2009 Long Range Transportation Plan

TECHNICAL DOCUMENT

Metro®

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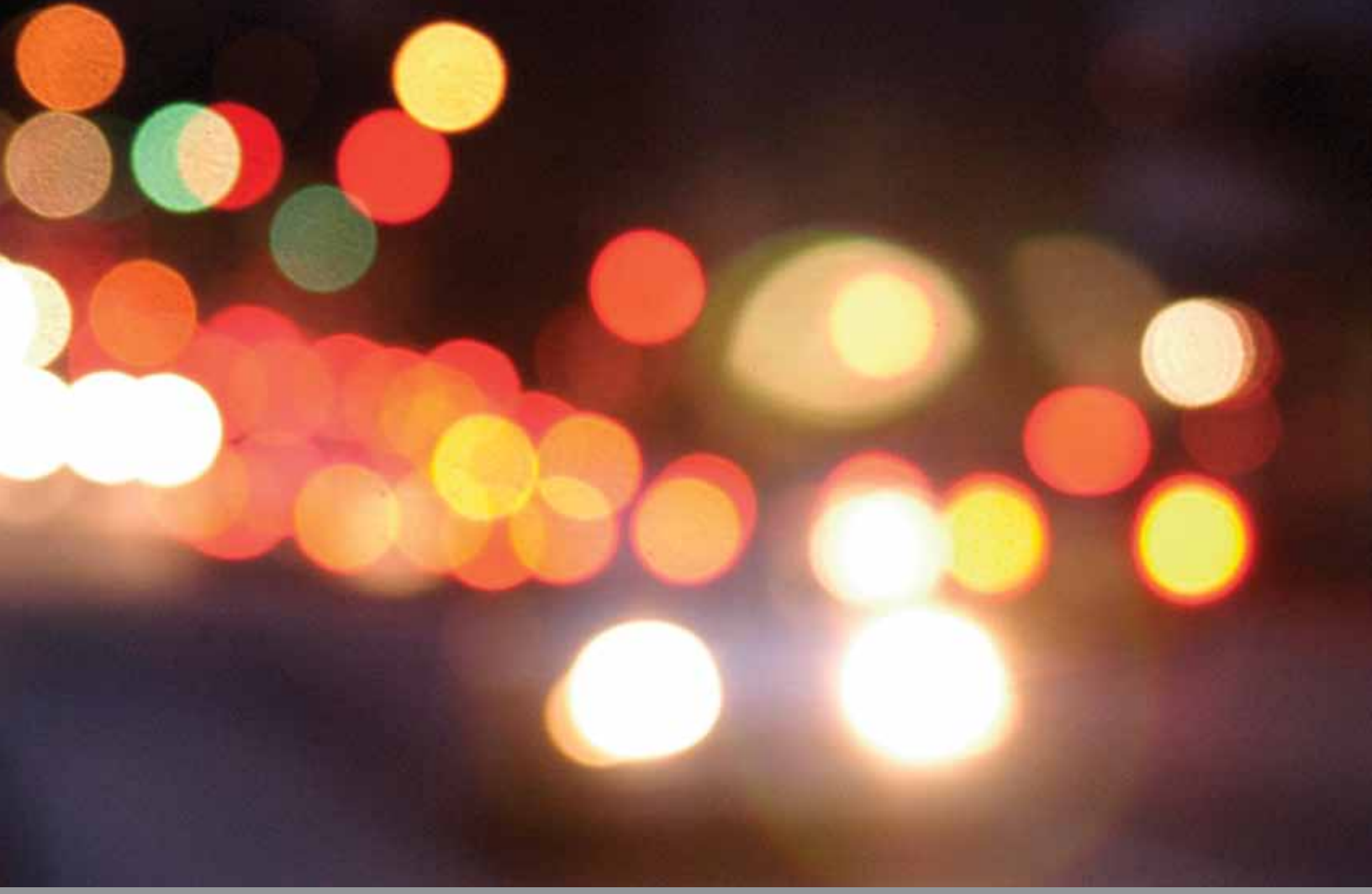

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The 2009 Long Range Transportation Plan Technical Document (Technical Document) is a companion document to the Los Angeles County Metropolitan Transportation Authority's 2009 Long Range Transportation Plan (Plan).

This Technical Document provides additional information regarding various technical components of the Plan, including sub-regional needs, climate change and sustainability issues, financial modeling and assumptions, travel demand modeling and assumptions, and performance analysis. For more information on Plan recommendations, please refer to the Plan document, available under separate cover.

Plan Overview

Metro is responsible for planning and programming in Los Angeles County, in accordance with California Government Code Section 130051. In order to meet these responsibilities, Metro develops a Long Range Transportation Plan for Los Angeles County. The Plan is periodically updated to maintain at least a 20-year planning horizon, and to reflect changes since the last Plan was adopted. The 2009 Plan extends the planning horizon from the 2001 LRTP by an additional 15 years, from 2025 to 2040. It also updates the Plan for a variety of factors, such as socio-economic data, financial conditions, changes in travel patterns, and the inclusion of Measure R projects and programs. Updating the Plan also provides an opportunity to assess whether new projects can be added to the Plan given anticipated funding resources, as well as to identify projects that could be done if more money was available.

Community Outreach, Environmental Justice, and Title VI Analysis

In developing the Plan, Metro coordinated with a wide range of interests. Metro conducted community outreach meetings for the Plan at locations throughout the County, and provided an opportunity for public review through a 45-day comment period. Metro also coordinated with its transportation partners, including the sub-regional agencies, the Southern California Association of Governments (SCAG), Caltrans, Metrolink, and municipal and local transit operators. Finally, Metro regularly consulted with the Metro Technical Advisory Committee and its subcommittees.

Metro complies with federal environmental justice and Title VI requirements to include transit-dependent and minority communities in its community outreach and to analyze the benefits and impacts of the Plan on the transit-dependent and minority communities. Metro meets these programs through the following: 1) through many community meetings on the Plan; 2) through coordination with nine subregions comprising local elected officals and staff; 3) through media awareness of the Plan and its development; 4) through periodic presentations on Plan development to the Metro Board; 5) through the 45-day public review period for the Draft Plan; and 6) through demographic analysis of the Plan's alternatives and recommendations, in particular looking at performance measures for mobility and transit access. Extensive community involvement also occurs on major transportation projects at the project-level and through planning and environmental review activities. The Plan has performed well in meeting the needs of transit dependent and minority communities. In fact, the analysis indicates that transit services are available at a higher service level in these communities than in the County at large. Further information regarding this analysis is found in the Travel Demand Model chapter.

Relationship of the 2009 Plan to the SCAG Regional Transportation Plan

As mentioned above, Metro has coordinated the development of its Plan with SCAG. Projects recommended for funding in the Plan have been provided to SCAG for inclusion in their 2008 Regional Transportation Plan Update. The adopted Plan was provided to SCAG and amended into the 2008 Regional Transportation Plan.

Technical Document Contents

This document includes the following sections, as described below:

- **Chapter 1 – Introduction**
- **Chapter 2 – Subregional Partners**
  This chapter highlights Los Angeles County's various subregions in their own voice, describing transportation needs and unfunded subregional projects recommended by each subregion.
- **Chapter 3 – Climate Change and Sustainability**
  This chapter takes a look at the climate change and sustainability issues and how Metro is addressing these issues.
- **Chapter 4 – Financial Model and Assumptions**
  This chapter describes the financial model and analysis that supports the Plan.
- **Chapter 5 – Travel Demand Model and Assumptions**
  This chapter describes the travel demand model and assumptions used to assess the performance of the Plan.
- **Appendix A – Metro Board Resolution Adopting 2009 Long Range Transportation Plan**
- **Appendix B – Glossary**

Subregional Partners

> **The nine subregions have identified their transportation challenges and unfunded priorities.**

> **A mobility project implemented in one subregion may also benefit the other subregions due to regional travel patterns.**

> **Understanding each subregion's mobility challenges and needs can improve coordination throughout the regional system and expand the benefit of subregional infrastructure enhancements.**

> **Strengthening the subregional partnerships will improve the flow of communication and increase the responsiveness to mobility issues.**

Los Angeles County is comprised of nine subregions, each containing many jurisdictions, communities, and neighborhoods with a combined population of more than 10 million residents. Although each subregion has distinct characteristics, each one shares common needs and challenges, particularly when it comes to transportation, and their quality of life.

The partnership between the subregions and Metro is an interdependent one that has resulted in developing and implementing creative transportation solutions for the residents of the County.

The 2009 Plan, once again, has enabled the nine subregions to identify their transportation challenges and unfunded priorities. The list of unfunded subregional transportation priorities and subregional perspectives contained in this 2009 Plan are the result of input received from each subregion over the last several years.

Planning Process

For planning purposes, Los Angeles County cities and communities are identified geographically by nine distinct, diverse and vibrant subregions based generally on the existing Councils of Government (COGs) boundaries that range from 60 to 2,500 square miles in area. Some are small, cooperative efforts staffed by city representatives; others are formalized COGs with paid staff; and some are geographic sub-sections of the City of Los Angeles.

In developing this chapter, subregional agencies were engaged early in the process to receive their input to capture the unique transportation issues and challenges facing each subregion. The subregions are:

> Arroyo Verdugo Cities
> Central Los Angeles
> Gateway Cities
> Las Virgenes/Malibu
> North Los Angeles County
> San Fernando Valley
> San Gabriel Valley
> South Bay Cities
> Westside Cities

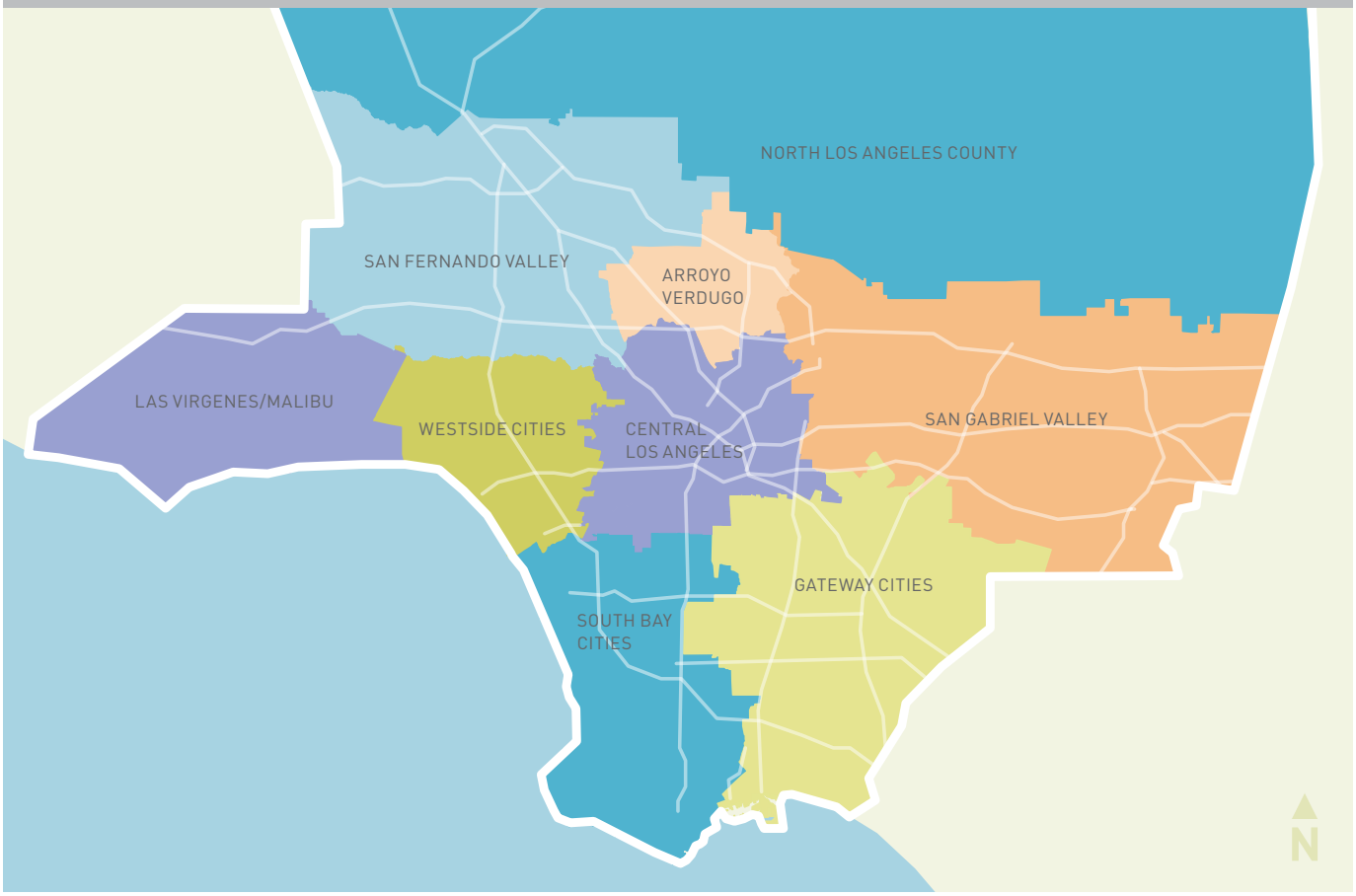
Figure 2.1 illustrates the subregions in the County.

The Results

Every day, millions of people throughout the County travel for work, school, play and shopping, originating from and passing through, virtually every subregion in the County, as well as circulating within their own neighborhoods and surrounding communities. Every mode traveled, including transit, relies on streets, sidewalks, bikeways, highways and freeways. This chapter addresses the unique transportation challenges throughout the County and identifies a number of

FIGURE 2.1

Los Angeles County Subregions



additional transportation solutions that are candidates for funding, if additional funding becomes available.

This chapter reflects the views and perceptions of the subregions themselves. While Metro provided the general framework for input, the subregions, and the cities that comprise them, invested their time and effort to consider the issue of transportation in their subregion over the next 30 years to develop this subregional policy framework. Metro is committed to working with all of the subregions and cities to address transportation priorities based upon the issues and objectives they have developed, as well as any other issues that may arise.

The following discussion identifies the needs and priorities expressed by each subregion.

ARROYO VERDUGO CITIES SUBREGION

Cities

Burbank, Glendale and La Cañada Flintridge

Setting

Arroyo Verdugo sits against a dramatic backdrop of the San Gabriel Mountains between the San Fernando and San Gabriel Valleys. It is located on the northern edge of the Los Angeles Basin, and is bounded to the north by the Angeles National Forest, to the west and south by the City of Los Angeles, and on the east by the City of Pasadena. Figure 2.2 illustrates the Arroyo Verdugo subregion.

