Blvd. High frequency lines operating in congested corridors are prone to bus bunching. Bus bunching occurs when two or more buses on the same route, and scheduled to be evenly spaced apart, are now operating in the same location at the same time. The end result is unreliable service, longer effective wait times for some passengers, and overcrowded buses followed closely by near-empty ones. The goal of the Wilshire BRT Project is to improve scheduled service reliability, improve passenger travel time, improve on-time performance, and encourage a shift from automobile use to public transit.

On June 5, 2013, Metro opened the first 1.8-mile route segment along Wilshire Blvd. between MacArthur Park and Western Ave. The Wilshire BRT Project is expected to be completed in September 2016.

#### 4.2 RAIL EXPANSION PROJECTS

During the life of this plan, Metro will complete two rail extension projects and initiate the construction of three new rail projects:

- Rail line extensions to be completed by FY 2016:
  1. Gold Line Foothill Extension to Azusa– Phase 1 (FY 2016)
  2. Exposition Light Rail Extension to Santa Monica (FY 2016)
  
- New rail projects under construction:
  1. New Crenshaw Light Rail (FY 2019)
  2. Regional Connector (FY 2021)
  3. Purple Line Extension to Westwood (TBD)

The following sections describe each of these projects in greater detail.

**Gold Line Foothill Extension (FY 2016)**

The Gold Line Foothill Extension is an 11.5-mile extension east of the Gold Line Sierra Madre Villa Station to Azusa adding six new stations in the cities of Arcadia, Monrovia, Duarte, Irwindale, and Azusa (Figure 4.2). Construction began in June 2010. On May 2, 2011 Metro staff met with the Foothill Construction Authority to discuss an initial bus/rail interface plan. Discussed were the rerouting of Lines 79, 264, 270, and 487 to serve the Arcadia, Monrovia, and Duarte stations and optimize bus/rail connections to facilitate transfer opportunities. The new extension offers an alternative mode of transit by improving access to Downtown Los Angeles and other destinations throughout the county by connecting with Metro Bus, Metro Rail, Metrolink Commuter Rail Lines, and other local regional transit providers.

Metro does not operate bus service east of the Duarte Station. The primary operator in the San Gabriel Valley is Foothill Transit who will provide service to the Gold Line’s Irwindale, Azusa/Alameda, and Azusa/Citrus stations (as well as other local municipal operators).



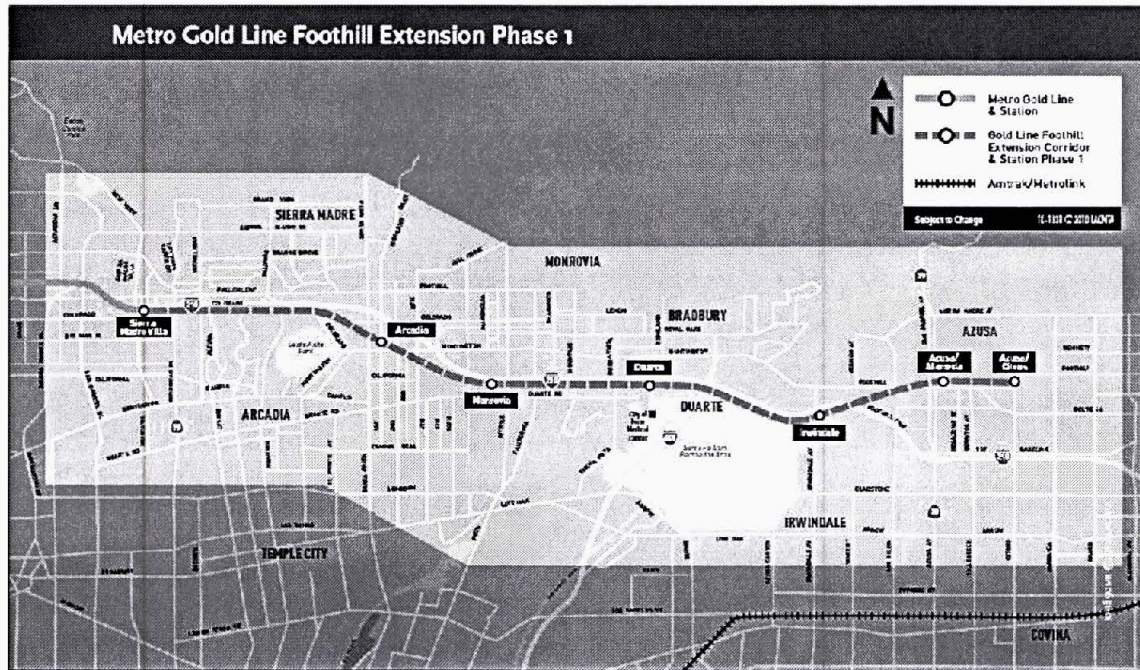


Figure 4.2 Gold Line Foothill Extension Phase 1

### **Expo Light Rail Extension to Santa Monica (FY 2016)**

The first phase of the Expo Light Rail was opened in June 2012, operating from the 7<sup>th</sup> St. / Metro Center in Downtown Los Angeles to Culver City. The Expo Line makes connections with the Blue, Purple, and Red rail lines at 7<sup>th</sup> St. / Metro Center in Downtown Los Angeles (Figure 4.3). The second phase of the Expo Light Rail consists of a 6.7 mile extension beginning at the Culver City Station and extending westerly to Santa Monica (Figure 4.4). Phase 2 construction began in summer 2012.



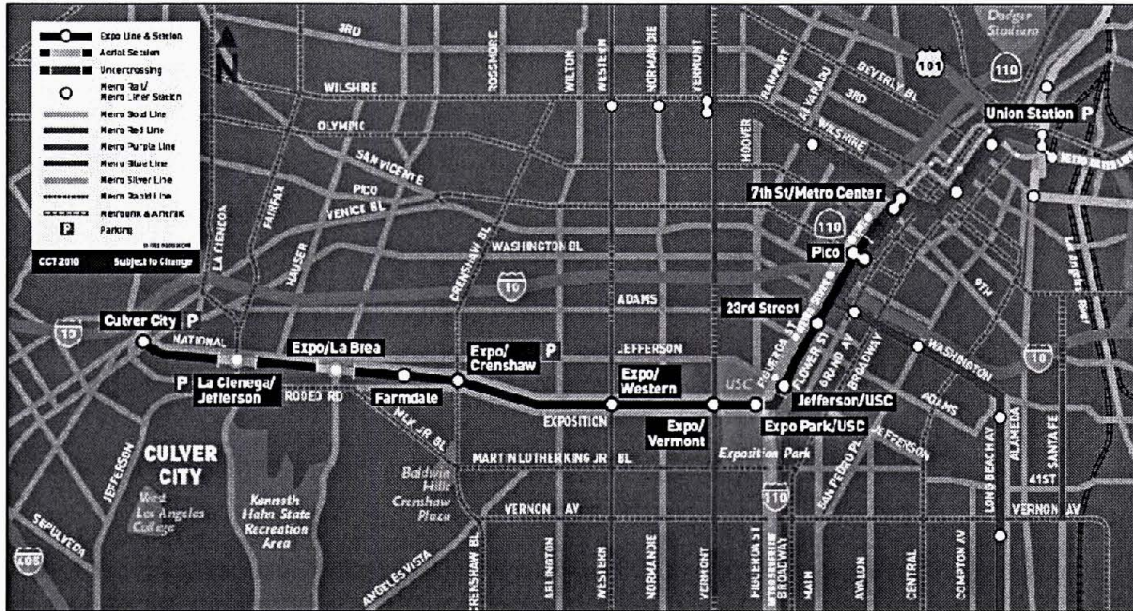


Figure 4.3 Expo Light Rail Project Phase 1 to Culver City

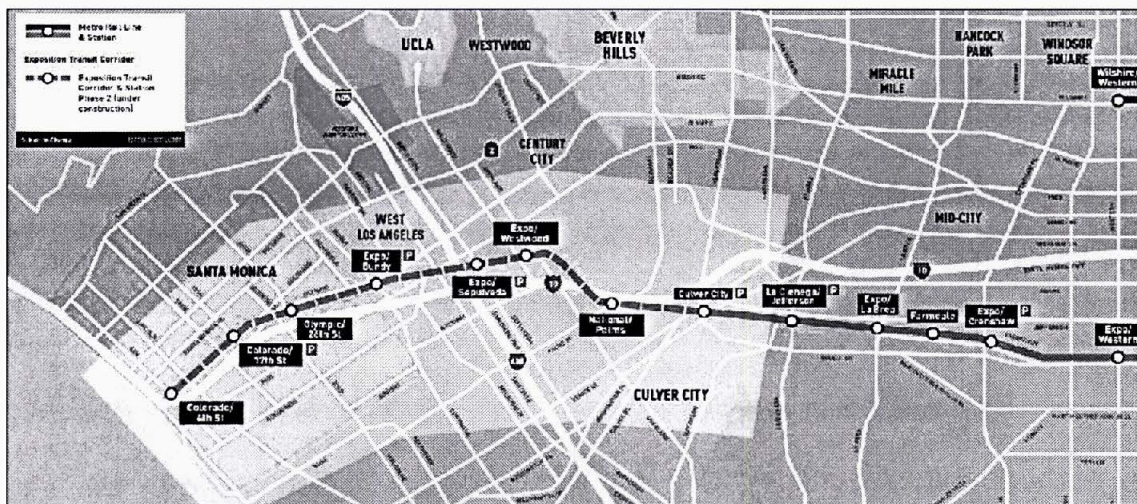


Figure 4.4 Expo Light Rail Project Phase 2 to Santa Monica

Principal transit operators serving rail stations west of the Expo Culver City Station are Santa Monica Big Blue Bus and Culver City Bus. However, Metro operates seven bus lines into and through Santa Monica. The following Metro Bus Lines will be considered for restructuring to provide service en route or terminate service at the Expo Line's Colorado/4<sup>th</sup> Station to optimize bus/rail connections facilitating transfer opportunities:

- Line 4
- Line 20
- Line 33
- Line 534



- Line 704
- Line 720
- Line 733

**Note:** Lines 4, 20, and 33 provide service to Downtown Santa Monica during early morning, evenings, or owl service time periods. Express Line 534 and Rapid Lines 704, 720, and 733 provide service to Downtown Santa Monica all day.

Initial planning calls for the shortening of Metro's Express Line 534. Line 534 currently operates between Malibu and the Washington/Fairfax Transit Hub. When Expo Line Phase 2 construction is completed, Line 534's eastern terminal will be moved to the Expo Colorado/4<sup>th</sup> St. Station in Downtown Santa Monica. Previously mentioned Metro bus lines may undergo minor rerouting within Santa Monica as existing layover locations are impacted by the Expo line.

#### **Crenshaw Light Rail (FY 2019)**

The Crenshaw/LAX Transit Corridor is a new light rail line Metro plans to open in FY 2019. It is centrally located between Downtown Los Angeles, West Los Angeles, and the Los Angeles International Airport (LAX). It will link the Crenshaw District with LAX and Redondo Beach. The project involves constructing an 8.5 mile light rail line between the Metro Expo Line at Crenshaw Station and the Metro Green Line near the Aviation/LAX station (Figure 4.5).

The Crenshaw Line will operate a combination of at-grade, below grade, and in aerial structures providing service to eight new stations. The Crenshaw Line will assume service currently served by the Green Line south of its Aviation/LAX Station (Mariposa, El Segundo, Douglas, and Redondo Beach stations). In addition, the project will result in rerouting the Green Line so that trains will be diverted northbound to serve a new station at Century and Aviation. This new station will be the Green Line's new western terminal.