Major Transportation Facilities

Several major freeways traverse this subregion including the Foothill (I-210), Glendale (SR-2), Golden State (I-5) and Ventura (US-101 and SR-134) Freeways. The northern portion of the Hollywood Freeway (SR-170) extends northwesterly to the south and west of the subregion.

Bus service in the subregion is provided by Metro and LADOT, as well as by local transit service providers in each of the member cities. Metrolink's Ventura County and Antelope Valley Lines provide commuter rail services to Burbank and Glendale. Limited Amtrak service is also available.

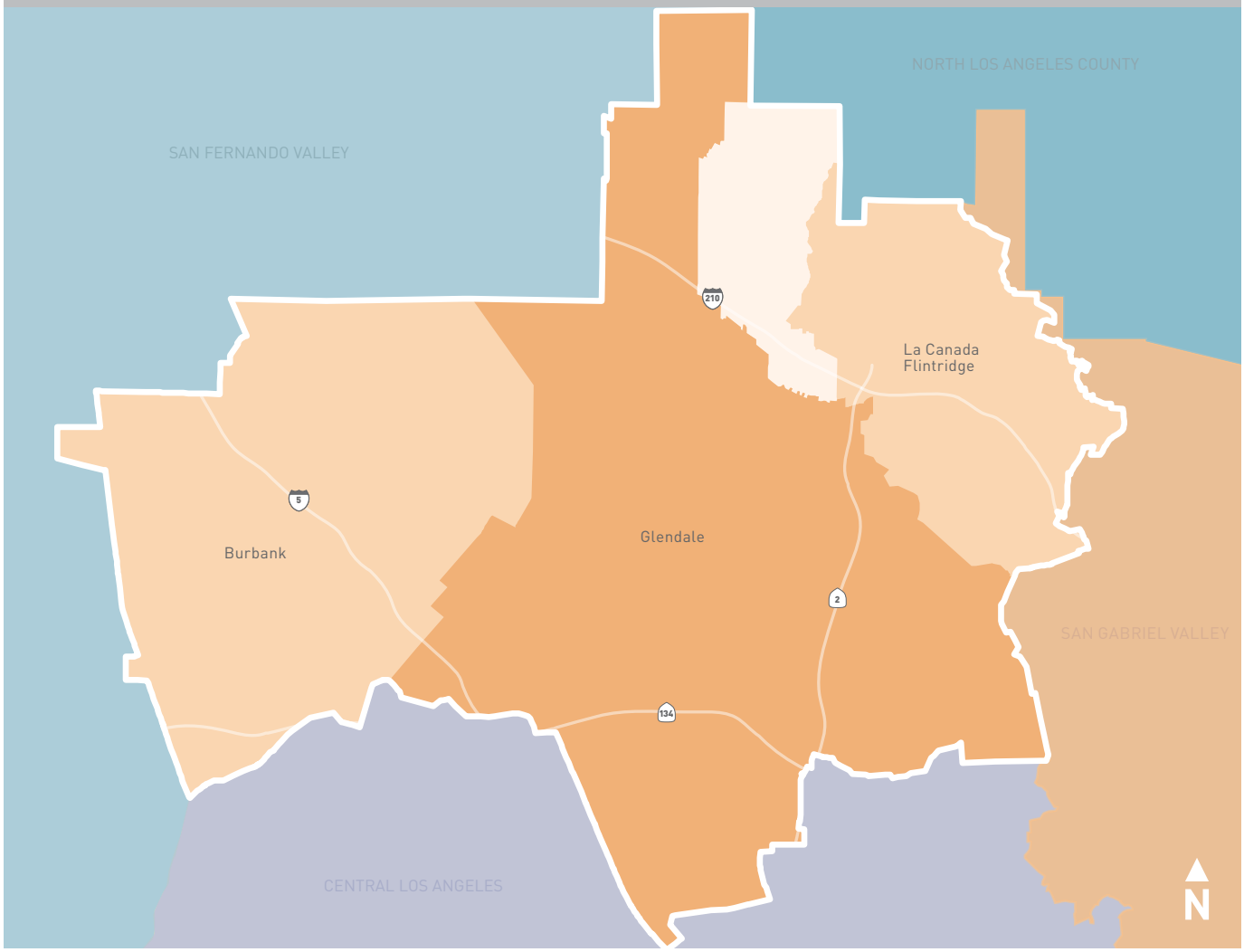
Burbank, Glendale, and La Cañada Flintridge also provide paratransit services within their cities for the elderly and persons with disabilities. Service in La Cañada Flintridge is administered by the City of Glendale. Access Services, Inc. provides paratransit service in Arroyo Verdugo as part of its region-wide service.

Mobility Challenges

Local freeways serve residents and commuters in the subregion, but worsening congestion on the surface streets limits access at freeway interchanges. Growing

FIGURE 2.2

Arroyo Verdugo Cities



employment densities in Glendale and Burbank have led to substantial arterial congestion intruding into neighborhoods, as drivers seek short-cuts through residential areas. This problem is especially acute on Foothill Bl in La Cañada Flintridge.

Metrolink service does not extend to Burbank and Glendale's highest density employment centers, but shuttle service links passengers with key locations. The possibility of linking this area with high-speed rail is also being considered.

Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with Arroyo Verdugo cities to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available prior to 2040. These strategies include, but are not limited to:

> Reducing arterial congestion and through traffic in residential areas;
> Increasing Metrolink access and service;
> Constructing soundwalls on local I-210 segments;
> Securing additional funding for transportation system preservation to keep pace with the growing cost of rehabilitating and improving the existing local roadway network;
> Purchasing land and constructing a new Pasadena Arts Operations and Maintenance Facility;
> Constructing transit maintenance facilities in Burbank and Glendale;
> Providing bikeways linking employment and activity centers and other transportation modes;
> Providing or encouraging independent bus service for the subregion and adjacent portions of the San Fernando Valley; and
> Improving freeway access to relieve traffic congestion by widening/reconfiguring on- and off-ramps.

The 2009 Plan is a living document that will be continually updated. Metro will work with the Arroyo Verdugo subregion on an ongoing basis to ensure that its priorities are taken into consideration during each update. Figure 2.3 lists a variety of unfunded subregional priorities that are identified by the Arroyo Verdugo COG.

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FIGURE 2.3

Arroyo Verdugo Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway		
Glendale	SR-134	SR-134 Corridor – Analyze SR-134 off/on-ramps to increase capacity and reduce congestion. Prepare conceptual design alternatives.
South Pasadena	SR-710	Perform a 'route neutral' feasibility study of the 'tunnel alternative' for the proposed SR-710 extension
Pasadena	SR-210	Soundwall Construction – North 210 Freeway, Orange Grove to Arroyo Parkway
Pasadena	Proposed I-710 Corridor, I-710 at Valley Bl to SR-710 at Del Mar Bl	Perform 'route neutral' preliminary engineering and technical studies for the tunnel alternative of the 710 extension
Glendale	SR-134	Construct a grade-separation structure to extend Doran St westerly over San Fernando Road and the Metrolink railroad tracks – SR-134 at Doran St
Glendale	SR-210	Reduce excessive noise due to the extension of SR-210 to I-15/I-210 – Pennsylvania Av to Lowell Av exits
Glendale	Route 2	Traffic Signals at on/off-ramps
Transit		
Arroyo Verdugo Cities	SR-134 corridor	Conduct a feasibility/alignment study for a Burbank-Glendale-Pasadena High Capacity Transit Corridor Study to connect Pasadena Gold Line to Red Line in North Hollywood/ Universal via a LRT or BRT system
Pasadena		Design and Construction of Gold Line Foothill Extension; Pasadena to Claremont
La Cañada Flintridge	Metro Line 177	Provide funding to decrease headways on Metro Line 177 connecting the Metro Gold Line to Jet Propulsion Laboratory
Glendale		Glendale Downtown Streetcar System – PS&E – Major Arterials in Glendale
Glendale		CNG and Maintenance Facility for Glendale Beeline transit services
Glendale		Purchasing buses to increase bus service and improve frequencies for Glendale Beeline Transit Services – City Wide
Burbank	Downtown Burbank Metrolink Station	Expand the downtown Burbank Metrolink Station to include additional bus layovers, vehicle maintenance facility, Bike Station, enclosed passenger waiting areas
Burbank	Bob Hope Airport Metrolink Station	Construct intermodal transit facility. Improve parking at existing station.
Rail Grade Separation		
Burbank	Buena Vista St/ SCRRA Metrolink Valley Line	Railroad Grade Crossing, Buena Vista St./San Fernando Bl and SCRRA Metrolink Valley Line – This project is part of a larger I-5 HOV improvement and Empire Interchange project
Burbank	Vanowen St - Empire Av	Realign Vanowen St to directly connect with Empire Av and provide a rail grade separation at the existing Clybourn St rail crossing. (Vanowen St west of Clybourn St to Empire Av east of Clybourn St)
Glendale	San Fernando Rd	Improve at-grade crossing safety improvements
Arterial		
Burbank	I-5/SR-134	Implement short-term and long-term improvements to the I-5, SR-134 interchange area as identified in the 5/134 Congestion Management System Study – Area bounded by I-5, SR-134, Alameda Av, Victory Bl
TSM/TDM		
Los Angeles County		La Crescenta Av between Foothill Bl and Prospect Av – Unincorporated Areas of La Crescenta
Los Angeles County		Montrose Av between Florencita Av and Del Mar Rd – Unincorporated Areas of La Crescenta
Los Angeles County		Oceanview Bl between Foothill Fwy and Florencita Av – Unincorporated Areas of La Crescenta
Los Angeles County		Pennsylvania Av between Foothill Bl and Foothill Fwy – Unincorporated Areas of La Crescenta
Los Angeles County		Ramsdell Av between Community Av and Montrose Av – Unincorporated Areas of La Crescenta
Los Angeles County		Rosemont Av between Foothill Bl and Montrose Av – Unincorporated Areas of La Crescenta

FIGURE 2.3 CONTINUED

Arroyo Verdugo Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Pasadena	210/710	Implementation of the City's ITS Master Plan including upgrades to the transportation management center, installation of fiber optic traffic signal interconnect, video cameras, a parking guidance system, and technology upgrades to the city's bus system. Corridor-wide
Bridge		
Burbank	Downtown Burbank Metrolink Station	Provide a bicycle and pedestrian bridge over I-5 and the SCRRA Metrolink tracks, connecting the Downtown Burbank Station with Downtown Burbank at Palm Av
Burbank	Olive Avenue	Widen the Olive Av Overpass with I-5 to provide eastbound dual left- and right-turn lanes at First St
Soundwall		
La Cañada Flintridge	I-210	Construct Soundwalls along I-210 between Berkshire and Ocean View exits
Bicycle		
Los Angeles County	Various	Projects identified in Metro Bicycle Strategic Plan – Arroyo Verdugo Cities Subregion
Other		
Burbank	Burbank Airport	Alternative Fuel – Design and Construct a Compressed Natural Gas Refueling Station in the vicinity of the Burbank Airport

CENTRAL LOS ANGELES SUBREGION

Communities

Atwater Village, Baldwin Hills, Boyle Heights, Central City, Chinatown, Eagle Rock, Echo Park, Glassell Park, Hancock Park, Highland Park, Hollywood, Hollywood Hills, Korea Town, Leimert Park, Little Tokyo, Arts District, Miracle Mile, Mt. Washington, Silver Lake, University Park, West Adams, Wilshire Center, portions of South Los Angeles, and the unincorporated County area of East Los Angeles.

Setting

The Central Area is generally bounded by the City of Glendale to the north, the cities of Inglewood, Vernon, and Commerce to the south, and the cities of West Hollywood, Beverly Hills, and Culver City to the west. Figure 2.4 illustrates the Central Area subregion.

The Central Area contains a diverse land use pattern that includes the County's heaviest concentration of commercial and government offices, major industrial areas along the Los Angeles River; the most densely populated residential communities in the region, western U.S. wholesale marts, and many of the region's recreational and cultural facilities. Downtown Los Angeles is the County's largest employment district and over the past decade the site of a considerable expansion of residential, entertainment, and retail development. The Central subregion's road infrastructure is built-out and cannot accommodate more road capacity without adverse community impacts.

Major Transportation Facilities

A total of eight freeways and two busways pass through the Central Area. They include I-110 (Harbor Freeway), SR-2 (Glendale Freeway), I-5 (Golden State/Santa Ana Freeway), I-10 (Santa Monica/San Bernardino Freeway), SR-60 (Pomona Freeway), SR-134 (Ventura Freeway), US-101 (Hollywood Freeway), and the I-710 (Long Beach Freeway). The El Monte Busway runs along the San Bernardino Freeway's median and terminates at Alameda St. The Harbor Transitway runs along the Harbor Freeway's median and terminates at Adams Bl.

Downtown Los Angeles is the focal point of the County's transportation system. Union Station is the County's largest transit facility and center of the region's Metrolink rail operations. Existing rail transit service at Union Station includes the Metro Red Line, Metro Gold Line, five Metrolink commuter rail lines, Metro Rapid, and fixed-route bus service. Amtrak also operates 24 weekday trains out of Union Station across the country.

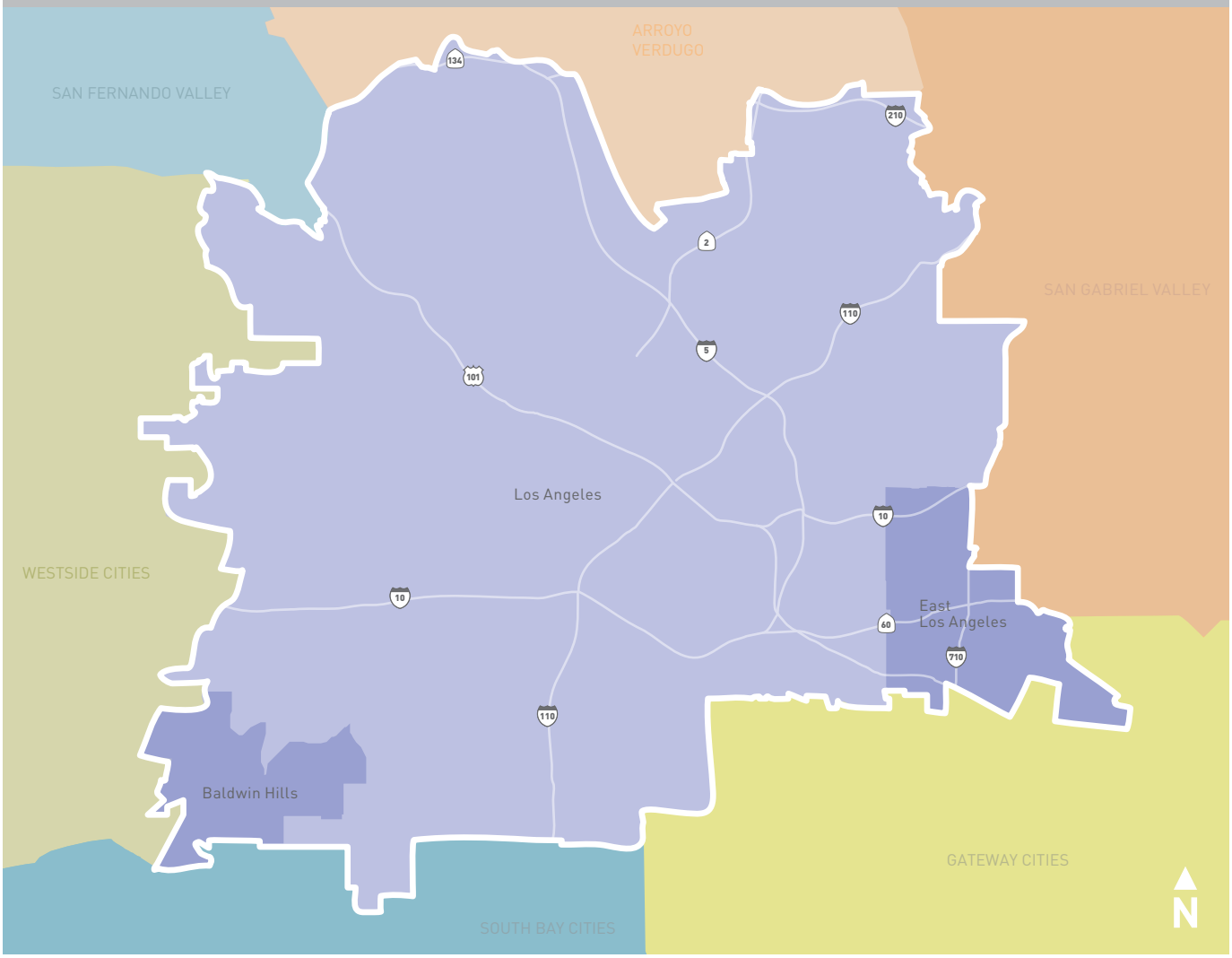
The Metro Red Line operates between Union Station and North Hollywood. The Metro Purple Line operates between Union Station and Wilshire/Western. The Metro Blue Line operates between the 7th St/Metro Center Station and Long Beach. The Metro Gold Line operates between Pasadena and East Los Angeles.

The Exposition Light Rail Transit Project (Phase I) is scheduled to open in 2010/2011 connecting Culver City with downtown Los Angeles.

Also, 10 municipal bus operators serve the Central Area. Which include Metro, Antelope Valley Transit, Foothill Transit, Gardena Municipal Bus Lines, LADOT (Dash and Commuter Express), Montebello Municipal Bus Lines, Orange County Transportation Authority (OCTA), Santa Clarita Transit, Santa Monica Municipal Bus Lines, and Torrance Transit. Currently, Metro operates four Metro Rapid lines within the Central Area (Wilshire/Whittier Bls, South Broadway, Vermont Av and Florence Av).

FIGURE 2.4

Central Los Angeles



Mobility Challenges

Downtown Los Angeles is the Central Area's primary travel destination. All freeways that pass through the Central Area, along with major arterials connecting downtown Los Angeles with neighboring communities, experience delay during both morning and evening peak periods. The Central Area's built-out urban setting limits the ability to expand or add capacity to the existing freeway and arterial networks. As a result, projects that improve the existing transportation system's efficiency, provide multimodal capacity, or influence travel behavior to decrease the reliance on automobile travel are key components of the strategy to meet the Central Area's mobility challenges.

Stakeholder Recommendations

During the development of the Long Range Transportation Plan, Metro met with the City of Los Angeles to gather input on additional subregional needs and priorities. These represent potential strategies could be explored should additional funds become available through 2040.

These strategies include, but are not limited to:

> Improving mobility and capacity on arterials through innovative signal synchronization, transit coordination and other ITS technologies;
> Improving transit access to downtown Los Angeles by improving connections to the Harbor Transitway and the El Monte Busway;
> Working with appropriate city and county agencies to develop policies that encourage mixed-use, transit-oriented development along major transit corridors (the majority of Metro's constructed and planned joint development projects are located in the Central Area);
> Continued improvement to pedestrian connections between transit facilities and major destinations/activity centers;
> Working with municipal transit operators to improve transit service within the Central Area to accommodate changing travel patterns resulting from downtown Los Angeles' continued redevelopment and to coordinate with Metro's expanding rail systems;
> Improving access from the I-5 freeway to downtown Los Angeles;

> Improving operation of US-101 corridor by improving freeway exit lanes, freeway auxiliary lanes, parallel arterials, bus and rail transit enhancements/expansions, park-and-ride/transit center expansions, and providing continued support for transportation demand management strategies, following community review, refinement and modification by affected agencies as recommended by the US-101 Freeway Corridor Study;
> Increasing capacity and considering the installation of HOV lanes on I-10 between I-110 and I-405;
> Add capacity to the connectors from northbound SR-110 to northbound I-5 and from northbound SR-110 to northbound US-101;
> Improve the terminus of I-710 at Valley Bl;
> Reconfigure freeway ramps in Boyle Heights to reduce impacts on residential communities;
> Improving SR-110 between I-10 and US-101 to improve access to downtown Los Angeles;
> Improve bicycle connections between the Los Angeles River trail and downtown Los Angeles;
> Coordinating Transportation Enhancement Activities (TEA) projects in conjunction with major Central Area investments such as the Cornfields and Taylor Yards State Parks, the Los Angeles River, Central City Associates, Bring Back Broadway, downtown Los Angeles BIDS, the new LAUSD's schools construction program, and loft conversions within downtown Los Angeles;
> Metro will continue to coordinate with subregional and other regional partners to reach consensus in identifying the most appropriate and technical approach for identifying a regional high-speed transit system for the county and region.

The 2009 Plan is a living document that will becontinually updated. Metro will work with the Central Los Angeles County subregion on an ongoing basis to ensure that its priorities are taken into consideration during each update. Figure 2.5 lists a variety of unfunded subregional priorities that are identified by the City of Los Angeles.

FIGURE 2.5

Central Los Angeles Unfunded Subregional Priorities

City	Subregion	Route	Project Limits/Description
FREEWAYS			
LA	Central Los Angeles	SR-2	Additional lane SB between SR-134 and I-5
LA	Central Los Angeles	SR-2	Construct a fly-over/half cloverleaf for the SB traffic exiting at San Fernando Rd and for SB San Fernando Rd traffic accessing the NB Fwy
LA	Central Los Angeles	SR-2	Construct an elevated 4-lane San Fernando Rd bypass between SR-2 and I-5 for access to downtown LA
LA	Central Los Angeles	I-5	Provide direct 4-lane connection to downtown LA from south of I-110 interchange. (Alameda Bypass, already studied by Caltrans.)
LA	San Fernando Valley	I-5	Additional lane NB and SB between SR-14 and I-405
LA	Central Los Angeles	I-5	Additional lane NB and SB between SR-134 and I-110
LA	Central Los Angeles	I-10	Additional lane EB and WB between I-110 and I-405
LA	Westside Cities, Central Los Angeles, San Gabriel Valley	I-10	Corridor-wide Expansion of Freeway Service Patrol
LA	Central Los Angeles	I-10	Modify EB off-ramps at Western Av, Arlington Av, Crenshaw Bl
LA	Central Los Angeles	I-10/US-101	Widen Cesar Chavez Av over crossing over I-10 and relocate NB US-101 Fwy ramps at Cesar Chavez Av
LA	Westside	I-10	Lincoln Bl ramps improvement
LA	Westside	I-10	Centinela Av ramps improvement
LA, Beverly Hills, Culver City	Central Los Angeles, Westside Cities	I-10	Major ramp reconfiguration at Robertson and Venice
LA	Central Los Angeles	US-101	Widen Edgeware bridge on SB US-101 between Glendale Bl on-ramp and US-101/I-110 interchange to provide auxiliary lanes
LA	Central Los Angeles	US-101	Construct a new NB on-ramp at Cahuenga Bl
LA	Central Los Angeles	US-101	Construct a new SB on-ramp from Cahuenga Bl West between Caltrans maintenance yard and Pilgrimage Bridge (fly-over or fly-under)
LA	Central Los Angeles	US-101	Construct direct NB on and off-ramps to the Hollywood Bowl parking lots

FIGURE 2.5 CONTINUED

Central Los Angeles Unfunded Subregional Priorities

City	Subregion	Route	Project Limits/Description
LA	Central Los Angeles	US-101	Build new SB US-101 on- and off-ramps at Campo de Cahuenga Wy (Ventura Bl exit from northbound direction)
LA	Central Los Angeles	US-101	Add lanes NB and SB between the Ventura Bl exit and the SR-134 Interchange
LA	Central Los Angeles	US-101	Reconfigure WB on- and off-ramps at Van Nuys Bl as hook ramps connecting at Riverside Dr just east of Van Nuys Bl
LA	San Fernando Valley	US-101	Add new WB on-ramp and EB off-ramp at Hayvenhurst Av
LA	San Fernando Valley	US-101	Add new WB on-ramp and new EB off-ramp at Canoga Av
LA	San Fernando Valley	US-101	Widen Canoga Av under the freeway overpass to full standard
LA	San Fernando Valley	US-101	Add on- and off-ramps at Fallbrook Av
LA	Central Los Angeles	I-110	Between US-101 and I-10 – reconfigure freeway ramps to provide additional NB lane and SB lane in the downtown area
LA	San Fernando Valley	I-210	Additional NB lane between SR-118 and Hubbard St
LA	San Fernando Valley	I-210	Additional lane on the connector from NB I-210 to NB I-5
LA	Westside	I-405	Construct a 4-lane tunnel, to provide toll expressway for access to LAX, between Victory Bl and SR-90 under I-405
LA	Westside	I-405	Construct LAX Expressway parallel to I-405 between SR-90 and Arbor Vitae St
LA	Westside	I-405	Reconfigure/reconstruct Sunset Bl/NB I-405 Fwy ramps
LA	Westside	I-405	Reconstruct the Skirball Center Dr ramps
LA	Central Los Angeles	I-710	Extend the SR-710 between Valley Bl and I- 210
Freeway-to-Freeway Interchanges			
LA	Central Los Angeles	I-5	Improve I-5 and I-10 interchange
LA	Central Los Angeles	I-5	Improve I-5 and SR-134 interchange
LA	Central Los Angeles	I-5	Improve I-5/SR-14/I-210
LA	Central Los Angeles	I-5	Improve I-5 and I-405 interchange
LA	Central Los Angeles	I-5	Improve I-5/SR-2 interchange
LA	Central Los Angeles	I-5	Improve I-5 and SR-110 interchange
LA	West Los Angeles	I-10	Improve I-10 and I-405 interchange
LA	Central Los Angeles	I-10	Improve I-10 and I-110 interchange
LA	Central Los Angeles	I-10	Improve I-10/SR-60/I-5 interchange
LA	San Fernando Valley	US-101	Improve US-101 and I-405 interchange
LA	San Fernando Valley	US-101	Improve US-101/SR-134/SR-170 interchange, including new connector from NB US-101 to EB SR-134
LA	Central Los Angeles	US-101	Improve US-101 and I-110 interchange
LA	Central Los Angeles	US-101	NB I-110 connector to NB I-101 – Extend 2 lanes to Glendale Bl off-ramp (eliminate merging of 2 lanes into 1 lane)
Auxiliary Lanes			
LA, LA Co	Central Los Angeles	I-5	Construct SB auxiliary lane on I-5 from Ditman Av to Calzona St
LA	Central Los Angeles	I-5	Construct SB auxiliary lane on I-5 from Marietta St to Lorena St
LA	Central Los Angeles	US -101	Add NB and SB auxiliary lanes from Glendale Bl to Cahuenga Bl
LA	San Fernando Valley	US -101	Add NB and SB auxiliary lane between Laurel Canyon Bl and Sepulveda Bl
LA	San Fernando Valley	US -101	Add NB and SB auxiliary lanes between Hayvenhurst Av and Valley Circle Bl
HOV Lanes			
LA	Central Los Angeles	I-5	Add HOV lane in both directions between SR-134 and I-110
LA	Central Los Angeles	SR-2	Construct 4-lane tunnel for HOV between SR-2 Terminus and I-10
Industry, LA, LA Co, Montebello, Monterey Park, South El Monte	San Gabriel Valley, Central Los Angeles	SR-60	Add HOV lane from US-101 to I-605 (both directions)
LA	Central Los Angeles	US-101	Add HOV lanes in both directions between SR-170 and I-110
LA	Central Los Angeles	US-101	Add HOV lanes in both directions between Topanga Canyon Bl and City Boundary