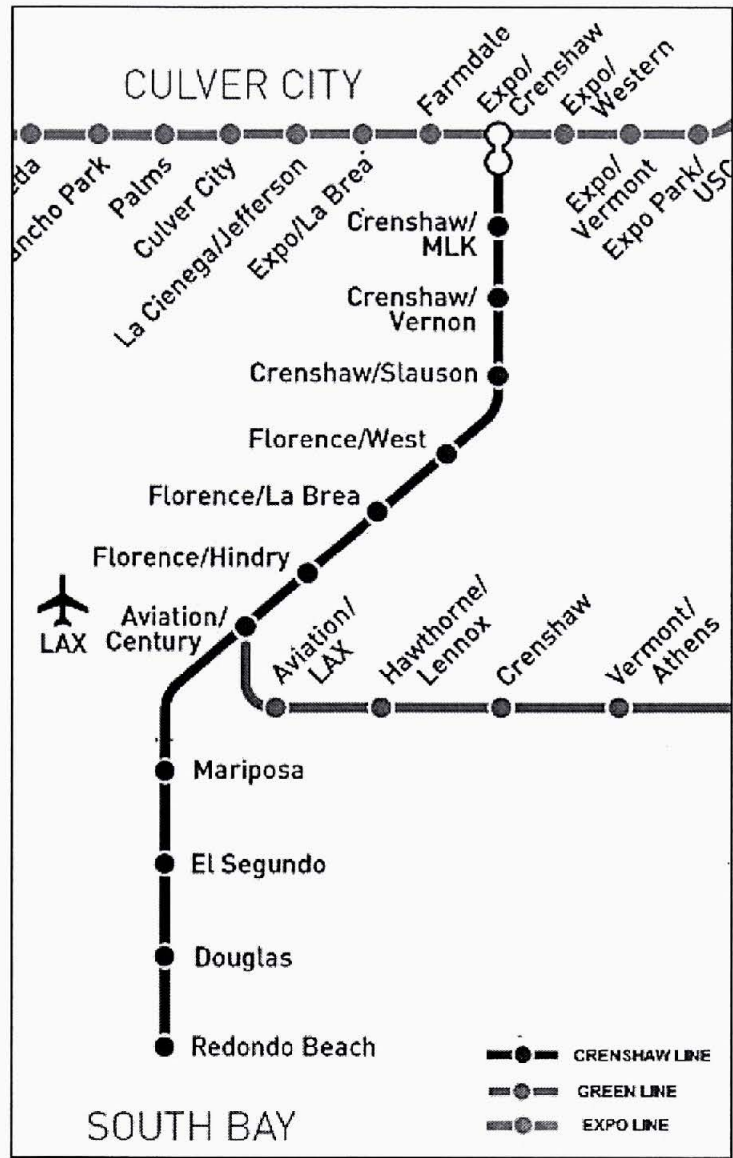


Figure 4.5 Crenshaw Line

**Regional Connector Transit Corridor Project (FY 2021)**

The Regional Connector is a new light-rail project undertaken by Metro and is planned to open in FY 2020. This largely underground project is located in Downtown Los Angeles. On the north end of the project, existing railway used by the Gold Line will be reconstructed so that approaches to the Regional Connector will transition from at-grade to below grade. The project includes three (3) new stations with one to replace an existing station (Little Tokyo) that will be closed.

The Regional Connector will introduce a significant change for Metro Rail operations. This project will create a direct link between three existing light rail lines (Blue, Expo, and Gold Line) as shown in Figure 4.6.



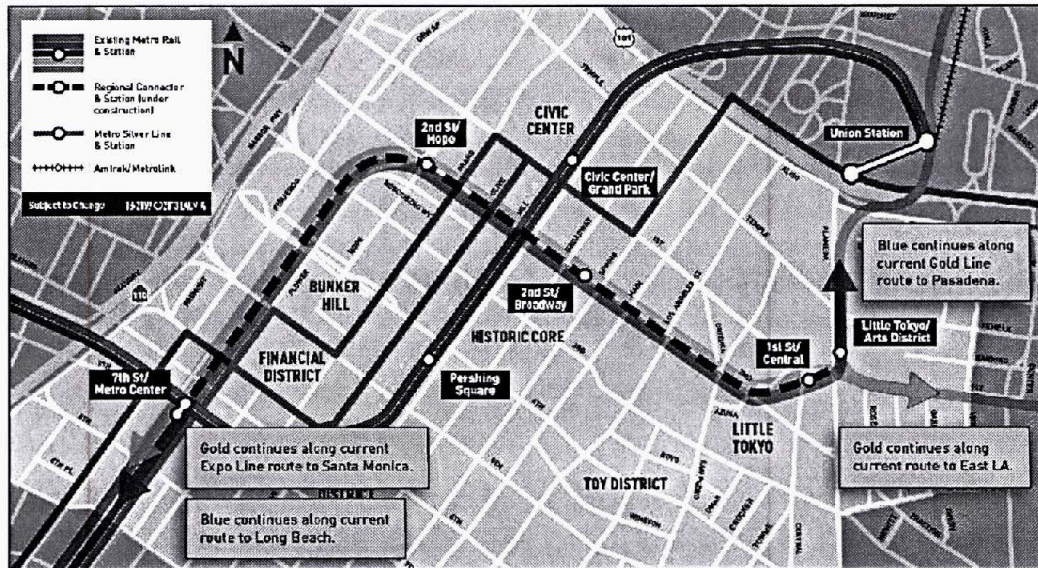


Figure 4.6 Regional Connector Transit Corridor Project

As indicated in Figure 4.6 the current proposal will link the Expo Line from Santa Monica with the Gold Line to East Los Angeles and the Blue Line from Long Beach with the Gold Line to Azusa as shown in Figure 4.7.

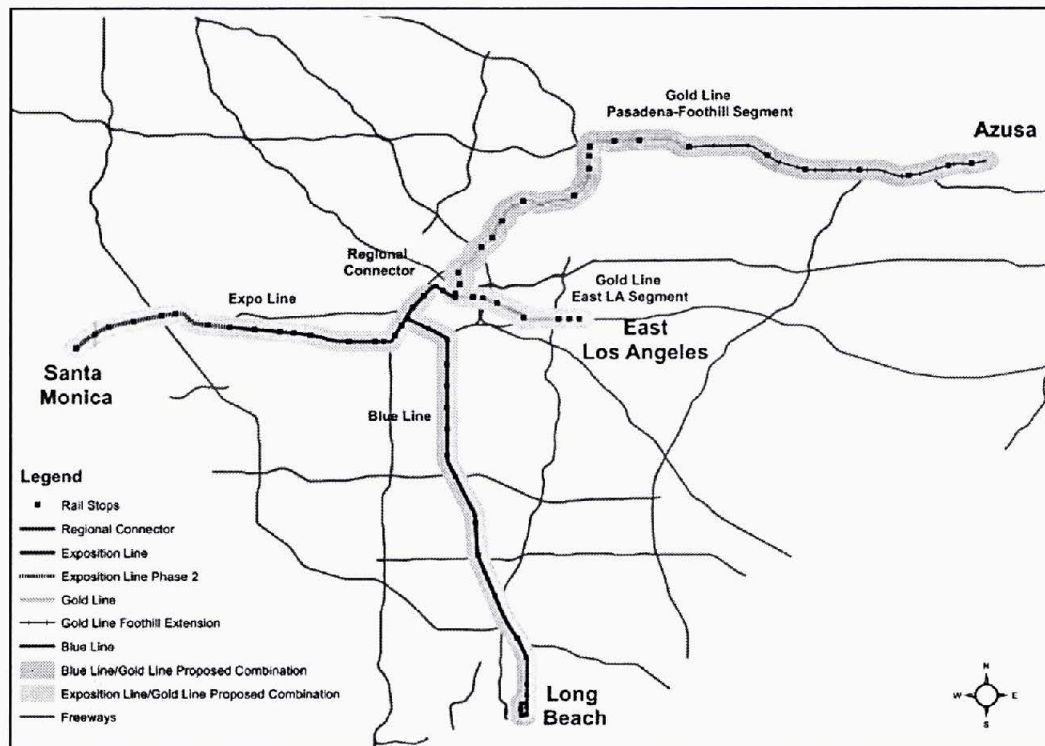


Figure 4.7 Proposed Light Rail Combinations



**Westside Purple Line Extension (2036)**

The construction of the Purple Line Subway Extension from Wilshire/Western Station to the Veteran’s Administration Building in the Westwood District of Los Angeles is planned to be initiated. Figure 4.8 depicts this 9-mile extension project. This extension will be constructed in segments.

- Phase I: Wilshire/Fairfax Station (FY 2024)
- Phase II: Century City Station (FY 2026)
- Phase III: Westwood/VA Hospital Station (FY 2036)

This service extension will be accompanied by improving peak period frequency from every 10 minutes to every 6 minutes on both the Purple Line and Red Line.

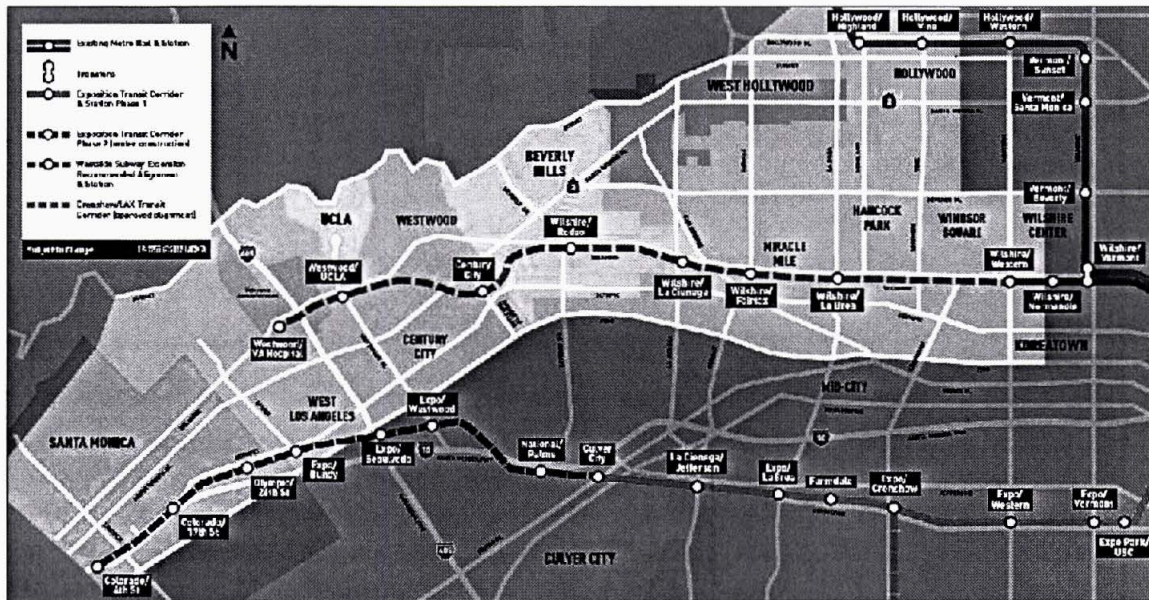


Figure 4.8 Westside Purple Line Extension

Once this extension is completed, it is projected to take 25 minutes to travel between the Westwood/UCLA station and the Pershing Square Station in Downtown Los Angeles.

Figure 4.9 is a conceptual map of what Metro’s rail system will look when the Westside Purple Line Phase III extension to Westwood is completed by 2036. This map shows the Gold Line Foothill extension to Azusa, the Expo Line extension to Santa Monica, the new Crenshaw Line alignment, the Purple Line extension to Westwood, and the Regional Connector that connects three light rails through Downtown.