FIGURE 2.5 CONTINUED

Central Los Angeles Unfunded Subregional Priorities

City	Subregion	Route	Project Limits/Description
LA	San Fernando Valley	SR-27	Construct HOV lane connector from US-101 to east-west busway
LA	Central Los Angeles	I-405	Add HOV lane NB between I-10 and US-101
ARTERIALS			
Corridor Capacity Improvements			
LA	Central Los Angeles	SR-2	Implement SR-2 terminus improvements at Glendale Bl and SR-2
LA	San Fernando Valley	Osborne St	Widen Osborne St between Foothill Bl and San Fernando Rd for pedestrian safety and improved traffic capacity
LA	San Fernando Valley	San Fernando Rd	Widen and install reversible lane on San Fernando Rd from Sierra Hwy to Sepulveda Bl/Roxford St
LA	Central Los Angeles	San Fernando Rd	Widen San Fernando Rd from SR-2 to I-5 to Major or Secondary Highway standard; construct streetscape, lighting, and parking
LA	San Fernando Valley	San Fernando Rd	Widen San Fernando Rd from Tyburn St to SR-2 to Major Highway standard
LA	Westside	Sepulveda Bl	Widen Sepulveda Bl between Olympic Bl and Pico Bl to Major Highway standard
LA	San Fernando Valley	Sepulveda Bl	Extend Sepulveda Bl from Rinaldi St to Roxford St
LA	North Co Cities	Foothill Bl	Widen Foothill Bl between Sierra Hwy and Balboa Bl to increase capacity
LA	Westside	Wilshire Bl	Widen Wilshire Bl between Federal Av and Centinela Av to Major Highway standard
LA	Central Los Angeles	Sunset Bl	Widen Sunset Bl between Las Palmas and Mansfield from 70' to 78'
LA	Central Los Angeles	Sunset Bl	Widen to increase capacity on Sunset Bl from Virgil Av to Vermont Av
LA	San Fernando Valley	Burbank Bl	Widen to provide 2 lanes in each direction on Burbank Bl from Cleon Av to Clybourn Av
LA	San Fernando Valley	Burbank Bl	Elevate Burbank Bl in the flood control basin to avoid closures during rainy season between Balboa Bl and Sepulveda Bl
LA	Central Los Angeles	Figueroa St	Widen to add southbound capacity on Figueroa St from Cypress Av to I-5
LA	San Fernando Valley	Chatsworth St	Widen to increase capacity on Chatsworth St from De Soto Av to Topanga Canyon Bl
LA	Central Los Angeles	Beaudry Av	Widen Beaudry Av to permit northbound left-turn lane and to maintain 2 full-time northbound lanes on Beaudry Av between Temple and Sunset
LA	Central Los Angeles	Santa Fe Av	Widen to increase capacity and access to I-10 ramps on Santa Fe Av from 8th St to Olympic Bl
LA	Central Los Angeles	Van Ness St	Widen Van Ness St from the SB US-101 off-ramp to Sunset Bl to add a right-turn-only lane
LA	Central Los Angeles	Melrose Av	Remove on-street parking on Melrose Av between Vermont Av and Western Av; widen to have 1 left-turn lane and 2 through lanes each way with 10-foot sidewalks
LA	Central Los Angeles	Melrose Av	Widen south side of Melrose Av between Western Av and US-101 by 10 ft to increase capacity
LA	Central Los Angeles	Fountain Av	Widen Fountain Av between Sunset Bl and Western Av to increase capacity
LA	Central Los Angeles	Cahuenga Bl	Widen Cahuenga Bl West between Highland Av and Barham Bl to provide 2 lanes in each direction with pedestrian sidewalk and bicycle lane, and left-turn lanes at Mulholland and Oakcrest
LA	Central Los Angeles	Cahuenga Bl	Add a NB lane on Cahuenga Bl East from Odin St to Barham Bl
LA	Central Los Angeles	Barham Bl	Widen Barham Bl between Cahuenga and Burbank City limit to increase capacity
LA	San Fernando Valley	Riverside Dr	Extend Riverside Dr from Van Nuys Bl to Sepulveda Bl

FIGURE 2.5 CONTINUED

Central Los Angeles Unfunded Subregional Priorities

City	Subregion	Route	Project Limits/Description
LA	San Fernando Valley	Van Nuys Bl	Improve capacity along southbound Van Nuys Bl between Burbank Bl and US-101
LA	San Fernando Valley	Hayvenhurst Av	Widen or realign the jutouts on the west side of Hayvenhurst Av between Magnolia Bl and Ventura Bl to City standards
LA	San Fernando Valley	Magnolia Bl	Extend Magnolia Bl from Hayvenhurst Av to Libbit Av. Extend Magnolia Bl from Haskell Av to Sepulveda Bl
LA	Central Los Angeles	Magnolia Bl	Widen Magnolia Bl from Colfax Av to Laurel Canyon Bl to increase capacity
LA	San Fernando Valley	Oxnard St	Extend Oxnard St from Sepulveda Bl to Woodley Av and build a half interchange to northbound I-405
LA	San Fernando Valley	Victory Bl	Widen Victory Bl between White Oak Av and Sepulveda Bl to add capacity
LA	San Fernando Valley	Victory Bl	Widen Victory Bl from Topanga Canyon Bl to Desoto Av to Major Highway Class I standard
LA	San Fernando Valley	Topanga Canyon Bl	Widen to provide 6 through lanes all day between US-101 and SR-118
LA	San Fernando Valley	Mulholland Dr	Widen Mulholland Dr from San Feliciano Dr to Flamingo St to reduce congestion
LA	San Fernando Valley	Sepulveda Bl	Widen/re-stripe Sepulveda Bl from Rinaldi St to Mulholland Tunnel to provide peak-hour reversible lanes
LA	San Fernando Valley	Alvarado St	Widen Alvarado St (SR-2) under US-101 to create a SB left-turn lane onto EB US-101 on-ramp
LA	San Fernando Valley	Sherman Wy	Sherman Way Capacity Improvements
Intersection Widening			
LA	San Fernando Valley	Coldwater Cyn Av	Widen Coldwater Cyn Av at US-101 to provide dual left-turns to two on-ramps
LA	Central Los Angeles	Monterey Rd	Widen and realign Monterey Rd north of Huntington Dr, possibly close access to Browne Av
LA	Central Los Angeles	Fletcher Dr	Widen to increase capacity of Fletcher Drive at Glendale Bl
LA	Central Los Angeles	Barham Bl	Increase intersection capacity of Barham Bl at Cahuenga Bl West
LA	Westside	Stocker St	Widen Stocker St at Victoria Av to increase capacity
LA	Westside	Sunset Bl	Widen Sunset Bl at La Brea Av to provide dual left-turn lanes
LA	San Fernando Valley	Riverside Dr	Widen Riverside Dr at southbound SR-170 off-ramp to provide double right-turn lanes onto SB Tujunga Av (freeway columns are an obstacle)
Bridges			
LA	Central Los Angeles	Barham Bl	Widen Barham Bl Bridge at Hollywood Fwy to increase traffic capacity that matches a street widening project programmed in 2001 Call for Projects
LA	Central Los Angeles	Los Angeles St	Replace Los Angeles St Bridge over US-101 with longer bridge for increased lateral underclearance. Cover NB on-ramp with a portal frame for increased open space for proposed park
LA	San Fernando Valley	Colfax Av	Replace Colfax Av bridge over LA River with signature span and widen to Ventura Bl
LA	Central Los Angeles	Grand Av	Widen Grand Av bridge between Cesar Chavez and Temple St over US-101 to improve access to US-101 and I-110 on-ramps
LA	Central Los Angeles	Hyperion Av/ Glendale Bl	Widen Hyperion Av/Glendale Bl bridge over I-5 to include bike lanes, shoulders, and sidewalks
LA	Central Los Angeles	College St	Replace College St Bridge over I-110 with wider bridge to improve capacity. Raise the superstructure to resolve underclearance deficiency
LA	San Fernando Valley	Tujunga Av	Widen Tujunga Av Bridge (HBRR project design complete, construction postponed to FY2007-08)
LA	Westside	Lincoln Bl (SR-1)	Widen Lincoln Bl bridge over the Ballona Creek, including reconstruction of the Culver Bl bridge over Lincoln Bl

FIGURE 2.5 CONTINUED

Central Los Angeles Unfunded Subregional Priorities

City	Subregion	Route	Project Limits/Description
Tunnels and Grade Separation			
LA	San Fernando Valley	Sepulveda Bl	Widen existing Sepulveda Bl Tunnel at Mulholland Bridge to provide additional bike and traffic lanes
LA	San Fernando Valley	Saticoy St	Build a tunnel on Saticoy St underneath the Van Nuys Airport between Woodley St and Hayvenhurst Av
LA	San Fernando Valley	Saticoy St	Construct grade separation between street and RR tracks for improved safety at Saticoy St between Van Nuys Bl and Woodman Av
LA	Central Los Angeles	N. Main St	Construct Grade Separation at N Main St with LA River/ Metrolink/Union Pacific Railroad
LA	San Fernando Valley	Sunland Bl	Construct grade separation on Sunland Bl near San Fernando Rd
LA	Westside	Sepulveda Bl	Construct grade separation (underpass) at the Sepulveda Bl and Wilshire Bl intersection
LA	Central Los Angeles	El Monte Busway	Provide grade separation at Alameda St for direct access of transit buses from downtown LA to El Monte Busway
LA	Westside	La Cienega Bl	Construct grade separations on La Cienega Bl at Jefferson Bl, Rodeo Bl, La Tijera Bl, and Manchester Bl to improve travel time along La Cienega between I-10 and LAX area
TRANSIT			
Rail			
LA	Central Los Angeles	Downtown LA	Regional Connector Light Rail Transit – 7th St/Metro Center Station to Union Station
LA	Central Los Angeles	Downtown LA	Downtown Los Angeles Streetcar
LA Co, Montebello, Pico Rivera, Whittier	Central Los Angeles, Gateway	East LA Corridor	Gold Line – extend from Atlantic to eastern portion of LA County
Culver City, LA, Santa Monica	Westside Cities, Central Los Angeles	I-10	Exposition Light Rail Transit: Phase I – Downtown LA to Culver City
LA, Culver City, Santa Monica	Central Los Angeles, Westside Cities	I-10	Exposition Light Rail Transit: Phase II – Culver City to Santa Monica
LA, Beverly Hills	Central Los Angeles, Westside Cities	Wilshire Bl	Metro Purple Line – extend from Wilshire/Western to Westside
LA, LA Co	Central Los Angeles	Vermont Corridor	Metro Green Line – I-105 to Hollywood Bl along Vermont Av
LA, Glendale	Central Los Angeles	Alameda Corridor North	Grade separation (trench) of Alameda Corridor North between SR-2 and SR-134 for commuter and freight rail lines
LA	San Fernando Valley	Red Line	Extend Metro Red Line from North Hollywood to Sylmar
LA	Westside	Metro Green Line	Extend Metro Green Line from LAX to City of Santa Monica
LA	Westside	I-405	Build Rail Connection from LAX to Sylmar along I-405
LA	Westside	Florence Av/ BNSF	Build rail to connect Harbor and Crenshaw Corridors to LAX utilizing existing BNSF rail line
Metro Bus			
LA, Santa Monica	Westside Cities, Central Los Angeles	I-10	Increase frequency, provide signal priority, dedicated transit lanes and high-capacity buses on SR-1 to I-5 parallel to I-10
Burbank, Glendale, LA, Lancaster, Palmdale, Santa Clarita, San Fernando	North Co Cities, SFV, Central Los Angeles	I-5	Expand Metrolink service and capacity on existing trains at various locations to be determined
LA	Central Los Angeles, Gateway, Arroyo Verdugo, SFV	I-5	Increase transit services throughout the I-5 corridor at various locations to be determined
LA	SFV, Central Los Angeles	US -101	Add local community transit service connections to Metro Red Line stations between US-101/SR-134/SR-170 interchange and downtown LA – Hollywood/Western (2 routes), Vermont/ Santa Monica/LACC (3 routes), Vermont/Beverly (6 routes), Westlake/MacArthur Park (3 routes)

FIGURE 2.5 CONTINUED

Central Los Angeles Unfunded Subregional Priorities

City	Subregion	Route	Project Limits/Description
LA	SFV, Central Los Angeles	US -101	Increase Metrolink services between Moorpark and Union Station
LA	San Fernando Valley	I-405	Add planned North-South Busway Project
DASH			
LA	Central Los Angeles, San Fernando Valley, Westside	I-5, I-10, US-101, I-405, I-110, SR-170	Add 10 new DASH routes Citywide
TSM/TDM			
TSM			
LA	Westside Cities, Central Los Angeles, San Gabriel Valley, San Fernando Valley	Citywide	Vehicle Infrastructure Integration – to integrate vehicle navigation system with Intelligent Transportation System (ITS)
LA	Central Los Angeles, San Fernando Valley	North San Fernando Valley, South Central Los Angeles	Complete Citywide ATSAC system
LA	Westside Cities, Central Los Angeles, San Fernando Valley, San Gabriel Valley	Citywide	Re-stripe various arterials for turn pockets and additional lanes. Arterial reconfiguration to facilitate directional flow such as reversible lanes
TDM – Ridesharing			
LA	Central Los Angeles, Gateway, Arroyo Verdugo, SFV	Citywide	Create a Transportation Management Association to champion TDM programs
LA	Central Los Angeles, Westside Cities, San Fernando Valley, San Gabriel Valley	Citywide	Add/expand park-and-ride facilities and finalize parking policy
TDM – Bicycles/Pedestrians			
LA	Westside Cities, Central Los Angeles, San Gabriel Valley	Citywide	Enhance/expand/coordinate pedestrian, bicycle, and transit information and amenities
LA	Central Los Angeles	US-101	Decking over US-101 between Bronson Av and Vermont Av for pedestrian linkage and open space
GOODS MOVEMENT			
Freeways			
Bell, Bell Gardens, Commerce, Compton, Long Beach, Lynwood, Monterey Park, Paramount, South Gate, Vernon	Gateway, Central Los Angeles	I-710	Add truck lanes to I-710 between I-405 and I-10
Arterials			
LA	Central Los Angeles	Alameda St	Alameda St widening and reconstruction between US-101 and 26th St. Rebuild street and repave to heavy-duty vehicle standards; Install channelization and widen curb returns to facilitate truck movements between US-101 and 26th St
LA	San Fernando Valley	Roxford & Sepulveda	Capacity Enhancements and ramp improvements at Roxford St/Sepulveda Bl/I-5. Widen Roxford St/Sepulveda Bl at I-5 to facilitate truck movements
LA, Glendale	Central Los Angeles	San Fernando Rd West	Capacity Enhancements at San Fernando Rd West/Brazil St and San Fernando Rd West/Doran St. Widen and improve north and south sides of Brazil St and Doran St to create additional lanes, curb and gutter in each direction. Increase curb returns to facilitate truck movements

FIGURE 2.5 CONTINUED

Central Los Angeles Unfunded Subregional Priorities

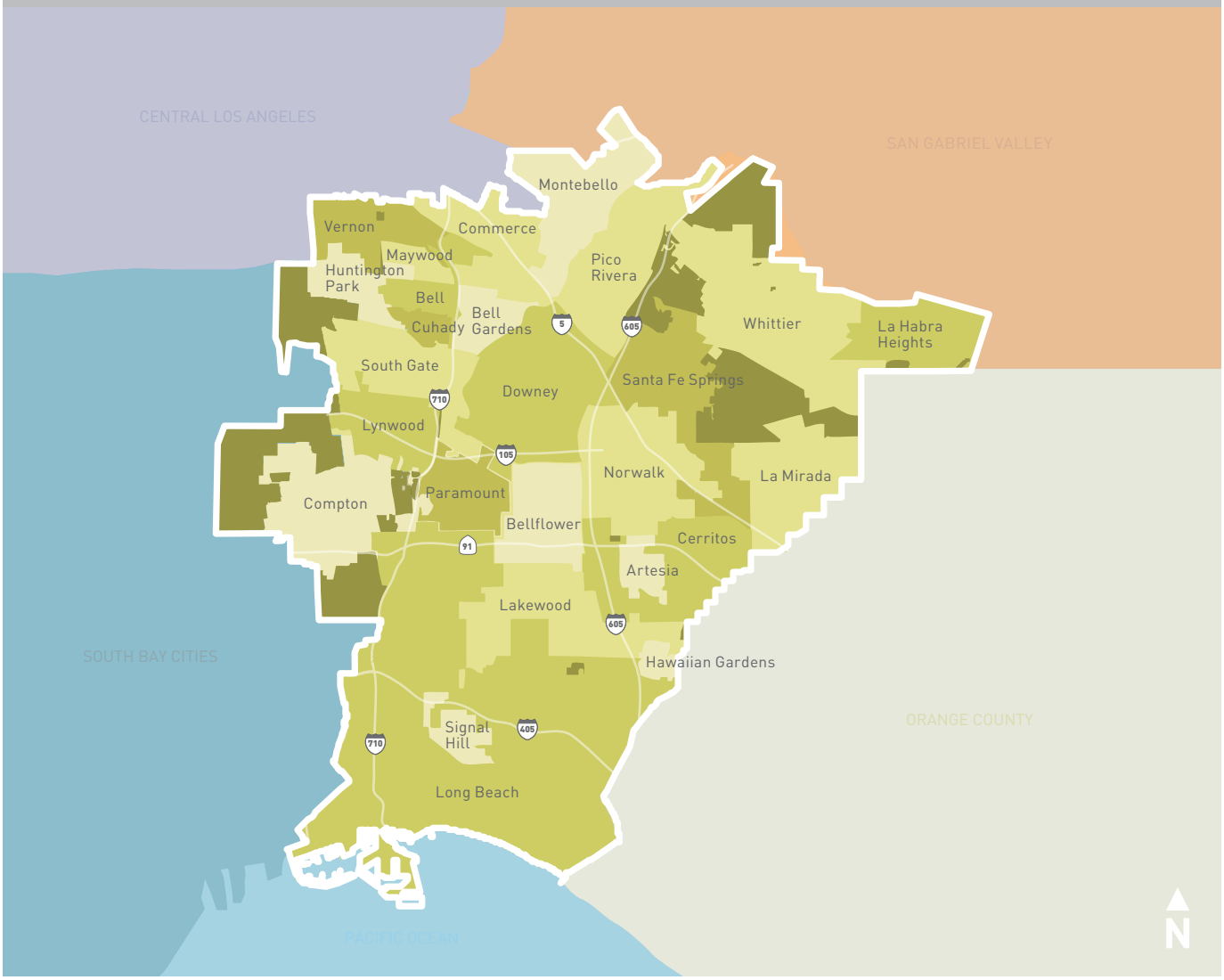
City	Subregion	Route	Project Limits/Description
LA	Central Los Angeles	Main & Daly	Capacity Enhancement at Daly St and Main St. Increase curb returns at NW and SW corners of Daly and Main to facilitate truck movements
LA	South Bay	Lomita Bl & Alameda St	Port Acess Improvements. Improve Lomita Bl between Wilmington Av and Alameda St to Major Highway Class II standards to provide truck access between intermodal facilities and the Alameda Corridor. Improve Alameda St between Henry Ford Av and Anaheim St to Major Highway Class II standards

Unfunded Projects submitted by the Port of LA

City	Route	Project Limits/Description
Freeway/NHS		
LA	I-110/SR-47	I-110/SR-47/Harbor Bl Interchange Improvements – Improve I-110/SR-47 Harbor Bl Ramps Interchange in two phases
LA	Navy Wy/SR-47	Northbound Navy Way flyover connector to Westbound Seaside Av (SR-47)
LA	Vincent Thomas Bridge	Develop and analyze alternatives to increase needed capacity, including modifcation of the existing bridge, construction of a second parallel bridge, construction of a second bridge at a new location. Replacement of the existing bridge, or construction of a tunnel crossing
LA	Various Locations	Implement Advanced Transportation Management Systems Phase 2 throughout the Ports of Los Angeles and Long Beach properties, the adjacent freeways and arterial facilities. Enhanced communications infrastructure and devices and enhanced system interfaces
Arterial		
LA	Fries Av	Grade separate Fries Av from Harry Bridges Bl to Pier A St from active rail line. Provides grade-separated vehicular access to heavily utilized rail line; improve the intersection of Harry Bridges Bl and Fries Av
LA	Broad Av	Grade separate Broad Av from Harry Bridges Bl to Water St from active rail line. Provides grade-separated access to waterfront area from heavily used rail line; extends Broad Av to Water St, provides bike lanes and sidewalks on both sides of Broad Av
LA	Waterfront – Bridge to Breakwater	Redevelop Waterfront. Key elements: scenic highway, historic rail line, historic transportation museum, pedestrian and bike paths, redesign of local street system and intermodal transportation center (seniors, cruise ships, water taxis, trolley, light rail lines, charter buses, taxi and “ped” cabs, hotel shuttles and transit linkages with regional bus, rail and high occupancy vehicle facilities)
Rail		
LA	Fries Av	Construct West Basin East Inter-modal Container Transfer Facility (ICTF) from south of Fries Av to the south end of marine terminal at Berth 147. On-dock railyard where containers will be loaded onto train directly at the marine terminal
LA	Sepulveda Bl & PCH	Construct near dock Inter-modal Container Transfer Facility (ICTF) South, west of the SR-103, north of Sepulveda Bl, south of PCH
LA	Various Locations	Construct California Highway Patrol (CHP) Truck Inspection Station. Port of LA locations to provide the CHP with permanent inspection facility sites for mobile units

FIGURE 2.6

Gateway Cities Unfunded Subregional Priorities



GATEWAY CITIES SUBREGION

Cities

Artesia, Avalon, Bell, Bell Gardens, Bellflower, Cerritos, Commerce, Compton, Cudahy, Downey, Hawaiian Gardens, Huntington Park, La Habra Heights, La Mirada, Lakewood, Long Beach, Lynwood, Maywood, Montebello, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, and Whittier. Gateway Cities also includes the following unincorporated communities of Los Angeles County: East Los Angeles, Florence, Rancho Dominguez, East Rancho Dominguez, Rosewood (portion), South Whittier, Walnut Park, and Willowbrook (portion).

Setting

The Gateway Cities form the southeastern boundary of Los Angeles County. This subregion is bounded to the south by the Pacific Ocean and ports of Long Beach and Los Angeles; the Orange County Line on the east; the I-110 (Harbor Freeway) on the west; and SR-60 (Pomona Freeway) on the north. Figure 2.6 illustrates the Gateway Cities subregion.

This subregion has an approximate resident population of 2 million people. The Gateway Cities have a highly diverse population that has formed and retained a unique identity throughout various cities. The subregion is home to highly urbanized areas including Long Beach, the County's second largest city, industrial-oriented cities such as Vernon and Commerce, traditional residential suburbs such as La Habra Heights and a broad spectrum of balanced communities that fall between. The Port of Long Beach is located within this subregion and serves as an important industrial center and economic driver for all of Southern California.

Major Transportation Facilities

SR-60 (Pomona Freeway), SR-91 (Artesia Freeway), and I-105 (Glenn Anderson Freeway) serve as major east-west freeway corridors in this subregion. I-5 (Santa Ana Freeway), I-405 (San Diego Freeway), I-710 (Long Beach Freeway), and I-605 (San Gabriel River Freeway) serve as the major north-south corridors. An airport located in the City of Long Beach serves as a hub of corporate activity. The Port of Long Beach combined with the adjacent Port of Los Angeles constitutes the fifth

busiest port in the world and the largest container port in the U.S. The ports are served by the Alameda Corridor, a 20-mile railway designed to speed cargo and containers from the ports to the rest of the country. The ports are also served by the freeway network described above.

The subregion is served by the Metro Blue and Green Light Rail lines as well as the Harbor Transitway running along the I-110. These major transit infrastructure investments help move people to the ports and other employment areas within the subregion. The subregional bus system consists of: Metro Gateway Cities Service Sector, Long Beach Transit, Norwalk Transit, Commerce, and Montebello Municipal Bus lines. In addition, many cities operate transit and dial-a-ride services, such as Cerritos on Wheels (COW), La Mirada Dial-a-Ride. Metrolink's Orange County Line provides commuter service with stops in Norwalk/ Santa Fe Springs and the City of Commerce.

Mobility Challenges

The Gateway Cities subregion has one of the largest all-weather ports in the world. As the 13th busiest cargo container port in the world, the Port of Long Beach moved $140 billion worth of cargo in 2007. When the Port of Long Beach is combined with the Port of Los Angeles, they comprise the fifth largest port in the world, making goods movement the greatest mobility challenge for the subregion. About forty percent of all goods imported to the United States from Asia arrive via the two ports. Of the goods that arrive at the ports, over ninety percent is transported through the Gateway Cities Subregion to destinations beyond the Gateway Cities area.

Currently, goods movement-related traffic is growing at a faster rate than that of automobiles. Daily truck traffic on I-710 alone is expected to increase from 38,000 to approximately 90,000 trucks a day by the year 2035. The trucks transporting cargo to and from the Port of Long Beach use Ocean Bl, I-710, SR-47/SR-103 (Terminal Island Freeway), and I-110. Truck traffic on SR-91 east of the I-710 is expected to increase from 34,000 daily trips to 40,000 daily trips in 2030. The heavy congestion generated by this truck traffic also has a significant impact on the traffic flow of I-710, I-405, SR-60, SR-91 and I-605 freeways.

Air quality degradation is a critical issue as maritime, railroad, and port-related truck traffic results in significant diesel emissions, including diesel particulate matter pollution. In addition, safety is also an issue due to aging and inadequate design of transportation infrastructure that require trucks to weave across multiple lanes in short distances, especially at major freeway interchanges.

Goods Movement issues related to railroad and freight traffic are a concern for the Gateway Cities Council of Governments (COG). Metro and the Gateway Cities COG are developing a Goods Movement Strategy to address air quality, safety, and mobility issues within this subregion. Efforts are underway to study off-freeway Goods Movement corridors linking the ports with the Vernon/Commerce rail yards, and eventually San Bernardino and/or Riverside County.

Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with cities and the Gateway Cities COG to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available through 2040. These strategies include, but are not limited to:

> Arterial and traffic signal improvements;
> Ramp widening and extended carpool lanes;
> More efficient, environmentally friendly goods movement strategies;
> Strategies to mitigate port traffic congestion on the SR-91, I-105, I-405, I-605 and I-710 Freeways;
> Improving safety, increasing capacity enhancement on the Metro Blue Line;
> More timed connections and circular routes between municipal operators, including designating regionally significant "transit hubs;"
> Implementation of advanced ITS technology to maximize capacity on arterial streets and freeways with emphasis on goods movement; and
> Seek opportunities for public-private partnerships, user fees, and other non-traditional sources to fund nationally and regionally significant goods movement projects.

The 2009 Plan is a living document that will be continually updated. Metro will work with the Gateway Cities on an on-going basis to ensure that their priorities are taken into consideration during each update. Figure 2.7 lists a variety of unfunded subregional priorities identified at the Gateway Cities COG.

FIGURE 2.7

Gateway Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway		
Commerce, Downey, Montebello	I-5	Add 1 HOV lane each direction from I-605 to SR-60
Downey, Santa Fe Springs	I-5	HOV connector at I-5 and I-605 (partial connector – from west to south & from west to north)
Norwalk	I-605	HOV connector at I-105 and I-605 (partial connector – from west to south & from west to north)
Cerritos	I-605	HOV connector at SR-91 and I-605 (all)
Bellflower	SR-91	Reconfigure interchange to tight diamond at Lakewood Bl/SR-91 interchange
Artesia, Bellflower, Cerritos, Compton, Downey, Hawaiian Gardens, Lakewood, Long Beach, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Whittier, LA County	SR-91/I-605	Alameda St eastward to Orange County Line and SR-60 southward to Orange County Line – Freeway improvements to be determined by needs assessment in progress
Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Orange County Line to I-605 – Add 2 HOV lanes and 2 mixed-flow lanes
Bell, Vernon	I-710	Extend 26th St to improve interchange operations at Atlantic Bl/Bandini Bl – interchange modifications
Gateway Cities along corridor	I-710	Deployment of Intelligent Transportation System Improvements (approx. 7 Ramp Meter sites, approx. 25 CCTV sites)
Bell, Bell Gardens, Commerce, LA, Long Beach, Lynwood, Monterey Park, Paramount, South Gate	I-710	Ocean Bl to PCH and I-405 to I-10 – Pavement and median rehabilitation, selected bridge widenings (no additional capacity)
Long Beach	SR-47	At Ocean Bl – interchange improvement
Long Beach	Interchanges/ Arterials	I-710 ramp terminus/arterial improvements – Redesign Shoemaker Bridge and realign/consolidate Broadway, 3rd, 6th and 7th St ramps
Bell, Bell Gardens, Commerce, Compton, Long Beach, Lynwood, Monterey Park, Paramount, South Gate, Vernon	I-710	Ports of Long Beach and Los Angeles and SR-60 – Bring general purpose lanes to 10 total; Add 4-lane exclusive truck facility from ports and rail yards. Improve specified interchanges in accordance with MCS. Improve arterials, synchronize traffic and implement TSM/TDM measures. Construct truck inspection facility
Long Beach, Signal Hill	I-405	Interchange modifications to provide access from NB 405 to SB Cherry at Cherry Av interchange
Commerce, Long Beach, Monterey Park, Paramount	I-710	Continuous high mast illumination (at freeway-to-freeway interchanges – I-405/I-710, SR-91/I-710, I-105/I-710, I-5/I-710, SR-60/I-710)
Downey, Long Beach, Norwalk	Various	Reconstruct intersections – I-405/I-605
Bellflower, Cerritos, Long Beach, Signal Hill	Various	Construct additional lanes in each direction – SR-91 (I-710 to Orange County line), I-405 (Lakewood Bl to the Orange County line), I-605
Artesia, Bellflower, Cerritos, Hawaiian Gardens, Lakewood, Long Beach, Norwalk, Santa Fe Springs, Whittier	SR-91, I-605, I-405	Conduct toll lane feasibility studies on SR-91, I-605, and I-405
Arterial		
Cerritos, Cypress, Lakewood, La Palma	Del Amo Bl	Widen Del Amo Bl bridge over Coyote Creek
Bellflower	Rosecrans Av	Widen Rosecrans Av bridge over the San Gabriel River channel
Cerritos, Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Develop arterial route parallel to I-5 to be used as a preferred arterial alternative to I-5 – Lakewood/Rosemead Bl and Orange County Line
Cerritos, Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Improve 50 arterial intersections – Lakewood/Rosemead Bl and Orange County Line
Cerritos, Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Improvements of 6 interregional arterial corridors to "Smart Street" operational standards – Lakewood/Rosemead Bl and Orange County Line
Bell, Commerce, Vernon	38th/37th/ Bandini Bl	Widen 38th/37th/Bandini Bl – Alameda to I-5
Vernon	Atlantic Bl	Rehabilitate and widen existing Atlantic Bl bridge at the LA River (from 68' to 100')