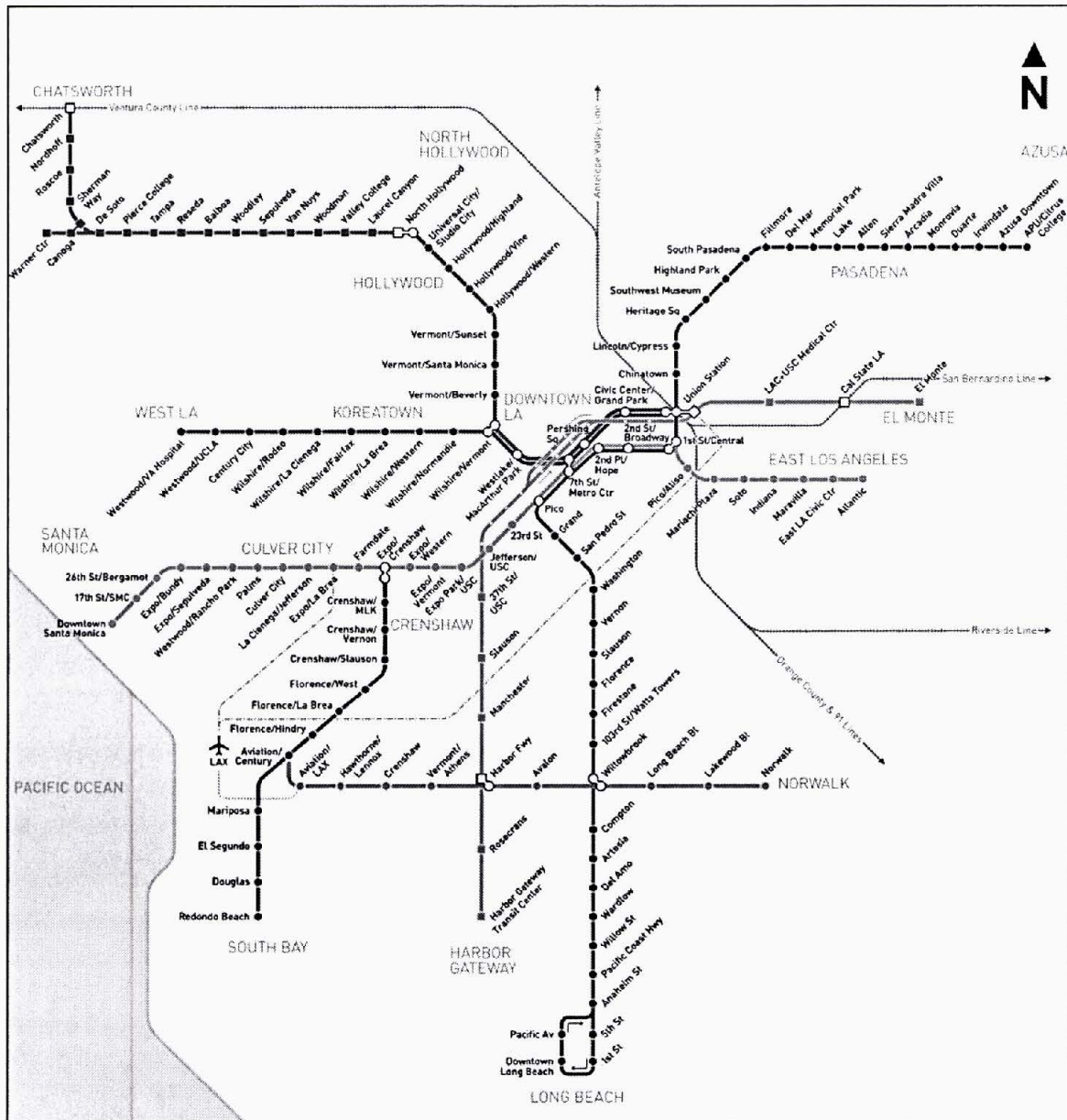


Figure 4.9 Metro Rail Projected Concept Map

### 4.3 TRANSIT CORRIDOR STUDIES

Metro planners are working on four major transit studies to develop an additional set of transit services. These studies will improve travel speeds, accessibility, and mobility throughout Los Angeles County. The first of these studies is the Los Angeles County BRT & Street Design Improvement Study. *This study* seeks to identify a number of potential corridors that could benefit from the implementation of BRT throughout the county. A second study, the Strategic Bus Network Study will identify street segments that that will continue to provide a high level of service over the next 20 to 30 years because they serve major

generators and attractions. A third study, the Bus Stop Usability Study will evaluate all bus stops in County to assess their usability and accessibility. Finally, the East San Fernando Valley Transit Study will eventually select a mode of transit to operate a north-south route alignment to be built in East San Fernando Valley.

### **Los Angeles County BRT & Street Design Improvement Study**

This study involves identifying a number of potential candidate corridors for an effective countywide BRT system that includes bus lanes. The list of candidates will be refined to eight or nine corridors for further study. Specifically, each corridor will be analyzed for its capability to provide dedicated peak-period bus lanes along with a number of other bus speed improvements such as signal priority and wider stop spacing. The initial study was completed in 2014. The recommended corridors have been identified and will be subject to a more detailed corridor level technical analysis.

### **Strategic Bus Network Study**

This study will identify, over the next 25 to 30 years, street segments that will continue to receive a high level of bus service because it serves major generators/attractors or because they provide a natural connection between such entities. This plan will guide new bus service and infrastructure investments in support of Measure R and Metro's expanding rail network.

### **Bus Stop Usability Study**

Los Angeles County has an estimated 25,000 bus stops. Approximately 15,000 of these are Metro bus stops; the remaining 10,000 bus stops are utilized by the other fixed-route transit providers within Los Angeles County.

The Metro Bus Stop Usability Study will provide a comprehensive review of existing conditions at all bus stops throughout Los Angeles County in order to document the physical characteristics of each bus stop and evaluate its usability. The inventory process will entail the accumulation of data on each bus stop to evaluate and determine what bus stops may need to be improved, remediated, or eliminated. During the course of the study Metro will:

1. Rate each bus stop overall for usability.
2. Rate each element of the bus stop to rank its usability and determine deficiencies.



3. Identify barriers to usability that may prevent a person with disabilities from using the bus stop such as obstacles or barriers in the pathway of a bus stop including bus shelters too close to the curb, poles blocking pathway, sidewalks with no curb cuts, newspaper racks and trash containers blocking path, lack of cemented sidewalks, etc.
4. Develop a Bus Stop Usability Report shall be created for each bus stop and for the system as a whole from all the gathered information. Some of the elements of the report are:
  - Photographs.
  - Recommendations will be developed to improve the overall usability of the stops.
  - Inventory page for each bus stop.
  - Develop a county-wide set of needed improvement needs categorized by jurisdiction from the data collected during the inventory process.

#### **East San Fernando Valley Transit Study**

In May 2010, the Board directed Metro to work with the City of Los Angeles and conduct a transit study to evaluate ways to improve north-south transit opportunities in the East San Fernando Valley. In June 2011, Metro initiated an alternatives analysis study. Based on technical analysis, the following items were advanced to the draft environmental review phase for further analysis in October 2012:

- **Modes** - Bus Rapid Transit (BRT), Light Rail Transit (LRT), or Tram
- **Route Alignments**
  - BRT Southern Alternatives: Van Nuys Blvd. and Southern section of Sepulveda Blvd. via the Orange Line Right-of Way or Ventura Blvd. (BRT Alternatives).
  - LRT / Tram Southern Alternative: Van Nuys Blvd. to Ventura Blvd.
  - Northern Terminal: Sylmar/San Fernando Metrolink Station.
- **Route Configuration** – Curb Running (Peak Period Bus Lane Only) or a Dedicated Median Operation.

As shown in Figure 4.10 this service will operate mostly on Van Nuys Blvd., which is San Fernando Valley's second busiest transit corridor behind the Metro Orange Line. The full study is scheduled to conclude in late 2014/early 2015.

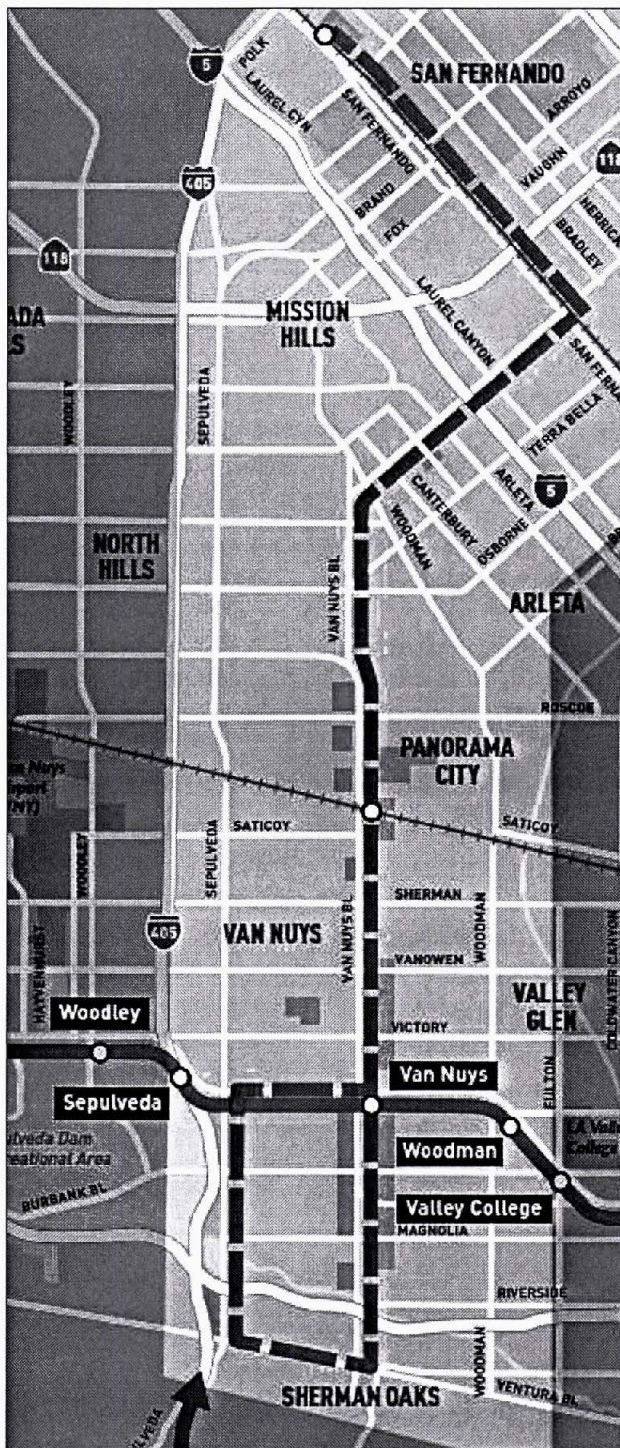


Figure 4.10 Alternative San Fernando Valley North-South Study Routes



#### 4.4 WHEELCHAIR SECUREMENT & PRIORITY SEATING AREAS

Thanks to past improvements such as the implementation of low-floor buses, Metro currently boards the most wheelchairs in the nation with over 80,000 per month. This is a huge jump from the 3,500 wheelchair boardings per month just ten years ago! While operating low-floor buses has proven to be effective in the boarding and alighting of wheelchair patrons, the one ongoing issue has been the proper securement of the wheelchairs; both manual and power. As a result many wheelchair patrons opt not to be secured, which has resulted in a number of onboard accidents. In addition, dwell time is dramatically increased, because the bus operator is spending time on how best to secure a wheelchair when requested. Metro is taking the initiative to go above and beyond ADA requirements to ensure it remains one of the most accessible and safe transit systems in the U.S.

##### Q'POD Restraint Systems

In an effort make it easier and safer for patrons who use a mobility device Metro began working with suppliers to look at ways to provide more choices for wheelchair patrons in terms of securement and positioning. In January 2013, the Metro Board approved a 550 bus order that incorporates two forward facing Q'POD restraint systems and two rear-facing barriers per bus. The change to incorporate ADA equipment was approved by the Board on July 25, 2013.

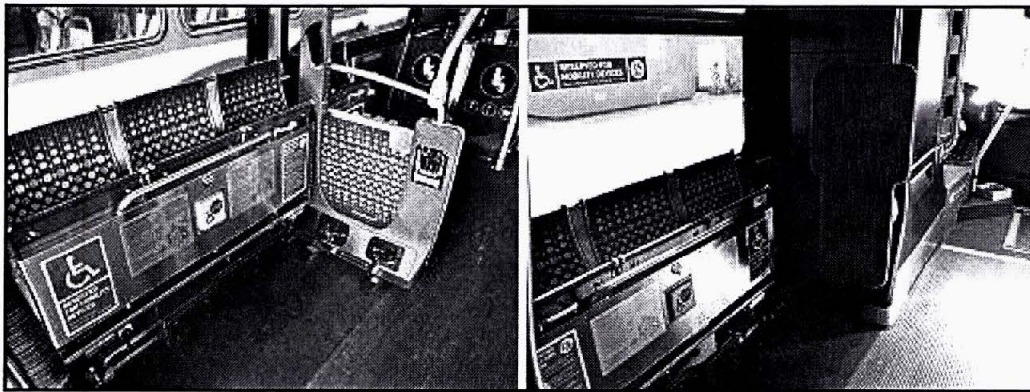


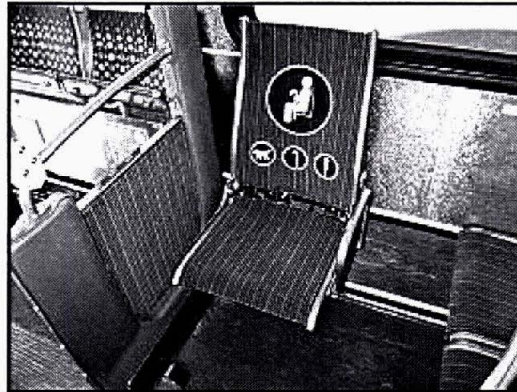
Figure 4.11 Forward Facing & Rear Facing Q'POD Restraint Systems

A Q'POD is a fully integrated wheelchair securement station specifically designed to secure virtually all styles of wheelchairs with a simplified operation that allows for quicker securement times, which aids in reducing vehicle dwell time. It is the first complete wheelchair station that can be simply bolted into the vehicle and an integrated shoulder belt eliminates the need for window brackets in combination with the front tensioner and scooter ring and delivers an ADA approved 3-point securement that eliminates a trip hazard.