FIGURE 2.7 CONTINUED

Gateway Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Vernon	26th St	Rehabilitate and widen existing 26th St bridge at the LA River
Bell, Commerce, Compton, Cudahy, LA Co, Long Beach, Lynwood, Maywood, South Gate, Vernon	Atlantic Bl	Improvements and/or capacity enhancements Atlantic Bl – PCH to SR-60
Compton, LA Co, Long Beach	Los Angeles Blue Line	Downtown Long Beach to 7th St/Metro Center in downtown LA – platform and operational improvements to existing line
Long Beach, Signal Hill	Atlantic, Cherry/ Garfield	Upgrade traffic signals and install signal synch along Atlantic, Cherry/Garfield
Lakewood, Long Beach, Paramount, Signal Hill	Cherry Av	Improvements and/or capacity enhancements Cherry Av – PCH to 70th St
Carson, LA Co, Long Beach	Del Amo Bl	Improvements and/or capacity enhancements Del Amo Bl – Alameda to Cherry
Bell, Bell Gardens, Commerce, Downey	Eastern Av	Widen Eastern Av – Garfield to Atlantic
Downey, South Gate	Firestone Bl	Improvements and/or capacity enhancements Firestone Bl – from Atlantic to Paramount
Bell, Bell Gardens, Downey	Florence Av	Florence – Atlantic to Paramount
Bell Gardens, Commerce, LA Co, Montebello, Paramount, South Gate	Garfield Av	Improvements and/or capacity enhancements Garfield Av – 70th to Pomona
South Gate	Long Beach Bl	Widening and/or capacity enhancements Long Beach Bl, from south city Limit to north city Limit
South Gate	Southern Av	Southern Av Extension – Southern Av extension over LA River/I-710 corridor
South Gate	Garfield Av	Garfield Av bridge widening over Rio Hondo channel
South Gate	I-710	Atlantic/Firestone Pedestrian bridge
Bellflower, Paramount	I-710	Upgrade traffic signals to improve traffic flow at intersections of Lakewood and Artesia, Alondra and Somerset
Long Beach	Anaheim St	Improve Anaheim St from Terminal Island Freeway to PCH
Long Beach	Broadway	Improve Broadway from I-710 to Alamitos
Long Beach	3rd St	Improve 3rd St from I-710 to Alamitos
Long Beach	6th St	Improve 6th St from I-710 to Alamitos
Long Beach	7th St	Improve 7th St from I-710 to I-605
Long Beach	Long Beach Bl	Improve Long Beach Bl from Ocean Bl to North City Limit
Long Beach	Santa Fe Av	Improve Santa Fe Av from southern terminus to I-405
Long Beach	Pacific Av	Improve Pacific Av from Ocean Bl to I-405
Long Beach	Ocean Bl	Improve Ocean Bl from I-405 to Redondo Av
Long Beach, Paramount	Paramount Bl	Improvements and/or capacity enhancements Paramount Bl – Carson to I-5
Long Beach, Signal Hill	Pacific Coast Hwy	Improve Pacific Coast Hwy – from Terminal Island Fwy to the Long Beach Traffic Circle
Port of Long Beach	Gerald Desmond Bridge	Replace Gerald Desmond Bridge – SR-47 and Pico Av
Commerce, LA Co, Vernon	Washington Bl	Widen Washington Bl – Alameda to I-5
Long Beach, Signal Hill	Willow St	Improve and/or widen Willow St – Terminal Island Fwy to Cherry
Long Beach	Alamitos Av	Ocean Bl to PCH – operational and aesthetic improvement
Gateway Cities along corridor	Various Arterials	Phase I (approx. 26) and Phase II (approx. 20) intersection improvements for most "truck impacted" intersections
Gateway Cities along corridor	I-710	Signal System upgrades and signal synchronization for several major arterials throughout the I-710 Study Area
Transit		
Bellflower		Bellflower Transit Center
LA Co, Montebello, Pico Rivera, Whittier	East LA Corridor	Extend from Atlantic to Norwalk/Whittier
LA, Long Beach, Redondo Beach, Torrance	I-405	Add express bus service to downtown Long Beach from South Bay Galleria
Long Beach	I-405	Increase service frequency on bus routes connecting Long Beach to the CSULB campus

FIGURE 2.7 CONTINUED

Gateway Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Long Beach	I-405	Increase service frequency on bus routes connecting downtown Long Beach to Orange County
Downey, LA, LA Co, Lynwood, Norwalk, Paramount	I-405	Increase feeder bus service to Metro Green Line (Lines 40, 232, 439, 561), Harbor Transitway (Lines 344, 442, 445, 550)
	I-5	Increase frequency and add bus signal priority at key intersections on Metro Bus lines 62 and 460 – from downtown LA along Telegraph Rd to San Antonio. 460 – from East LA south along Telegraph Rd
Commerce	I-5	Upgrade Commerce Station to 100% of 91 Line service (current service ~ 75%)
	I-5	Reduce bus service headways Corridor-wide
	I-5	Add reverse commute service to OCTA express bus lines Corridor-wide
	I-5	Increase Metro bus service (up to 10%) Corridor-wide
	I-5	Improve coordination of service between local bus service and longer-haul service Corridor-wide
Cerritos, Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Procure and install transit systems equipment to implement transit vehicle priority capability to Lakewood/Rosemead Bl and Orange County Line
La Mirada, Santa Fe Springs, Norwalk	I-5	Establish TMA, enhance local circulator service and connectivity
Norwalk	I-5	Provide Airport FlyAway Service Norwalk Transportation Center
	I-5	Increase Metrolink service and add capacity to existing trains in Orange County, Riverside, and 91 Lines
	I-5	Increase transit services throughout the I-5 corridor
SCRTTC	Regional	Through the Southern California Regional Transit Training Consortium support community college transit maintenance curricula
LB Transit	I-605	New transit route connecting CSULB/VA Hosp to Metro Green Line Lakewood Station
Artesia, Bell, Bellflower, Cerritos, Cudahy, Downey, Huntington Park, Maywood, Paramount, South Gate, Vernon	Gateway, Central Los Angeles	Construct environmentally-friendly high-speed transit along "Santa Ana West Branch" ROW from Union Station to Orange County
Downey, El Segundo, Hawthorne, LA, LA Co, Lynwood, Norwalk	Green Line	Miscellaneous capital and operational improvements to existing line
Various	I-710	Additional Metro Blue/Green Line bus feeder shuttles
Various	I-710	Enhanced community bus service (local circulators)
	I-710	Bus service Improvements: miscellaneous operational improvements to existing systems (approx. 20% increase in service levels)
TSM/TDM		
	I-405	Expand operations of Freeway Service Patrol Corridor-wide
	I-5	Support existing and expand TDM programs Corridor-wide
	I-5	Create a Transportation Management Association to champion TDM programs Corridor-wide
Commerce, LA Co	I-5	Expand Freeway Service Patrol (FSP) throughout the corridor from SR-134 to I-710
Cerritos, Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Implement ITS strategies for optimizing corridor traffic flow – Lakewood/Rosemead Bl and Orange County Line
Cerritos, Downey, La Mirada, Norwalk, Santa Fe Springs	I-5	Installation of Central Control and Communications Centers at each of five I-5 corridor cities at Lakewood/Rosemead Bl and Orange County Line
Burbank, LA, San Fernando	I-5	Install ramp metering on more on-ramps throughout the I-5 corridor – Throughout Segment B of I-5
	I-5	Add/expand park-and-ride facilities throughout the corridor
Bicycle		
Cerritos, Artesia, Paramount, Bellflower	I-105	Construct Class 1 Bikeway within "Santa Ana West Branch" ROW
	Various	Incorporate other elements of Bicycle Transportation Strategic Plan upon completion
Goods Movement		
POLB		Empty container management through "virtual container yard" program
GCCOG		Expanded drayage truck emission reduction program

FIGURE 2.7 CONTINUED

Gateway Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
POLB/POLA		Extended gate hours at the ports
Long Beach, Paramount, Commerce, Monterey Park	I-710	Continuous high mast illumination (at freeway-to-freeway interchanges: 405/710, SR-91/710, 105/710, I-5/710, SR-60/710)
LA Co, Long Beach, POLA, POLB, GCCOG	ITS	Complete corridor signal synchronization; Develop area-wide connectivity among LACDPW systems, Caltrans, ports, municipalities, private goods movement industry, and ATIS type systems to maximize mobility in port area
POLA/POLB	ITS	Advanced Transportation Management Info and Security System (ATMIS)

LAS VIRGENES/MALIBU SUBREGION

Cities

Agoura Hills, Calabasas, Hidden Hills, Malibu and Westlake Village, and parts of unincorporated Los Angeles County.

Setting

The Las Virgenes/Malibu subregion occupies the westernmost portion of Los Angeles County, and is bordered by Malibu and the Pacific Ocean to the south and Ventura County to the west and north. The area's most prominent feature is the strikingly rugged Santa Monica Mountains, which divide this subregion. The Las Virgenes cities occupy the north-facing foothills and valleys adjacent to the Santa Monica Mountains State Park and National Recreation Area. Figure 2.8 illustrates the Las Virgenes/Malibu subregion.

Major Transportation Facilities

The Ventura Freeway (US-101) is the subregion's dominant transportation corridor, around which most commercial/research park development and employment opportunities have clustered. This generally low-density area has a limited network of arterial roadways, of which Pacific Coast Highway (SR-1) is the most heavily traveled. A series of north-south arterials connect the two highways, which include Decker/Westlake (SR-23), Kanan Dume/Kanan, Las Virgenes/Malibu Canyon Rd, and Topanga Canyon Bl (SR-27).

Regional bus service is provided by Metro and LADOT. Calabasas runs a community shuttle while the other cities in the subregion operate dial-a-ride services. There is currently no rail service in the subregion.

Mobility Challenges

The transportation system in the Las Virgenes/Malibu subregion has substantial capacity problems. As home to some of the nation's most-visited beaches and recreational sites, severe weekend and summertime traffic are frequent occurrences. Weekday traffic volumes have also grown as development and employment opportunities have extended into Ventura County. The unavoidable reliance on two primary routes presents substantial challenges to this area and yields the anticipated outcomes: traffic delays, disruptions and unreliable service levels.

Due to the region's topography, size, modest roadway network, and limited transportation alternatives, congestion has become commonplace. While all the cities in the Las Virgenes/Malibu subregion provide dial-a-ride or community shuttle services, coordination of these services is limited. Bus service does not traverse the mountains in a north-south direction. This significantly reduces access to employment opportunities by day-workers and access to Pepperdine University by students traveling from other areas of the region.

Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with cities and the Las Virgenes/Malibu COG to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available through 2040. These strategies include, but are not limited to:

> Enhance transit access to the Metro Orange Line.
> Increase capacity of US-101 by adding freeway and carpool lanes, and improving access to and provision of other modes of transportation, such as light rail;
> Improve operation of US-101 corridor by improving local freeway interchanges and parallel arterials, subject to further community review and refinement and modification by affected agencies as recommended by the US-101 Freeway Corridor Study;
> Improve access to emergency services; and
> Increase transportation alternatives in this subregion, such as adding smart shuttles, and increasing the number of transportation "hubs."

The 2009 Plan is a living document that will be continually updated. Metro will work with the Las Virgenes/Malibu COG and its member cities on an ongoing basis to ensure that their priorities are taken into consideration during each update. Figure 2.9 lists a variety of unfunded subregional projects identified by the Las Virgenes/Malibu COG.

FIGURE 2.8

Las Virgenes/Malibu

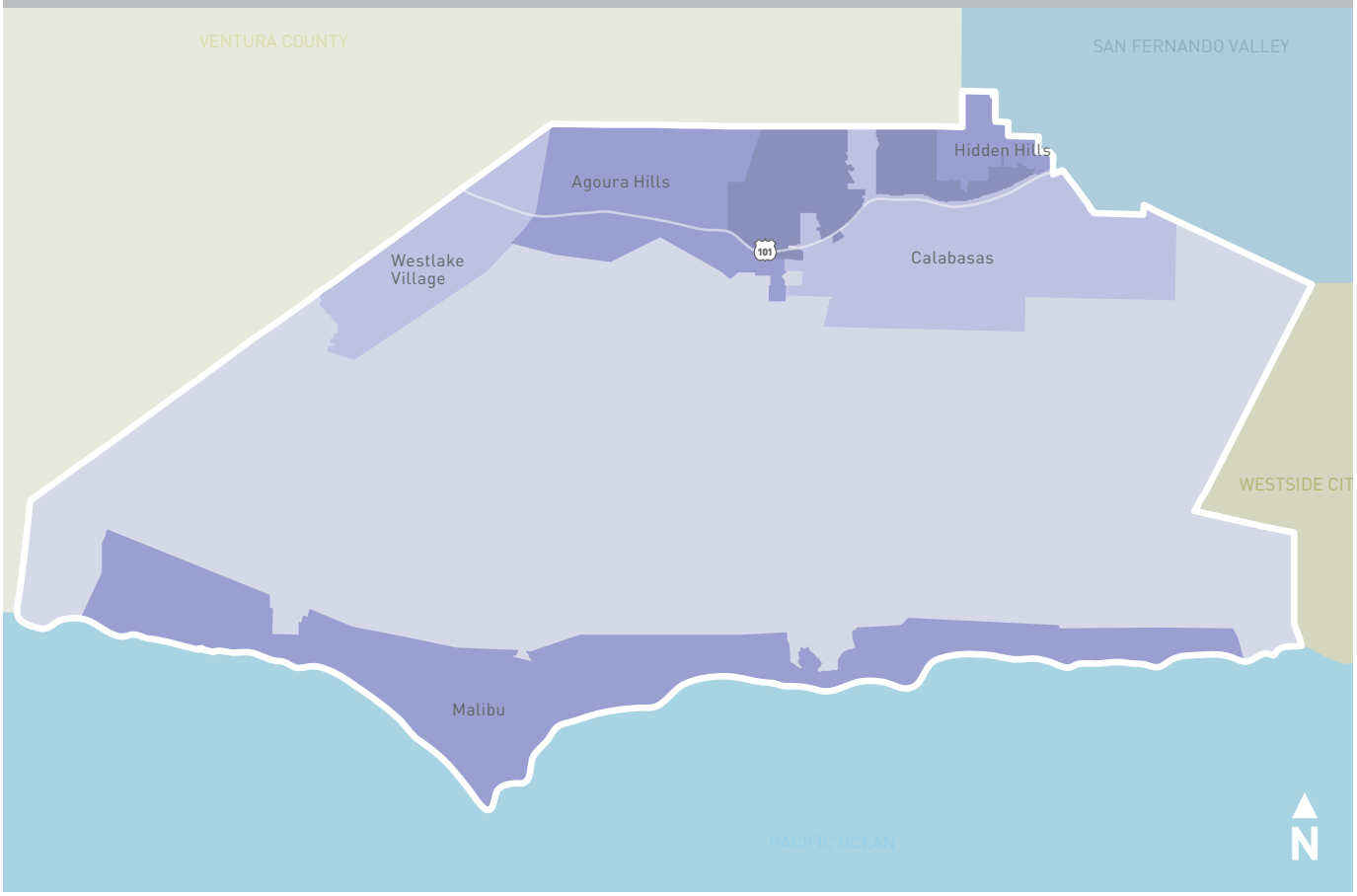


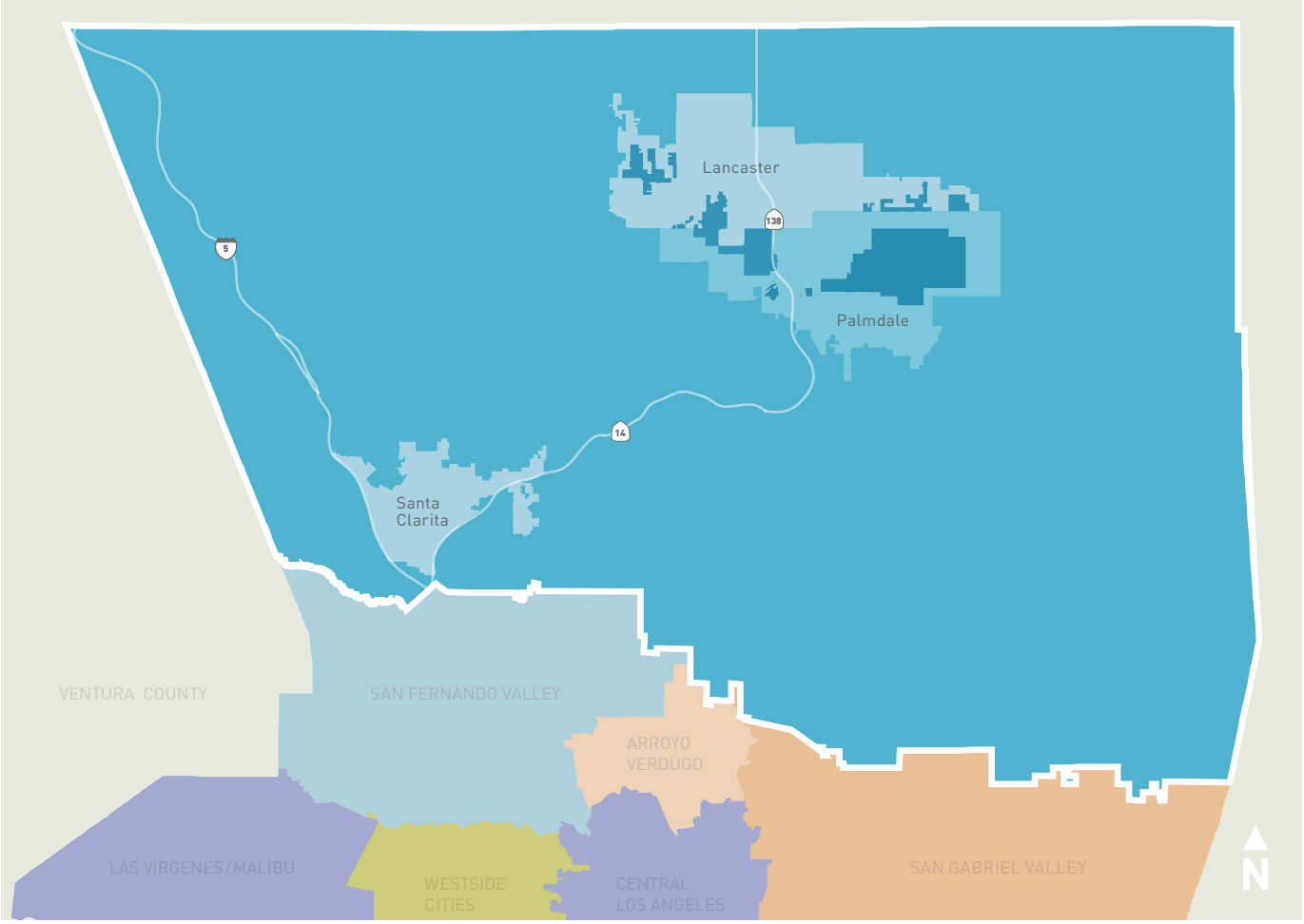
FIGURE 2.9

Las Virgenes/Malibu Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway/Interchange		
Agoura Hills	US -101	Improve interchange at Agoura Rd/Chesebro Rd
Agoura Hills	US -101	Improve interchange at Kanan Rd
Calabasas	US -101	Improve interchange at Las Virgenes Rd
Westlake Village	US -101	Improve interchange at Lindero Cyn Rd
Calabasas	US -101	Improve interchange at Lost Hills Rd
Agoura Hills	US -101	Improve interchange at Reyes Adobe Rd
LA City, Agoura Hills, Calabasas, LA Co, Westlake Village	US-101	Re-striping to add additional lane to Ventura County line.
Arterial		
Agoura Hills, Calabasas, LA Co, Westlake Village	Hampshire Rd/ Agoura Rd	Improve Hampshire Rd/Agoura Rd from Thousand Oaks Bl to Las Virgenes Rd
Calabasas	Agoura Rd & Calabasas Rd	Complete the connection of Agoura Rd and Calabasas Rd between Valley Circle Bl/Mulholland Dr and Las Virgenes Rd

FIGURE 2.10

North Los Angeles County



NORTH LOS ANGELES COUNTY SUBREGION

Cities

Lancaster, Palmdale, Santa Clarita, and parts of unincorporated Los Angeles County.

Setting

This subregion comprises all of Los Angeles County north of the San Fernando Valley and includes the Angeles National Forest. The two most populous areas of the subregion are the Santa Clarita and Antelope Valleys. Santa Clarita, in the southern portion of the subregion, is divided from Lancaster and Palmdale in the Antelope Valley to the north, by the breathtaking natural beauty and open space of the Angeles National Forest. Figure 2.10 illustrates the North Los Angeles County subregion.

Major Transportation Facilities

Area freeways include the Golden State (I-5) and the Antelope Valley (SR-14). SR-126 and SR-138 also impact the region. Antelope Valley Transit Authority and Santa Clarita Transit provide local bus services. Metrolink operates commuter rail services with stations located in the cities of Lancaster, Palmdale, and Santa Clarita and in unincorporated Los Angeles County.

Mobility Challenges

The steady growth in population in the North County is expected to continue. Recent growth in residential development outpaced job-creating commercial and industrial development. Therefore, many North County commuters travel into the Los Angeles County basin area for work and contribute to congestion on SR-14 and connecting arterial streets. SR-14, running from just south of Santa Clarita to Lancaster and Palmdale, is congested during peak commuting periods. In addition, I-5, which feeds SR-14 into North Los Angeles County from the south, experiences slow-moving heavy-duty trucks negotiating the steep grade along the Newhall Pass which causes intermittent stop-and-go traffic conditions. These traffic conditions and job conditions if the North County housing/jobs inbalance continues.

The Angeles National Forest, which straddles the center of this subregion, is also a magnet for commuters to the San Gabriel Valley, day-trippers, weekenders and vacationers.

Because of this subregion's location at the northern-most reaches of Los Angeles County, transportation linkages with destinations south of downtown Los Angeles are of key concerns for the region's residents and businesses.

Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with the North County cities to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available through 2040. These strategies include, but are not limited to:

> Seek to ensure that it receives a "fair" share of resources to fund transportation improvements in the subregion;
> Promote alternatives to SR-14 to ultimately relieve demands on congested corridors, including High Speed Rail, new highways, airport access, and goods movement;
> Secure additional funding for transportation system preservation to keep pace with the growing cost of rehabilitating and improving the existing local roadway network;
> Improve access for key trips within the subregion and to major employment centers outside of the subregion;
> Implement the various projects named within the North County Combined Highway Corridor Study – the major corridor study for the I-5/SR-14/SR-138; and
> Seek to ensure that an Antelope Valley inland port is implemented.

The 2009 Plan is a living document that will be continually updated. Metro will work with the North Los Angeles County subregion on an ongoing basis to ensure that its priorities are taken into consideration during each update. Figure 2.11 lists a variety of unfunded subregional priorities identified by the North County cities.

FIGURE 2.11

North Los Angeles County Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway		
LA Co, Lancaster, Palmdale	High Desert Fwy	From I-5 to San Bernardino County Line
LA Co, Santa Clarita	I-5	Add 1 mixed-flow lane from SR-14 to SR-126 (both directions)
LA Co, Santa Clarita	I-5	Improve interchange between I-5 and SR-14
LA Co, Santa Clarita	I-5	Add HOV lane from SR-14 to SR-126 (both directions)
LA Co, Palmdale	SR-138	Add 1 expressway lane from SR-14 to San Bernardino Co Line (both directions)
LA Co, Lancaster, Palmdale, Santa Clarita	SR-14	Add 1 mixed-flow lane from I-5 to Kern Co Line (both directions)
LA	I-5	South of I-5 and SR-14 – Separate SR-14 connectors to I-5 with a physical barrier to prevent weaving and queuing
LA Co, Santa Clarita	I-5	SR-126/I-5 interchange.
LA Co, Santa Clarita	I-5	From SR-14 to SR-126 – Add HOV and truck lanes on I-5
LA, LA Co	I-5	SR-14/I-5 interchange – Add HOV direct connector to SR-14/I-5 interchange
LA Co	I-5	Weldon Canyon Rd to SR-14 – Add mixed-flow lane on I-5
LA	I-5	I-405 and SR-14 – Add mixed-flow and HOV lanes
LA	I-5	SR-14 and I-210 – Modify/rebuild I-5 (SB)/I-210 (EB) transition – By braiding over the SR-14 southbound connector ramps
Lancaster	SR-14	Avenue G and SR-14 – Construct interchanges with High Desert Corridor at the subregional level by the City of Lancaster at Avenue G and SR-14
Lancaster	SR-14	Avenue H and SR-14 Interchange – Construct interchanges with High Desert Corridor at the subregional level by the City of Lancaster at Avenue H and SR-14

FIGURE 2.11 CONTINUED

North Los Angeles County Unfunded Subregional Priorities

City	Route	Project Limits/Description
Lancaster	SR-14	Avenue I and SR-14 Interchange – Construct interchanges with High Desert Corridor at the sub-regional level by the City of Lancaster at Avenue I and SR-14
Lancaster	SR-14	Avenue L and SR-14 Interchange – Construct interchanges with High Desert Corridor at the sub-regional level by the City of Lancaster at Avenue L and SR-14
Santa Clarita	SR-14	Golden Valley Rd – Widen Overcrossing at Golden Valley Rd
LA, LA Co, Santa Clarita	SR-14	I-5/SR-14 Interchange – Redo/restripe the transition from SB SR-14 to SB I-5 to allow a continuous 2-lane truck route and separate SR-14 connectors to I-5 with a physical barrier to prevent weaving and reduce queuing
Palmdale, Santa Clarita	SR-14	Sand Canyon Rd/Avenue P – Add a mixed-flow lane on SR-14 at San Canyon Rd and Avenue P
LA Co, Lancaster, Palmdale, Santa Clarita	SR-14	Expansion of FSP throughout the SR-14 corridor
Palmdale	HDC E-W (Avenue P-8)	SR-14 to 50th St E – 3 + 1 HOV
LA Co, Palmdale	HDC E-W (Avenue P-8)	50th St E to US 395 – Add 3 lanes
	HDC N-S	SR-14 to HDC SR-138 – Add 2 lanes
LA Co, Santa Clarita	I-5	Interchange reconstruction – S/B auxiliary lane to the off-ramp
LA Co, Santa Clarita	I-5	Calgrove Av to SR-126 West – Add 2 truck and 2 HOV lanes
LA Co	I-5	Lake Hughes Rd to Kern County Line – Add 1 truck Climb lane
LA Co, Santa Clarita	I-5	SR-126 West to Lake Hughes Rd – Add 1 truck Climb and 1 HOV lane
LA Co	I-5	SR-14 to Calgrove Av – Add 2 truck and 2 HOV lanes
LA	I-5	SR-14 and I-405 – Add truck lane on I-5
LA Co, Lancaster	SR-14	Avenue L to Kern Co Line – Add 1 mixed-flow lane
LA Co, Lancaster, Palmdale	SR-14	Avenue P to Avenue L – Add 1 mixed-flow lane and 1 HOV lane
LA Co, Santa Clarita	SR-14	I-5 to San Fernando Rd – Add 2 HOV and 1 truck for a total of 3 consistent reversible HOV lanes
LA Co, Palmdale	SR-14	Pearblossom to Avenue P – Add 1 mixed-flow lane and 2 HOV for a total of 3 consistent reversible HOV lanes
LA Co, Santa Clarita	SR-14	Placerita Canyon to Sand Canyon – Add 1 mixed-flow lane and 2 HOV for a total of 3 consistent reversible HOV lanes
LA Co, Santa Clarita	SR-14	San Fernando Rd to Placerita Canyon – Add 1 mixed-flow lane and 2 HOV and 1 truck lanes for a total of 3 consistent reversible HOV lanes
LA Co, Santa Clarita	SR-14	Sand Canyon to Avenue P-8 – Fitting the gap, making it a consistent 3 lane cross section in each direction plus 3 consistent reversible HOV lanes on SR-14
LA Co	SR-138	I-5 to SR-14 – Add 2 lanes
Palmdale	Avenue N/SR-14	Interchange upgrade
Palmdale	Avenue S/SR-14	Interchange upgrade
Palmdale	10th St West/SR-14	Interchange upgrade
Arterial		
LA	Foothill Bl	Balboa Bl and Sierra Hwy – Widen/add lanes on Foothill Bl
LA	Sepulveda Bl	San Fernando Rd and Roxford St – Widen/add lane on Sepulveda Bl with direct access to I-5 SB on-ramp
LA	Sierra Hwy	San Fernando Rd/Sierra Hwy intersection – Widen intersection (bridge over Metrolink tracks) by adding 2 lanes on Sierra Hwy
LA	The Old Road/San Fernando Rd	SR-14/Sierra Hwy and Roxford St – Add a reversible lane on The Old Road/San Fernando Rd/Sepulveda Bl
LA Co	The Old Road/San Fernando Rd	Weldon Canyon Road and SR-14/Sierra Highway – Add a reversible lane on The Old Road/San Fernando Rd
LA Co, Santa Clarita	Newhall Ranch Rd	Cross Valley Connector – Golden Valley Rd to Bouquet Cyn Rd
LA Co, Santa Clarita	Golden Valley Rd	Cross Valley Connector – Construct Golden Valley Rd from Soledad Canyon to Newhall Ranch Rd (includes bridge over Santa Clarita River)
LA Co, Santa Clarita	Golden Valley Rd	Cross Valley Connector. Newhall Ranch Rd to Plum Canyon, Newhall Ranch Rd from Golden Valley Rd to Bouquet Canyon Rd