### **Priority Seating Area**

In addition, priority seating areas will now be identified by improved pictogram decals and new seat fabric designs, making them easy to distinguish. The new buses ordered will include a special area for those who use walkers; these buses will begin entering service early next year.



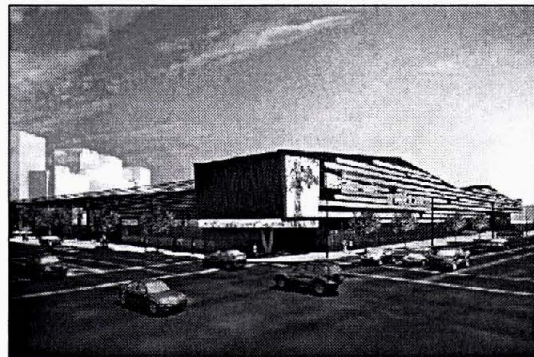
**Figure 4.12** Priority Seating reserved for seniors and persons with disabilities

As for trains, new areas will be reserved for wheelchairs, and they will be marked by blue floor decals and an International Symbol of Access (ISA) graphic. These spaces will be separate from the areas allotted for bicycles, luggage and strollers. New light rail cars will have space for four wheelchairs in each articulated car. That's up to 12 locations per 3-car train!

## **4.5 NEW BUS AND RAIL DIVISIONS**

### **New Bus Division (FY 2015)**

As previously mentioned, Metro will commission a new bus division in FY 2015. *Division 13* will be centrally located northeast of Downtown Los Angeles at the intersection of Vignes St. and Cesar E. Chavez Ave. This new facility is to be constructed on one of Metro's existing properties (Terminal 31) adjacent to the Fleet Management Support Service Facility and the Twin Towers Correctional Facility. The total

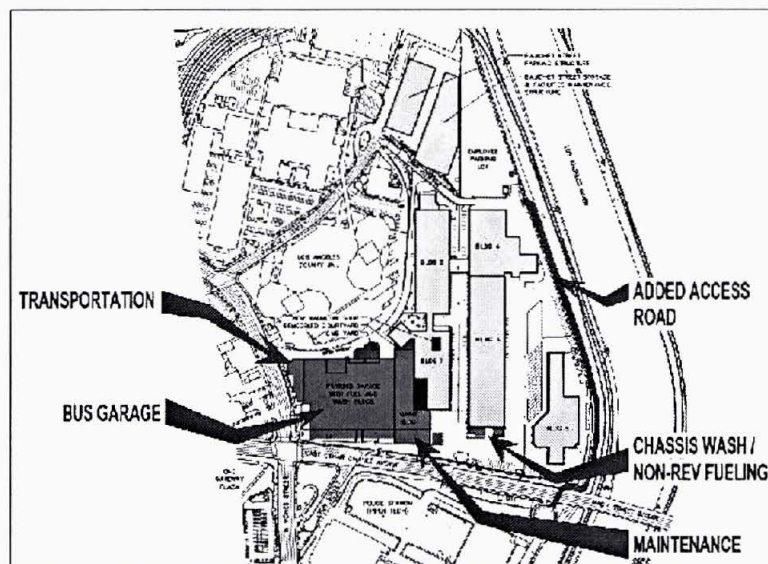


cost of this project is estimated at \$95M. In 2011, the Federal Transit Administration (FTA) awarded Metro a State of Good Repair Grant (\$47.75m) and a Clean Fuels Grant (\$5.5M) for a grand total of \$54.25M. The remaining balance will be paid through local funds. The entire site area sits on 10.58 acres



and Division 13 itself will occupy 8.25 acres. The construction phase began in November 2012 and is expected to be completed by the summer of 2014.

Division 13 will be designed to accommodate a fleet of 200 40-foot CNG buses. However, this facility will have the capability to support higher capacity buses



such as Metro's 45-foot and 60-foot articulated buses. Key features of this division are a multi-level structured parking garage; maintenance building, fueling for both revenue and non-revenue vehicles, washing for revenue and non-revenue vehicles, maintenance and transportation offices, and support areas. In addition, Metro included a number of sustainable design features such as

natural ventilation, day lighting to all major work areas, a 275,000 gallon underground storm water retention tank, and water efficient landscaping.

### New Rail Divisions

**FY 2016:** Metro Rail will commission two new rail divisions. *Division 14* is located in Santa Monica and will support the Expo Line. *Division 24* is located in Monrovia and will support the Gold Line.

**FY 2019:** Metro Rail will commission a new rail division. *Division 16* is located adjacent to Los Angeles International Airport (LAX). While planned to support the Crenshaw Light Rail Line, this Plan assumes *Division 16* will support the Green Line along with *Division 22* at which time the Green Line will be restructured to operate from the new Aviation/Century Station to Norwalk.

**Note:** Section 6.1 provides additional information.

### **4.6 DIVISION 2 MASTERPLAN & RENOVATION**

Division 2 is located on the south side of Downtown Los Angeles. As early as 1923 the property was originally known as the Los Angeles Railway's 16<sup>th</sup> Street Garage. Construction of the existing shop building was initiated in 1926 and completed in 1927 to service the company's motor vehicles and motor coaches.

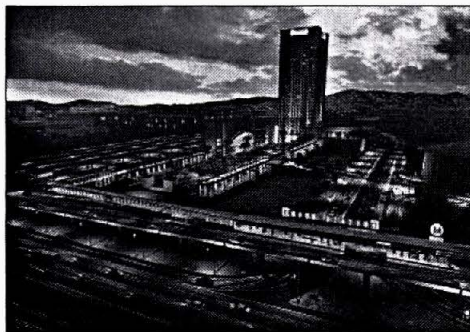
On January 22, 1929 it was officially designated the Coach Division. In January 1946 it was designated the Los Angeles Transit Lines Division<sup>2</sup>. The bus maintenance building is eligible for historic designation requiring additional design sensitivity. The master planning effort is focused on modernizing and upgrading the systems within the maintenance building to make the facility more efficient and extend its useful life another 50 years.

The scope of improvements includes replacing an antiquated bus washes, updating service and fuel areas, and an addition for expanded maintenance capacity. The final master plan also includes a new transportation building and off-site parking lot improvements. The upgraded facility will be designed to serve 120 buses.

During the renovation stage Division 2 transit operations will be temporarily moved to Metro's New Bus Division 13 located North East of Downtown near the Los Angeles Union Station.

#### **4.7 PATSAOURAS PLAZA BUSWAY STATION (TBD)**

For some time, the entrance to the I-10 Freeway ExpressLanes (formerly the El Monte Busway) at Union Station has been in need of reconfiguration to allow for a more efficient flow of pedestrians, buses, and automobiles. Furthermore, the passenger boarding/alighting areas for the ExpressLanes are not located adjacent to Union Station. Rather, they are situated at the corner of Alameda Street and the I-10



Freeway ExpressLane entrance which requires a long walk eastbound through the Union Station to the Patsaouras Transit Plaza to connect with other services.

To resolve these issues and provide a more user-friendly passenger experience, a number of potential configurations have been evaluated. The final preferred configuration is to provide a new passenger boarding/alighting area on the south side of Patsaouras Transit Plaza on the I-10 Freeway ExpressLanes. The Union Station/ Patsaouras Busway Station project consists of the following main design and construction elements:

- Optional relocation of the Busway patron boarding island (now situated at the corner of Alameda Street).
- Widening of the existing Caltrans Los Angeles River Busway Bridge and Overhead.



- New vertical and horizontal pedestrian circulation elements (pedestrian ramp/walkway, pedestrian over crossing, elevators, and stairs) along the I-10 Freeway ExpressLane and connecting to the south end of Patsaouras Transit Plaza.

This project was originally projected to be completed in 2015, but has now been put on hold because bids to date have come in higher than the budgeted \$16.8M estimated cost.

## **SECTION 5: METRO'S FARE STRUCTURE & POLICY**

Metro charges a flat fare to most users with a discounted fare structure for the elderly, disabled and student riders. Most fares can be prepaid on a daily or 30-day basis. Full fare riders can also purchase a prepaid 7 day pass. Cash riders must pay a full fare for each boarding although transfers to services operated by others are available. Riders on express services (lines in the 400-599 range) pay an additional surcharge based upon distance. Riders on the Metro Silver Line, operating on the I-10 & I-110 ExpressLanes, pay a premium flat fare.

### **5.1 RECENT FARE HISTORY**

In May 2007, the Board approved a two stage fare change to be implemented on July 1, 2009 and July 1, 2011, respectively. The first stage changes would impact only full fare riders. The second stage changes would impact reduced fare (elderly, disabled and student) riders. With the passage of Measure R in November 2008, a Board action to further defer the pending fare changes took effect. The full fare changes went into effect on July 1, 2010. The reduced fare changes were to be effective on July 1, 2013. However, the agency has subsequently initiated a fare policy study seeking ways to restructure Metro's pricing.

Table 5.1 provides Metro pricing and fare structure for the past ten years. Table 5.2 provides information on Metro Silver Line pricing and fare structure since its introduction in December 2009.

The Metro Silver Line began operation in December 2009 as a consolidation of several freeway express services that had been operating independently within the I-10 and I-110 freeway corridors. A separate pricing structure was adopted for that service as shown in Table 5-2.

An experimental one year reduction in the price of a Day Pass from \$6 to \$5 was implemented on August 1, 2011. That reduced price has been extended indefinitely while the current fare policy study is underway.



**Table 5.1**

*Recent Metro Pricing and Fare Structure*

	Effective Jan 1 2004	Effective July 1 2007	Effective July 1 2010	Effective August 1 2011	Effective July 1 2013
<b>Regular</b>					
Cash	\$ 1.25	\$ 1.25	\$ 1.50	\$ 1.50	\$ 1.50
Cash - Late Night & Owl	\$ 0.75				
Cash - K to 12				\$ 1.00	\$ 1.00
Token	\$ 1.10	\$ 1.25	\$ 1.50	\$ 1.50	\$ 1.50
Day Pass	\$ 3.00	\$ 5.00	\$ 6.00	\$ 5.00	\$ 6.00
Weekly	\$ 14.00	\$ 17.00	\$ 20.00	\$ 20.00	\$ 20.00
Semi-Monthly	\$ 27.00				
Monthly	\$ 52.00	\$ 62.00	\$ 75.00	\$ 75.00	\$ 75.00
EZ Transit Pass	\$ 58.00	\$ 70.00	\$ 84.00	\$ 84.00	\$ 84.00
<b>Regular - Other</b>					
Cash Zone 1	\$ 0.45	\$ 0.60	\$ 0.70	\$ 0.70	\$ 0.70
Cash Zone 2	\$ 0.90	\$ 1.20	\$ 1.40	\$ 1.40	\$ 1.40
Cash Zone 3	\$ 1.35				
Cash Zone 4	\$ 1.80				
Cash Zone 5					
Monthly Premium Each Zone (1)	\$ 15.00	\$ 18.00	\$ 22.00	\$ 22.00	\$ 22.00
Student - Cash Zone 1					
Student - Cash Zone 2					
Student - Cash Zone 3					
Student - Cash Zone 4					
Student - Cash Zone 5					
Stu&Coll - Mon. Premium/Zone (1)					
Transfer					
Transfer - K to 12					
Metro to Muni Transfer	\$ 0.25	\$ 0.30	\$ 0.35	\$ 0.35	\$ 0.35
<b>Senior/Disabled/Medicare</b>					
Cash - Peak	\$ 0.45	\$ 0.55	\$ 0.55	\$ 0.55	\$ 0.65
Cash - Off Peak		\$ 0.25	\$ 0.25	\$ 0.25	\$ 0.30
Cash - Late Night & Owl	\$ 0.35				
Cash Zone 1	\$ 0.25	\$ 0.30	\$ 0.30	\$ 0.30	\$ 0.35
Cash Zone 2	\$ 0.50	\$ 0.60	\$ 0.60	\$ 0.60	\$ 0.70
Cash Zone 3	\$ 0.75				
Cash Zone 4	\$ 1.00				
Cash Zone 5					
Monthly Premium Each Zone (1)					
Day Pass	\$ 1.50	\$ 1.80	\$ 1.80	\$ 1.80	\$ 2.15
Monthly	\$ 12.00	\$ 14.00	\$ 14.00	\$ 14.00	\$ 17.00
EZ Transit Pass	\$ 29.00	\$ 35.00	\$ 35.00	\$ 35.00	\$ 42.00
(EZ Pass only) Monthly Premium Each Zone (1)	\$ 7.50	\$ 9.50	\$ 9.50	\$ 9.50	\$ 9.50
Transfer					
Metro to Muni Transfer	\$ 0.10	\$ 0.10	\$ 0.10	\$ 0.10	\$ 0.10
<b>Student Monthly Passes</b>					
K-12	\$ 20.00	\$ 24.00	\$ 24.00	\$ 24.00	\$ 29.00
College	\$ 30.00	\$ 36.00	\$ 36.00	\$ 36.00	\$ 43.00

Free Fare for a) Children Under 5  
 b) Blind  
 c) uniformed law enforcement personnel including TCO's within City of LA  
 d) Metro employees

- (1) Since December 2003 -- Free fares on New Year's Eve (Bus - 9pm to 5am Rail - 9pm to 2am)
- (2) Revised December 2006 -- Free fares Xmas Eve & New Year's Eve - 9pm to 2am
- (3) Since February 2007 -- LA Marathon runners ride free subsidized by City of LA
- (4) max. of 2 zones from 1-1-04; max. of 4 zones from 8-1-01; max. of 5 zones previously
- (5) Day Pass reduced from \$6 to \$5 on 8-1-11 for 1-Year Demonstration extended indefinitely
- (6) 8-8-11 Monthly Passes become 30-Day rolling passes; Weekly Passes become 7-Day rolling passes

**Table 5.2**

*Metro Silver Line Fare History*

	Effective Dec 13 2009	Effective July 1 2010	Effective August 1 2011	Effective July 1 2013
<b>Silver Line</b>				
Cash	\$ 2.45	\$ 2.45	\$ 2.45	\$ 2.45
Token	plus \$1.20	plus \$0.95	plus \$0.95	plus \$0.95
all Day Passes	accepted	accepted	accepted	accepted
Weekly Pass	plus \$1.20	plus \$0.95	plus \$0.95	plus \$0.95
Monthly Pass	plus \$1.20	plus \$0.95	plus \$0.95	plus \$0.95
EZ Transit Pass	plus \$1.20	plus \$0.95	plus \$0.95	plus \$0.95
Senior/Disabled - Peak	\$ 1.15	\$ 1.15	\$ 1.15	\$ 1.15
Senior/Disabled - Off Peak	\$ 0.85	\$ 0.85	\$ 0.85	\$ 0.85
Senior/Disabled Monthly Pass	accepted	accepted	accepted	accepted
K-12 Student Pass	accepted	accepted	accepted	accepted
College Student Pass	accepted	accepted	accepted	accepted

Free Fare for a) Children Under 5  
 b) Blind  
 c) uniformed law enforcement personnel including TCO's within City of LA  
 d) Metro employees

- (1) Since December 2003 -- Free fares on New Year's Eve (Bus - 9pm to 5am Rail - 9pm to 2am)
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- (6) 8-8-11 Monthly Passes become 30-Day rolling passes; Weekly Passes become 7-Day rolling passes

**5.2 FARE POLICY STUDY**

A fare policy study was initiated in early 2013 by the Office of Management and Budget to investigate alternatives for restructuring Metro's price structure. A variety of approaches such as flat, time-based, distance-based, premium, time of day and combinations of these approaches have been studied. As previously stated, a fare increase for reduced fare riders that had been planned for implementation on July 1, 2013, has been deferred until the Board provides guidance on future fare policies.

Key objectives of the fare policy study:

- Increasing fare revenue
- Increasing farebox recovery ratio
- Addressing transfer needs for cash paying riders
- Charging premium fares for premium services
- Incentivizing TAP usage

As Figure 5.1 indicates Metro's fares have not kept pace with inflation. As discussed in Section 3.2 if fares had kept pace with inflation today's fare would be slightly over \$2.00.



Consequently, as Figure 5.2 indicates, Metro's Farebox Recovery Ratio has declined over the years since peaking at 45% in FY 1981. Currently Metro's Farebox Recovery Ratio is at 27%, which is up slightly in recent years because of a fare increase in FY 2011.

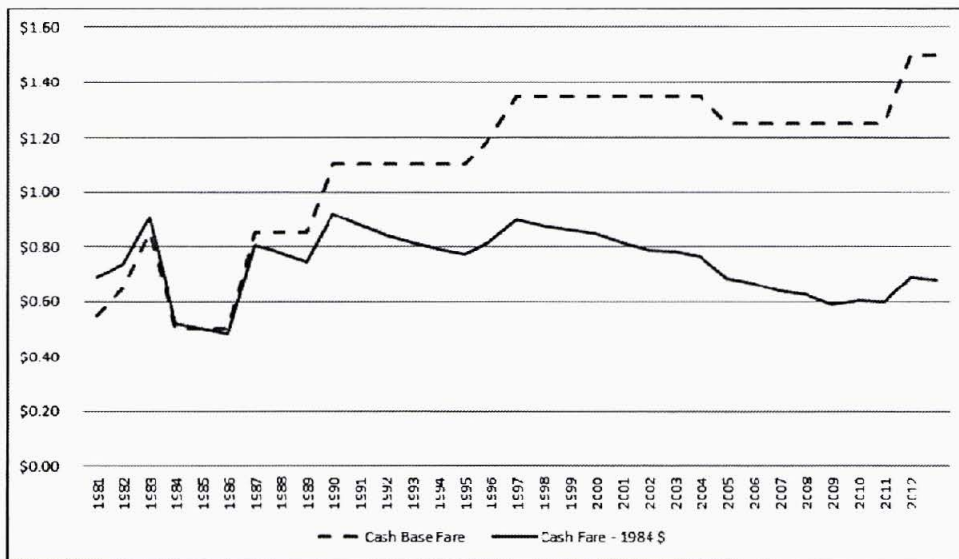


Figure 5.1 Metro Cash Fares & Inflation

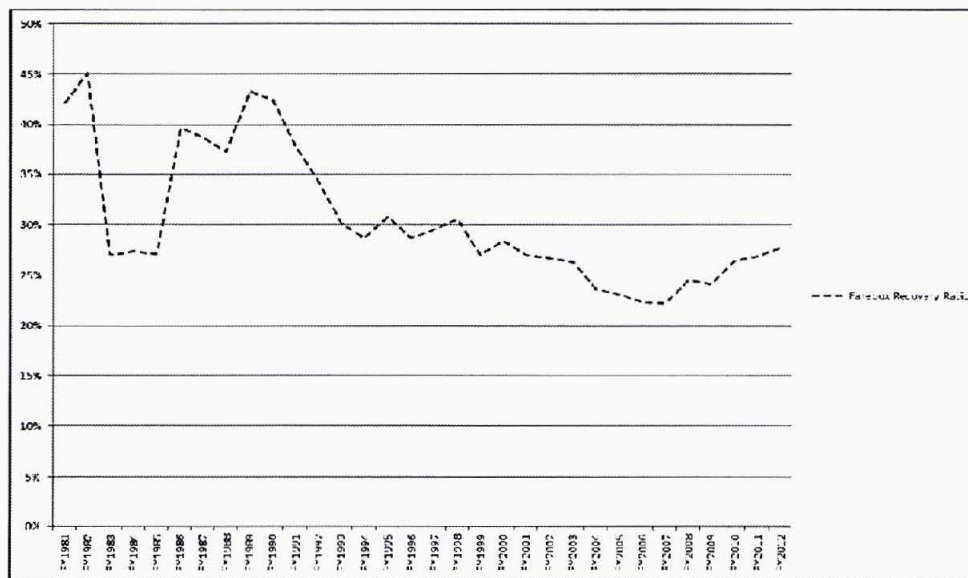


Figure 5.2 Metro Farebox Recovery Ratio

Since January 1, 2004, Metro has required a base fare payment with each boarding for those who are paying cash to ride. While this incentivizes purchase of prepaid fare instruments, such as 1-day and 30-day passes (for which unlimited boardings are permitted during the period of validity), there remain a significant number of riders who continue to pay cash. In FY 2012 nearly 28% of

boardings were by riders paying cash. Given a grid route structure that obligates many riders to transfer at least once to reach their destination, the continued high rate of cash fare payment is a concern. The fare policy study is investigating ways to address this problem including possible reinstatement of transfers, time-based pricing structures, and short duration passes.

Some services operated by Metro are perceived as premium services as they offer higher levels of amenities and/or faster service than local buses. Rail lines provide dedicated stations with off-vehicle fare collection, dedicated security and added passenger amenities. Additionally, Rapid and Limited bus lines offer faster service because fewer stops are served. The Orange Line benefits from an exclusive guideway over much of its length, and all-door boarding because of off-vehicle fare collection. The Metro Silver Line operates on uncongested HOV facilities and serves few stops through downtown Los Angeles. The fare policy study is considering which of these services should be considered premium from a pricing standpoint, and how higher pricing should be assessed (such as through an increased flat fare, or through some form of distance-based pricing).

Usage of the TAP card could be incentivized through differential pricing (a rider pays more for using cash) as well as through a time-based solution to the transfer concern TAP users would get unlimited additional boardings at no added cost for a defined time period after their initial paid boarding). Additionally, Metro continues to expand the use of TAP media on multiple operators' systems throughout Los Angeles County with eight municipal operators currently having the ability to accept TAP cards for fare payment.

### **5.3 SELF-SERVICE FARE COLLECTION**

Metro's rail system and the Metro Orange Line utilize off-vehicle, self-service fare collection. Passengers may use prepaid fare media, or purchase trip specific media from a TVM. Surveys conducted within recent years have identified a significant fare evasion problem on these services.

In 2009, Metro began installing fare gates at rail stations. In late 2012, Metro began conducting tests in which fare gates were latched at selected stations. It was found that up to one-half of riders entering these stations did not have fare media unless they were required to purchase it because the fare gates were latched. An estimated \$6-9 million in added annual fare revenue is anticipated since gates on the Red/Purple heavy rail system were latched in mid-2013.



## SECTION 6: CAPITAL IMPROVEMENT PROJECTS

Metro is initiating planned capital improvement projects that enhance safety, reliability, and sustainability needed to support its transit network now and into the future. The capital projects identified in Metro's 2009 LRTP are critical components to the overall 30-year plan. This section describes those planned short-term capital projects that are necessary to support its transit network, protect its capital investments, and promote a "greener" environment. Over the life of this plan new facilities will be built, existing facilities will be upgraded, new rail lines will be completed or under construction, and new environmental friendly transit vehicles will be procured.

### 6.1 CAPITAL IMPROVEMENTS TO EXISTING FACILITIES

Metro presently operates 11 bus divisions, 4 rail divisions, is constructing a new bus division, and will be constructing three new rail divisions to support its growing rail network (Figure 6.1). In addition, Metro operates a number of other support facilities located throughout Metro's service area.

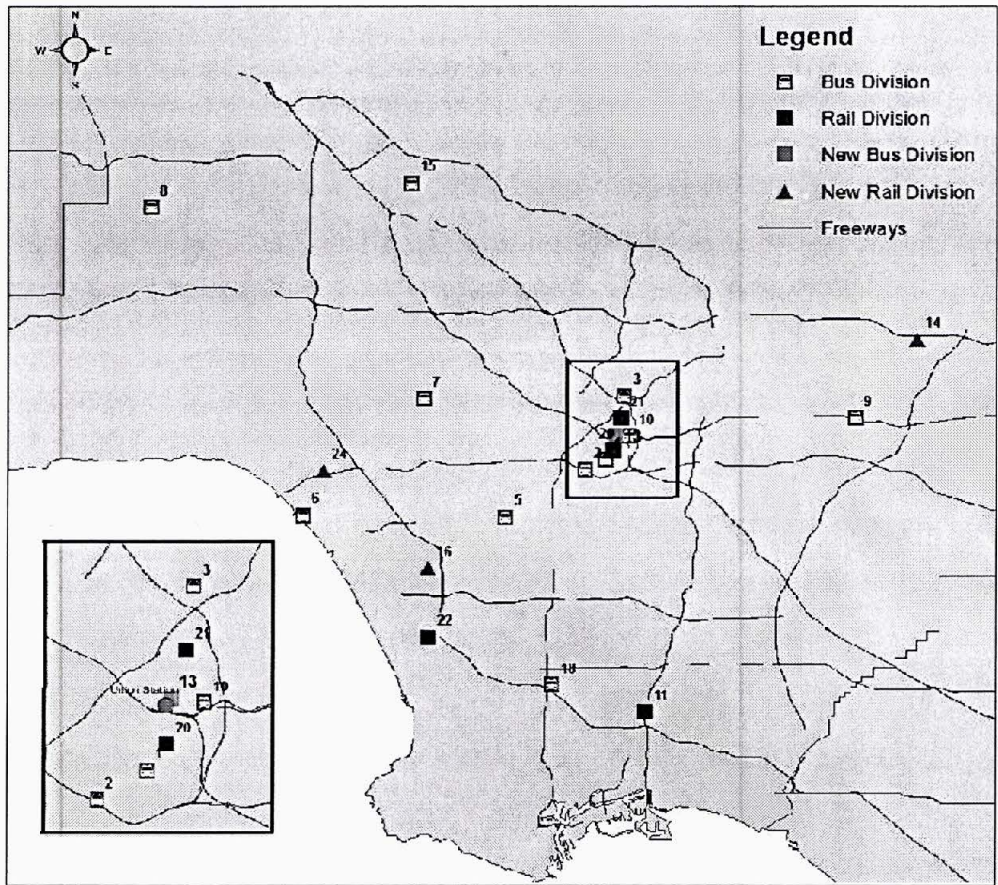


Figure 6.1 Metro's Bus / Rail Divisions



**Bus Divisions and Support Facilities**

Metro operates 11 bus divisions where buses are housed and maintained. System wide, Metro is using 90% of its designed parking capacity; however, there are several divisions that are operating at or over their designed parking capacity as shown below in Table 6.1. Operating over designed parking capacity negatively impacts a bus division’s operational flexibility and strains efficient management of bus operations.

**Table 6.1**

*Metro Bus Division Fleet Assignment (June 2013)*

Division	40-Foot Bus Parking Design Capacity	40-Foot Bus	45-Foot Bus	60-Foot Bus	Actual Number of Buses	40-Foot Bus Equivalence	Actual Operating Storage Utilization
1	245	150	22	30	202	220	90%
2	195	175			175	175	90%
3	210	68	41		109	114	54%
5	247	127		51	178	204	82%
6	79		39		39	44	56%
7	248	159	22	32	213	232	93%
8	238	38	121	43	202	239	100%
9	235	210	32		242	246	105%
10	259	97		99	196	246	95%
15	262	81	113	37	231	264	101%
18	280	75	101	56	232	273	97%
Total	2,498	1,180	491	348	2,019	2,254	90%

**Note:** Metro’s bus parking design capacity is stated in terms of 40-foot buses. A 40-foot bus equivalence factor is used to calculate actual operating storage capacity since Metro operates various bus sizes.

In the past, Metro’s Capital Improvement Program once included a number of bus division expansion projects because of a need to increase bus parking capacity. When the Board approved building a new centrally located bus division, resources were redirected to renovating and upgrading Metro’s 11 existing bus divisions through its Capital Improvement Program at an estimated cost of \$20,896,000.

The majority of repairs and upgrades to Metro’s bus divisions have been completed such as new roofs, new bus washer facilities, new compressed natural gas facilities, and the modernization of maintenance buildings among



many other items. Improvements and upgrades to Divisions 1, 2, and 3 are expected to be completed by the end of FY 2014 as noted below:

- **Division 1:** Modifications to this division include refurbishing and expanding major sections of the facility and updating its equipment. The specific improvements will be determined when a master site plan is completed. This effort is a part of Metro's Bus Facility Deferred Maintenance Improvements and Enhancement Program.
- **Division 2:** Improvements to Division 2 is focused on modernizing and upgrading the systems within the maintenance building and includes a new transportation building and off-site parking lot improvements (See Section 4.5 for further details). During the renovation stage Division 2 transit operations will be temporarily moved to Metro's New Bus Division 13 located North East of Downtown near the Los Angeles Union Station.
- **Division 3:** Improvements to Division 3 consist of implementing Phases II – IV of the Master Plan. Improvements include a variety of items including a new articulated bus repair annex, farebox repair annex and warehouse. This effort is a part of Metro's Bus Facility Deferred Maintenance Improvements and Enhancement Program.

The following needs and issues still need to be addressed in an updated State of Good Repair Plan beyond the current capital improvement plan which expires in FY 2014:

- **Division 4:** This is Metro's non-revenue vehicle division. It is in good condition but it is not centrally located, which means the equipment (including maintenance vehicles) has to travel long distances to be serviced.
- **Division 8:** Install Metal Bin Canopies and Building Awnings and re-stripe bus parking lot to increase parking capacity.
- **Division 9:** A new maintenance shop is needed and the parking structure needs to be replaced. The current maintenance shop is undersized and outdated. The parking structure is inefficient due to poor design.

Metro has a number of other sites that support Metro's bus operations that serve in various capacities that should be a part of a needs assessment to determine if they should be included in Metro's future state of good repair plan:

- **Division 12:** Metro is currently leasing this facility on a short-term basis to the City of Long Beach for bus storage. Eventually a new location will need to be found.

- **Location 14:** South Park Shops are located in South Los Angeles. This is a large industrial-use facility, which houses bulk storage for large or slow-moving parts and supplies, storage of salvage equipment (and other material scheduled for disposal or sale), and flammable material storage. It also houses various facilities maintenance functions, such as carpentry, sign printing, and large maintenance equipment.
- **Location 29:** The Cash Counting Facility is located at Division 2. Cash and tokens collected through bus and rail revenue operations are counted at this site.
- **Location 30:** Maintenance Support Services Center is located in the northeast portion of Downtown Los Angeles (one block from Metro headquarters building at Gateway Center and adjacent to new Division 13). This maintenance facility is recognized as one of the most advanced and efficient bus repair operations facilities of its kind in the world and contains the following functions:
  - Heavy Maintenance Bus Support
  - Unit Repair
  - Bus Painting
  - Body Shop
  - Alternate Fuels Testing
  - Emissions Testing
  - Electronic Farebox Repair
  - Central Stores

Maintenance Support Services Center also serves as the primary site for the Transportation and Maintenance Departments' Central Instruction function. All training for new operators, mechanics, and service attendants occurs at this facility, as well as training classes for existing operators, mechanics, and service attendants:

- **Location 33:** The San Gabriel Office located at El Monte Station houses Access Services, a Sheriff Satellite Station, and bus Division 9 (Transit Operations).
- **Location 34:** Vernon Yard is located south of Downtown Los Angeles in the City of Vernon. The Rail Facilities Maintenance Section and Farebox and TVM Maintenance Section are located here. Training for Class A licenses for mechanics and bus familiarization for new service attendants is conducted here.
- **Location 508:** The Instruction Lot is located on the corner of Temple Street and Beaudry Ave. (used for bus operator instruction).



### **Rail Transportation & Maintenance Divisions**

There are a total of three light rail divisions and one heavy rail division that provide vehicle storage, inspection, cleaning and all major repair functions:

- **Division 11:** *Light Rail Division* assigned to support both the Blue and Expo Lines. This facility is located 15 miles south of Downtown Los Angeles, adjacent to the Blue Line right-of-way between the Del Amo and Wardlow Stations in North Long Beach and can house a total of 86 rail cars.
- **Division 21:** *Light Rail Division* assigned the Gold Line. This facility is located 1.5 miles north of Union Station, adjacent to the Los Angeles River and the Gold Line right-of-way, between Chinatown and Lincoln Heights/Cypress Park stations and can house a total of 50 rail cars.
- **Division 22:** *Light Rail Division* assigned to the Green Line. This facility is located at the far west end of the line and is adjacent to the Green Line right-of-way, between Douglas/Rosecrans and Marine/Redondo Beach stations, and can house a total of 39 rail cars.
- **Division 20:** *Heavy Rail Division* assigned to both the Purple and Red Lines. This facility is located one mile south of Union Station in Downtown Los Angeles and can house a total of 200 rail cars.

### **6.2 NEW BUS DIVISION**

Bus Division 13 is being built next to the Central Maintenance Facility across from the Patsaouras Bus Plaza at Vignes St and Cesar E. Chavez Avenue. It will be a full service bus division capable of accommodating 200 40-foot equivalent buses with the ability to handle 45 and 60 foot buses. The project is scheduled to be completed in FY2015.

### **6.3 NEW RAIL DIVISIONS**

#### **Expo Line Division (Division 14)**

The Exposition Construction Authority is building a new rail division for the Expo Line in Santa Monica. This facility, tentatively designated as Division 14, will include: vehicle storage, inspection, cleaning, light and running repair functions for all vehicles assigned to the Expo Line. However, it will not be able to accommodate heavy repair, paint and body shop work. For these activities Metro plans on expanding Division 11 to handle the work. With respect to vehicle capacity, the new Santa Monica Division will be able to store up to 48 vehicles, but this is an insufficient capacity. To augment storage capacity, additional siding track will be built by Metro next to the Blue Line at Washington

Bl. and Long Beach Ave. The Washington Bl. Facility will have capacity for 12 cars and become operational in FY 2013.

Crenshaw Line (Division 16)

*Division 16* is located adjacent to Los Angeles International Airport (LAX). While planned to support the Crenshaw Light Rail Line, this Plan assumes *Division 16* will support the Green Line along with *Division 22* at which time the Green Line will be restructured to operate from the new Aviation/Century Station to Norwalk.

Gold Line Division (Division 24)

As part of the Gold Line extension to Azusa, the Gold Line Foothill Construction Authority is building a new rail division in Monrovia. It is tentatively designated as Division 24. The maintenance facility will provide: vehicle storage, inspection, cleaning, and all major light and running repair functions for vehicles assigned to the Gold Line. This facility will also include a body shop and a painting facility and will have storage capacity for no less than 84 vehicles.

**6.4 OTHER CURRENT CAPITAL PROJECTS**

Wilshire Bus Rapid Transit Project

The Wilshire Bus Rapid Transit (BRT) Project consists of converting approximately 7.7 miles of curbside lanes into peak hour bus lanes along Wilshire Blvd between downtown Los Angeles and Santa Monica. In addition to the curbside bus lanes, a number of other general improvements are included such as upgrading the existing transit signal priority system, restriping, some reconstructing and resurfacing of the curb lanes as necessary, and the installation of traffic/transit signage and pavement markings as needed. Buses will operate in mixed flow traffic in those segments of Wilshire where there will be no bus lanes. These lanes will be used by Metro Lines 20 and 720 and the hours of operation will be from 7–9 am and 4–7 pm on weekdays. The project will be completed in FY 2016.

Gold Line Foothill Extension

The Metro Gold Line Foothill Extension Phase I is a 11.5 mile extension of the Gold Line from Sierra Madre Villa in Pasadena to Citrus Avenue in Azusa. The extension includes six new stations and a new rail division in Monrovia. The Gold Line Foothill Extension is scheduled to be completed in FY 2016.

Expo Line Extension to Santa Monica

This project will extend the Expo Line 6.6 miles from Culver City to Santa Monica. It will have seven new stations and a new rail yard in Santa Monica. It is being built by the Exposition Construction Authority and will be completed in FY 2016.



## 6.5 PLANNED CAPITAL PROJECTS

### Patsaouras Plaza Busway Station

As part of the ExpressLane Project, a new station is being built at the south side of the Patsaouras Transit Plaza on the I-10 HOV lanes. This will provide patrons more direct access to the Patsaouras Transit Plaza, and the Union Station rail platforms and bus service on Cesar E. Chavez Avenue. Bus lines benefiting from the project include the Metro Silver Line, Foothill Silver Streak, Metro 485, 487, 489 and Foothill 481, 493, 497, 498, 499 and 699. The project also includes widening the existing Caltrans Los Angeles River Bridge/Overhead and pedestrian plaza circulation elements connecting the station to the Plaza. This project was expected to be completed in 2015. However, the project has been put on hold due to potential budget shortfalls. Metro is currently developing a funding strategy to ensure the project is fully funded.

### Burbank Airport Transit Center

Bob Hope Airport is constructing a Regional Intermodal Transportation Center on Empire Avenue between the Airport Terminal and the Burbank Metrolink/Amtrak Station. This facility includes a drop-off location, two boarding locations, a bus turnaround loop and space for three bus layovers. It will be able to accommodate buses up to 45 feet long. The Transportation Center is schedule to open in the summer of 2014.

### Hawthorne/Lennox Bus Layover

Hawthorne/Lennox Bus Layover will be a new off-street bus layover to be built using a portion of the Hawthorne/Lennox Green Line Station Park & Ride lot. The facility will consist of four bus bays (three standard bays and one bay for articulated buses) and a restroom for bus operators. It will serve Metro Line 40 short line and Line 212. This project replaces the facility that was lost when Caltrans sold a part of the Park & Ride to a private party.

## 6.6 FLEET REPLACEMENT PLAN

As of June 2013, Metro's directly operated bus fleet size is 2,138 and its contracted services bus fleet size is 152 bringing Metro's total active fleet assigned to 2,290. The Federal Transit Administration (FTA) set the minimum service-life of heavy duty large buses (35-foot to 60-foot buses) from the date the vehicles were placed in revenue service up to 12 years or 500,000 miles at which time these buses are eligible to be retired.

Metro rail fleet size consists of 171 light rail cars and 104 heavy rail cars. The Federal Transit Administration (FTA) set the minimum service-life of rail cars from the date the vehicles were placed in revenue service up to 25 years.

These guidelines are set in FTA Circular 9030.1D effective May 1, 2010 and only applicable for vehicle procurements using federal grant monies.

### **Metro Bus Fleet**

Approximately 60% of Metro's directly operated bus fleet is comprised of 40-foot Compressed Natural Gas (CNG) buses and the other 40% is a mix of 45-foot CNG Compo buses (492) and 60-foot CNG Articulated buses (389). Metro's Board of Directors recently approved the procurement of 150 CNG 45-foot replacement buses and 900 CNG 40-foot replacement buses.

At some point newly procured 40-foot buses may replace a portion of Metro's older 45-foot bus fleet. A 45-foot bus seats 46 passengers and a 40-foot bus seats 40 passengers. The effect of replacing a 45-foot bus with a 40-foot bus is slightly less seating capacity per bus. However, due to a wider turning radius there are routes that cannot be operated by a 45-foot bus because of safety concerns or simply the physical limitations of negotiating a turn. Metro has more flexibility operating 40-foot buses because of their tighter turning radius making it more maneuverable than 45-foot buses. In addition, 40-foot buses cost less to procure and offer a slight reduction in maintenance costs over a 45-foot bus.

Based on retirement eligibility Metro's Vehicle Technology & Support Department also identified a need to procure 90 to 100 40-foot buses for Metro's contracted service providers. Funding has yet to be secured for the procurement of these buses.

It is unclear at the present time whether or not California Air Resources Board will enact new zero emission bus requirements in 2015. Presently, these buses are much more expensive than CNG buses and have considerably less range between refueling/recharging. Increase use of these buses will have a considerable adverse financial impact.

### **Metro Rail Fleet**

#### **Light Rail**

Metro's light rail fleet currently consists of 171 vehicles (FY 2013). Each light rail car has 76 seats and is scheduled to reasonably accommodate up to 133 passengers during peak service hours. The light rail fleet consists of four different models - Sumitomo P865 & P2020, Siemens P2000, and Ansaldo-Breda P2550.

There are 69 Sumitomo light rail vehicles: 54 Sumitomo P865 vehicles with an average age of 21.9 years and 15 Sumitomo P2020 vehicles with an average age of 17.0 years from the date of acceptance. All 69 light rail cars have operated over 1.35 million miles. These vehicles will be replaced beginning in FY 2018. These vehicles are currently assigned exclusively to the Blue and Expo



Lines and are integrated as one operational unit and subject to assignment on either line. By FY 2018, the number of P865 vehicles will be reduced to 36 while the number of P2020 vehicles will remain at 15.

Additionally, the Siemens P2000 vehicles make up 52 out of the 171 light rail vehicles averaging an age of 10.0 years from the date of acceptance. All 52 light rail cars have operated more than 760,000 miles. These vehicles are scheduled to undergo a mid-life overhaul program between FY 2017 and FY 2019. In addition, there are 50 Ansaldo-Breda P2550 vehicles in the fleet used for revenue service with an average age of 1-4 years with fewer than 160,000 miles operated.

Starting in FY 2015, Metro will start receiving an initial P3010 light rail vehicle procurement from Kinki-Sharyo. By the end of FY 2018, 184 new vehicles will be added to Metro's light rail vehicle fleet. The first 78 vehicles are necessary for implementing the Gold Line Extension from Pasadena to Azusa and Exposition Extension from Culver City to Santa Monica. The remaining vehicles will be used to operate the new Crenshaw Light Rail, the reconfiguration of the Blue, Expo, and Gold Lines upon completion of the Regional Rail Connector Project, facilitate mid-life rehab of aging light rail cars, and to replace retired light rail cars. Overall, light rail fleet will grow from 171 to 285 when the Crenshaw Line opens in 2019.

#### Heavy Rail

There are 104 Breda A650 vehicles providing service for the Red and Purple Lines. The first 30 have an average age of 19 years from the date of acceptance with an average of more than 622,000 operating miles per car. The remaining 74 heavy rail vehicles have an average age of 13 years (date of acceptance), with more than 947,000 operating miles per car. These vehicles are capable of operating up to 70 miles per hour. Each vehicle is designed to accommodate a crush load of 175-200 passengers; however, are scheduled to reasonably accommodate up to 124 passengers (54 seated) during peak service hours.

The first 30 vehicles acquired by Metro are DC powered. The remainders are AC powered. Due to inconsistent wear-and-tear and maintenance requirements between these sets of vehicles, Metro has increasingly not deployed vehicles among the first 30 for revenue service, and retained them for longer maintenance cycles. Therefore, vehicles among the first 30 have not accumulated as many miles in recent years.

To alleviate maintenance matters and prolong the life of the fleet, Metro plans to begin a component overhaul program of this fleet beginning in FY 2013. No more than 12 vehicles from the fleet will be unavailable during this overhaul program which should be completed in early FY 2016. The first 30 will be among the first to undergo the component overhaul program. The remaining 74 vehicles will undergo a more comprehensive refurbishment beginning in 2015 and conclude in

2018. Then starting in FY 2018, Metro will begin receiving new vehicles for expansion of the Purple Line which is expected to open in FY 2022.

The Red Line currently operates a 6-car consists with a peak frequency of 10 minutes and the Purple Line operates a 4-car consists with a peak frequency of 10 minutes. As stated previously in Section 3.2 the peak frequency of both the Red and Purple Lines will be improved from 10 minutes to 6 minutes with the extension of the Purple Line to Wilshire/La Cienega. The total vehicle requirement for both lines together will increase from 78 to 90. There will not be any vehicle storage problems at the yard since the yard has room for 200 vehicles.

## **6.7 STATE OF GOOD REPAIR**

The State of Good Repair needs fall into three categories – safety, service delivery, and quality of service. It is essential Metro's capital assets be maintained or replaced as they progressively age, deteriorate, or approach the end of their useful life in order to maintain a safe and reliable transit system.

Metro is currently developing a Transit Asset Management Plan (TAMP) that will aid Metro in maintaining its transit system in a State of Good Repair (SGR). TAMP will allow Metro to follow the most current FTA requirements and guidelines concerning age-based criteria and useful life definitions to determine when assets should be replaced.

Metro determined their largest need occurs in the first few years where a backlog of needs greatly exceeds funding and in outer years funding exceeds needs. TAMP will provide a simple and efficient procedure for managing and reporting asset conditions, costs for rehabilitation and replacement, and making optimal cost-effective investment prioritization decisions. The TAMP should be completed within the next year.



## **SECTION 7: OPERATIONS & CAPITAL FUNDING**

This section discusses the operational and capital funding plans developed to fund the components of this plan over the course of the next 5 years. Also discussed, in detail, are the various primary sources of revenue used to fund transit operations, capital improvements, vehicle procurements, and new facilities discussed in previous sections of this plan.

### **7.1 OPERATION FINANCIAL PLAN**

Metro's transit operations and maintenance is funded by the Enterprise Fund portion of Metro's Budget. The bulk of the funds are allocated through the Formula Allocation Process (FAP) with other County transit operators included in the FAP. These include 95% of the Proposition A Discretionary funds, Proposition A Interest, Transportation Development Act (TDA) Article 4 including interest and funds from the state's sales tax on diesel fuel available through a combination of the Public Transportation Account (PTA) and State Transit Assistance Account (STA). The current FAP program allocates as follows: 50% based on vehicle service miles and 50% based on the ratio of the operator's passenger revenue and their base cash fare.

Operating funds also come from Measure R, a portion of Proposition A's 35% set aside for rail, Prop C Discretionary Funds, transit fares, advertising, and other miscellaneous revenue that Metro generates. Metro also receives some funding from the Federal Section 5307 Urbanized Area Formula Funds. Finally Metro also takes advantage of the Federal Congestion Mitigation and Air Quality (CMAQ) Grant Program which are only available for the first three years of operations for a new transit project. A summary of the Enterprise Fund can be found in Metro's Annual Budget and details on the different fund sources can be found at the end of this chapter.

Table 7.1 on the following page shows the Operations Plan Financial Forecast. This is a balanced plan in current FY 2013 dollars that assumes fares as a whole will keep constant with inflation. Cash fares for seniors, disabled, and students were scheduled to increase on July 1, 2013 along with the Day Pass fare from \$5 to \$6. However, as noted in Section 4.1, scheduled fare changes have been deferred indefinitely while the agency reviews its current fare structure and seeks ways to restructure Metro's pricing. The \$34.5 million deficit shown for FY 2018 is the result of the opening of the San Fernando Valley Transit Corridor Project based on the schedule provided by the 2009 Long Range Transportation Plan. Since the project is still under study and additional funding still needs to be identified, it is more likely that the project will open after FY 2018.

**Table 7.1**

*Metro Transit Operating Budget Forecast: FY 2014 – FY 2018 (\$'s in millions)*

	FY13 Adopted	FY14 Forecast	FY15 Forecast	FY16 Forecast	FY17 Forecast	FY18 Forecast	Six-Year Totals
<b>Resources</b>	1,279.20	1,323.20	1,366.50	1,476.40	1,529.50	1,559.50	8,534.30
Operating Revenues	378	367.5	372	379.8	388.7	396.6	2,282.60
Fares (incl. Metrolink Subsidy)	345.6	340.4	343.4	350.7	359.4	366.6	2,106.1
Other Revenues	32.4	27.1	28.6	29.1	29.3	30	176.5
Intergovernmental	297.3	240.7	245.7	250.1	225.8	249	1,508.60
Federal	297.3	240.7	245.7	250.1	225.8	249	1,508.60
State	-	-	-	-	-	-	-
Local	-	-	-	-	-	-	-
Subsidy Transfers In	603.9	715	748.8	846.5	915	913.9	4,743.10
Proposition A	148.8	220.8	234.6	278.2	234.4	240.6	1,357.40
Proposition C	77.5	102.4	88.3	47.8	156	154.6	626.6
Measure R	107.8	131.4	137.6	158.8	201.4	171.9	908.9
Transportation Development Act	163.8	177.2	204.3	276.8	237.5	260.6	1,320.20
State Transit Assistance	106	83.2	84	84.9	85.7	86.2	530
General Fund	-	-	-	-	-	-	-
<b>Expenses - Transit Operations</b>	1,279.20	1,323.20	1,366.50	1,476.40	1,529.50	1,594.00	8,568.80
<b>Transit Operations (Deficit) / Surplus</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>(\$34.50)</b>	<b>(\$34.50)</b>

Note: Dollar figures are in FY 2013 dollars.

During the next five years, transit service levels are expected to increase by approximately 622,000 annual revenue vehicle service hours, which equates to an increase of 8%. The bulk of this increase is due to the opening of the Gold Line Foothill Extension to Azusa, Expo Line Extension to Santa Monica, as well as increase in service levels on the Red and Purple Lines.

**7.2 CAPITAL FINANCIAL PLAN**

Table 7.2 shows the Capital Plan Financial Forecast. This balanced plan includes money for transit vehicle acquisition, new transit yards and upgrades, new rail extensions, new BRT service, and other miscellaneous transit facility upgrades, rehabilitation, and maintenance.



**Table 7.2**

*Metro Transit Capital Budget Forecast: FY 2014 – 18 (\$'s in millions)*

	FY13 Adopted	FY14 Forecast	FY15 Forecast	FY16 Forecast	FY17 Forecast	FY18 Forecast	Six-Year Totals
<b>Resources</b>	447.8	543.9	653	662.4	728.1	779.4	3,814.60
Subsidy Transfers In	447.8	543.9	651.3	657.4	719.8	767.8	3,788.00
Proposition A	170.3	183.8	185.9	190	196.5	200.2	1,126.60
Proposition C	171.6	194.8	217.4	232.9	237.2	242	1,295.80
Transportation Development Act	2.4	1.5	1.5	1.5	1.5	1	9.5
Measure R	53.6	63.8	96.5	128	174.6	194.5	711
TIFIA Loan	-	-	50	5	10	30	95
Federal Capital Grants	50	100	100	100	100	100	550
Local Revenues	-	-	1.7	5	8.3	11.6	26.6
<b>Expenses - Debt</b>	447.8	543.9	653	662.4	728.1	779.4	3,814.60
<b>Debt (Deficit) / Surplus</b>	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Note: Dollar figures are in FY 2013 dollars.

**7.3 FUNDING SOURCES**

These represent the primary sources of revenue for transit operations, capital improvements, vehicle procurements and new facilities.

Local Revenues

- *Proposition A*: A half-cent sales tax, passed by Los Angeles County voters in 1980, is to be used to improve public transit throughout Los Angeles County. The revenues after 5% is taken for administration are divided as follows:

- Local Return Program 25%
- Rail Development and Operations 35%
- Discretionary 40%

All Prop A 40% discretionary funds are used for bus operations per Metro Board policy. 95% of these funds are allocated to Metro and Municipal operators through the FAP. The remaining 5% of the funds is for Metro's Incentive Program for paratransit. Local Return funds are revenues returned to cities within Los Angeles County based on population for public transit.

- *Proposition C*: A half-cent sales tax, passed by Los Angeles County voters in 1990, is to be used for public transit purposes in Los Angeles County. The revenues after 1.5% is taken for administration are divided as follows:

• Rail and Bus Security	50%
• Commuter Rail/Transit Centers/Park and Rides	10%
• Transit-related Streets/State Highways	25%
• Local Return Program	20%
• Discretionary	40%

The 40% discretionary funds are eligible for both transit operations and capital. A portion of these funds is allocated to the Municipal Operators through the Municipal Operators Service Improvement Program (MOSIP) by Metro Board direction. The Local Return Funds for this revenue go back to local cities and Los Angeles County based on population to benefit transit. Currently, more than half of the Commuter Rail-Transit Center funds are allocated to Metrolink. Finally most of the Transit-related Highway funds currently go highway-related projects such as high occupancy vehicle (HOV) lanes. These funds are also eligible for portions of transit projects that are on a state highway or freeway and for mass transit improvements to railroad rights-of-way.

- *Measure R*: A half-cent sales tax effective July 1, 2009, passed by Los Angeles County voters in 2008, is used for projects and programs per the Measure R Expenditure Plan. Unlike Prop A and C revenues, Measure R revenues will end in year 2040. Revenues, after 1.5 percent administration, are divided as follows:

• New Transit Capital Specific Projects	35%
• Metrolink Capital Improvements	3%
• Metro Rail Capital System Improvements	2%
• Highway Capital	20%
• Local Return Program	15%
• Rail Operations	5%
• Bus Operations	20%

The bus operations funds are allocated to both Metro and municipal operators through the FAP. Rail operations funds are allocated to running and operating new rail projects. Meanwhile Metro Rail Capital System Improvement funds are for system upgrades, rail cars and new facilities associations with Metro’s rail system; while new transit capital funds are for projects specified in the Measure R ordinance. Finally Local Return funds are allocated to cities and the county on a per capita basis for a range of projects such as street maintenance, traffic signals, bicycles and transit.



### **Metro General Revenue**

Metro receives self-generated revenue from a variety of different sources. These include fares, advertising, lease and leasebacks, joint development, and other miscellaneous funds and grants. These funds are generally available for transit operations and capital expenditures.

### **State Revenues**

- *TDA Article 4: Transportation Development Act (TDA) Article 4 funds are derived from quarter-cent Statewide Sales Tax for transit. The funds are eligible for both transit operations and capital expenditures. TDA Article 4 funds are appropriated to each county by the State Board of Equalization and then allocated to both Metro and municipal operators through the FAP.*
- *Public Transportation Account (PTA)/State Transit Assistance Account (STA): PTA and STA funds are derived from the State's 6.75% sales tax on diesel fuel. The revenue is divided into two parts where one is based on population share and the other based on operator revenue share. The population share is allocated entirely for Metro while the second is allocated to both Metro and municipal operators through the FAP. These funds are eligible for both operations and capital expenditures.*

### **Federal Revenues**

- *Section 5307 Urbanized Area Formula Funds: Section 5307 funds are from the Federal formula grant program for urbanized areas. They originate from the Mass Transit Account of the Highway Trust Fund. These allocations also include Section 5340 Growing States/High Density Funds. Eligible uses include transit capital projects and bus operations up to certain limits. This fund was reorganized with the MAP 21 in 2012, the latest Federal Transportation Funding Act, so manner of allocation still needs to be determined.*
- *Section 5309 Fixed Guideway Capital Investments Grants: Section 5309, "New Starts," funds are for building or expanding fixed-guideways. Fixed guideways range from arterial bus lanes to subways. The funds originated from the Mass Transit Account of the Highway Trust Fund and administered by the Federal Transit Administration. These funds are obtained through a competitive application process on a project by project basis.*
- *Section 5337 State of Good Repair Grants: Section 5337 funds are from the Mass Transit Account of the Highway Trust Fund and administered by the Federal Transit Administration. These funds are capital funds for repairing and replacing fixed guideway system components, facilities, and*

rolling stock. Fixed guideway includes rail and bus service using either dedicated rights-of-way or HOV lanes. This fund was reorganized with the MAP 21 in 2012, the latest Federal Transportation Funding Act, so manner of allocation still needs to be determined.

- *Section 5339 Bus and Bus Facilities Funds:* Section 5339 funds are from the Mass Transit Account of the Highway Trust Fund. The funds are for purchasing and rehabilitating buses and constructing new bus-related facilities. Metro allocates these funds to itself and municipal operators by formula.
  
- *Congestion Mitigation and Air Quality Improvement Program:* Congestion Mitigation and Air Quality Improvement (CMAQ) grants are for projects and programs in air quality nonattainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation-related emissions. Funds are apportioned by formula based on population and severity of pollution in ozone and carbon monoxide areas. Eligible transit uses include starting up new transit services for serving new markets, operation assistance for new transit services for up to three years, and new vehicles under certain conditions. The funds are administered jointly between the Federal Highway Administration and Federal Transit Administration.



## GLOSSARY

**Americans with Disabilities Act of 1990 (ADA):** Prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, State and local government services, public accommodations, commercial facilities, and transportation. The current text of the ADA includes changes made by the ADA Amendments Act of 2008, which became effective on January 1, 2009.

**Articulated Bus:** A single decker bus usually 55 feet or more in length comprised of two rigid sections linked by a pivoting joint. This is a higher passenger capacity bus used for public transit.

**At Grade:** The location of a structure or transit guideway at the same level as the ground surface.

**Below Grade:** The location of a structure or transit guideway below ground surface such as a subway or within a trench.

**Bus Rapid Transit (BRT):** A high performance public transport bus service which aims to combine bus lanes with high-quality bus stations, vehicles, amenities and branding to achieve the performance and quality of a light rail with the flexibility, cost and simplicity of a bus system.

**Congestion Mitigation and Air Quality Program (CMAQ):** Provides federal funding for transportation projects that improve air quality and reduce traffic congestion in counties classified as air quality non-attainment and maintenance areas for the federal criteria pollutants ozone and fine particulate matter.

**Fare Box Recovery Ratio:** Measure of the proportion of operating expenses covered by passenger fares found by dividing total fare box revenue by total operating expense.

**Headways:** Headway is a measurement of the distance or time between vehicles in a transit system. A "shorter", or smaller valued, headway signifies more frequent service.

**Heavy Rail:** An electric railway with capacity for a "heavy volume" of traffic, and characterized by exclusive rights-of-way, high speed and rapid acceleration. Heavy rail is different from commuter rail and light rail. Consists of 4-6 cars or more may be operated.

**High Occupancy/Toll Lane (HOT):** A road pricing scheme that gives motorists in single-occupant vehicles access to high-occupancy vehicle lanes (or "HOV lanes").

**High Occupancy Vehicle Lane (HOV):** A high-occupancy vehicle lane (also known as a carpool lane or diamond lane) is a restricted traffic lane reserved for exclusive use of vehicles with a driver and one or more passengers, including carpools, vanpools and transit buses. Common minimum occupancy levels are 2 or 3 occupants.

**Layover:** A layover refers to the break the operator of a vehicle is given at the end of a trip before beginning its next trip.

**Light Rail Transit (LRT):** An electric railway with a lower passenger capacity compared to heavy rail usually ranging from a 1 to 3 car consists.

**Load Factor:** The ratio of passengers actually carried versus the total passenger seating capacity of a vehicle. A load factor of greater than 1.0 indicates that there are standees on that vehicle.

**Peak Hours:** The time of day when traffic congestion on roads and crowding on public transport is at its highest in the AM and PM when the most people commute. The maximum number of buses and trains are operated during peak hours due to shorter headways (more frequent service). Metro's peak hours of service are 6am to 9am and 3pm to 7pm.

**Pull-In Time:** The non-revenue time assigned for the movement of a revenue vehicle from its last scheduled terminus or stop to the garage.

**Pull-Out Time:** The non-revenue time assigned for the movement of a revenue vehicle from the garage to its first scheduled terminus or stop.

**Revenue Service:** When a revenue vehicle is in operation over a route and is available to the public for transport.

**Revenue Vehicle Hours:** The amount of time that a single revenue vehicle (a bus or rail car) is in revenue service including layovers and interline movements expressed in hours.

**Transit Access Pass (TAP):** A form of electronic ticketing in the form of a durable plastic card used on public transport services within Los Angeles County, California. It is administered by the Los Angeles County Metropolitan Transportation Authority (Metro) and is valid on Metro's bus and rail system as well as a number of other different transit systems in Los Angeles County. Each TAP card has an electronic chip inside; just load the type of pass and stored value you want on your card, and the chip remembers it.

**Train Consist:** A lineup or sequence of rail cars connected that form a train.



**Transit Signal Priority (TSP):** Is an operational strategy that facilitates the movement of buses through traffic-signal controlled intersections. Objectives of TSP include improved schedule adherence and improved transit travel time efficiency while minimizing impacts to normal traffic operations.