FIGURE 2.11 CONTINUED

North Los Angeles County Unfunded Subregional Priorities

City	Route	Project Limits/Description
LA Co, Santa Clarita	Via Princessa	Via Princessa from Circle J to Magic Mountain Pkwy; Via Princessa from Golden Valley Rd to Rainbow Glen
LA Co, Santa Clarita	Magic Mountain Pkwy	Widen at I-5
LA Co, Santa Clarita	Magic Mountain Pkwy	Gap closure connection on Magic Mountain Pkwy from San Fernando Rd to Via Princessa
LA Co, Santa Clarita	Santa Clarita Pkwy	New road construction of Santa Clarita Pkwy from Bouquet Canyon Rd to Soledad Canyon Rd
LA Co, Santa Clarita	Santa Clarita Pkwy	New road construction of Santa Clarita Pkwy from Soledad Canyon Rd to Via Princessa
LA Co, Santa Clarita	Santa Clarita Pkwy	New road construction of Santa Clarita Pkwy from Via Princessa to SR-14
LA Co, Lancaster, Palmdale, Santa Clarita	Sierra Hwy, Agua Dulce Cyn Rd, Sand Cyn Rd, Soledad Cyn Rd, San Fernando Rd	Install Traffic Signal Synchronization and Other Improvements along major arterial roads serving SR-14 (Sierra Highway, Agua Dulce Canyon Rd, Sand Canyon Rd, Soledad Canyon Rd, San Fernando Rd)
Palmdale	Sierra Hwy	Widen from Ave M to Technology Dr
Palmdale	Ave R	Widen from 5th St E to 20th St E
Santa Clarita		Gateway Interchange Beautification
Grade Separation		
Palmdale	Rancho Vista Bl	Grade Separation at UPRR/Metrolink/Sierra Hwy Division St to 15th St E
Transit		
LA Co, Santa Clarita		Additional local bus routes serving the Castaic Lake area and SR-126
Lancaster, Santa Clarita		Increase Shuttle service from Metrolink Stations to employment destinations (Newhall, Santa Clarita, Via Princessa, Vincent Grade, Lancaster)
LA, Santa Clarita		Initiate fixed-route transit service between Santa Clarita and San Fernando Valleys
Santa Clarita		Increase frequency on existing Santa Clarita Transit routes: 794, 798, 799 (Express Bus)
Burbank, San Fernando, Santa Clarita, Valencia		Add late night and weekend service to specific destinations in Santa Clarita, Valencia, San Fernando and Burbank
Burbank, Glendale, LA, San Fernando, Lancaster, Palmdale, Santa Clarita		Increase Shuttle service from Metrolink stations to employment destinations (Glendale, Burbank, Sun Valley, Sylmar, Central LA, San Fernando)
Burbank, Glendale, LA, Lancaster, Palmdale, Santa Clarita, San Fernando		Antelope Valley Metrolink Service – Add reverse commute service on Antelope Valley Line
	I-5	Corridor-wide – reduce bus service headways
	I-5	Corridor-wide – add reverse commute service to AVTA express bus lines
	I-5	Corridor-wide – increase Metro bus service (up to 10%)
	I-5	Corridor-wide – improve coordination of service between local bus service and longer-haul service
	I-5	Increase transit services throughout the I-5 corridor various locations to be determined.
LA Co, Lancaster, Palmdale, Santa Clarita	SR-14	Improve bus transit services along SR-14 corridor
Lancaster, Palmdale, Santa Clarita	SR-14	SR-14 Corridor Metrolink Service – Expansion of Metrolink services and capacity on existing trains
LA Co, Santa Clarita	I-5/SR-14	Express bus
LA Co, Santa Clarita	I-5/SR-14	Metrolink – 4 trains/24 cars
LA Co, Santa Clarita	I-5/SR-14	Park-and-ride
Palmdale	SR-138/HDC E-W	Express bus – 3 E-W Routes, 9 buses per hour
Palmdale	SR-138/HDC E-W	Local bus – 75% Increase over no build
Palmdale	SR-138/HDC E-W	Park-and-ride – 11 new lots 4,000 total spaces
Santa Clarita		McBean Regional Transit Center Park-and-Ride
Santa Clarita		Santa Clarita Transit Bus Fleet Expansion
Santa Clarita		Santa Clarita Transit Stop Expansion and Amenities

FIGURE 2.11 CONTINUED

North Los Angeles County Unfunded Subregional Priorities

City	Route	Project Limits/Description
TSM/TDM		
LA Co, Santa Clarita	I-5	From SR-126 to SR-14 – Expand FSP throughout the corridor
LA, Lancaster, Palmdale, Santa Clarita	I-5	In Los Angeles, SR-14 to Kern County Line – Install CCTV and Communications System from SR-14 to the Kern County line
LA	Sierra Hwy and Foothill Bl	Sierra Hwy and Foothill Bl (NB I-5/SR-14 on-ramp) – Install new traffic signal at the intersection of Sierra Hwy and Foothill Bl (NB I-5/SR-14 on-ramp)
LA	San Fernando Rd and Sierra Hwy	San Fernando Rd with Sierra Hwy and Sierra Hwy with Foothill Bl/NB I-5/SR-14 ramp – Install traffic signals at intersections of San Fernando Rd with Sierra Hwy and Sierra Hwy with Foothill Bl/NB I-5/SR-14 ramp
LA	San Fernando Rd/ The Old Road and Sierra Hwy	San Fernando Rd/The Old Road and Sierra Hwy intersection – Install new traffic signal at San Fernando Rd/The Old Road and Sierra Hwy intersection
Burbank, San Fernando, LA	I-5	From SR-14 to SR-134 – Expand Freeway Service Patrol throughout the corridor
	I-5	Corridor-wide – Support existing and expand TDM programs
	I-5	Corridor-wide – Create a Transportation Management Association to champion TDM programs
Burbank, LA, San Fernando	I-5	Throughout Segment B of I-5 – Install ramp metering on more on-ramps throughout the I-5 corridor
LA Co, Lancaster, Palmdale	SR-14	I-5 to Ave P along SR-14 – Deployment of four ITS projects along the proposed SR-14 HOV lanes
LA, LA Co, Santa Clarita	SR-14	In Los Angeles to Santa Clarita, I-5 to Sand Canyon Rd – Install CCTV and Communications System from Los Angeles to Santa Clarita (I-5 to Sand Canyon Rd)
Santa Clarita		Citywide Public Relay Information System
	SR-14	SR-14 Corridor – Add and/or expand park-and-ride facilities

SAN FERNANDO VALLEY SUBREGION

Cities and Communities

San Fernando Valley portion of the City of Los Angeles and City of San Fernando, and parts of unincorporated Los Angeles County.

Setting

The San Fernando Valley is bounded by the Westside to the south, the Las Virgenes/Malibu subregion to the west, the Arroyo Verdugo subregion to the east, the North County subregion to the north. Figure 2.12 illustrates the San Fernando Valley subregion.

Major Transportation Facilities

A number of freeways crisscross this subregion, including the Golden State (I-5), Ventura (US-101 and SR-134), Simi Valley (SR-118), Hollywood (SR-170), San Diego (I-405) and Foothill (I-210) freeways. There are carpool lanes on the SR-118, SR-134, and SR-170 and portions of the I-5 and I-405.

Municipal operators as well as Metro provide bus service to the subregion. The Metro Red Line serves this area via stations at Universal City and North Hollywood. Metrolink's Antelope Valley and Ventura County lines provide commuter rail service.

Metro opened the Metro Orange Line in October 2005. The 14-mile landscaped transitway includes a Class I bikeway along the most of the alignment, with 13 stations spaced about a mile apart. It runs between the North Hollywood Metro Rail station and Warner Center Station. The four-mile Canoga Extension connecting the Metro Orange Line Canoga Station and the Metrolink Chatsworth Station is expected to open in 2012.

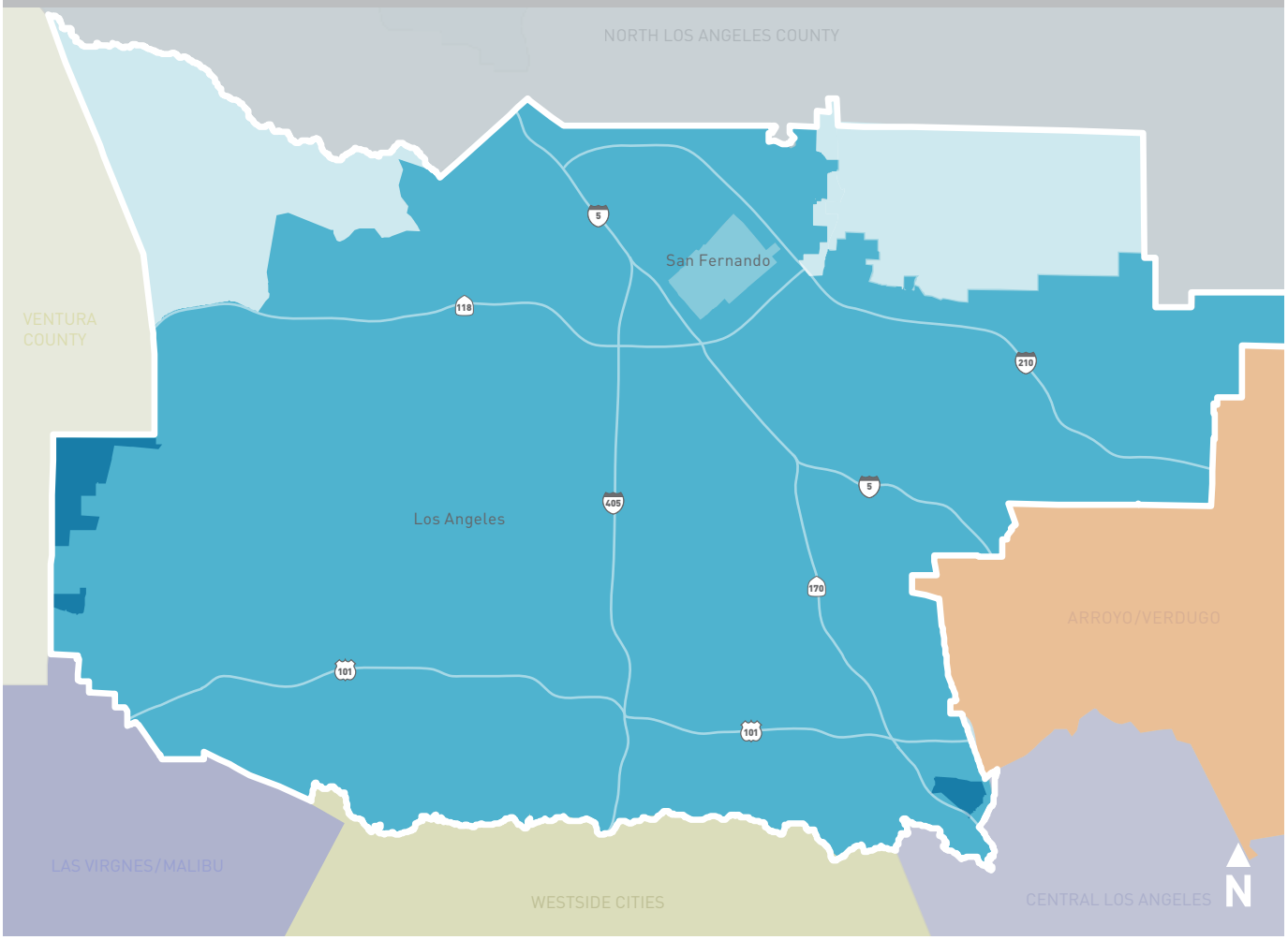
Mobility Challenges

This subregion is growing fastest at its east and west extremities, and transportation service and investment should be adjusted accordingly with changing demographics and travel patterns.

The I-405 is the major conduit between the San Fernando Valley and the Westside Cities, carrying several hundred thousand vehicles per day through the Sepulveda Pass. Currently, there is only one carpool lane for southbound traffic. The I-405/US-101 and I-405/I-10 interchanges at either end of this section are two of the 10 busiest interchanges in the nation. Due to capacity limitations on the I-405 through the Pass, Sepulveda Bl, Laurel Canyon Bl, Coldwater Canyon Dr, and Beverly Glen Bl carry significant traffic between the San Fernando Valley

FIGURE 2.12

San Fernando Valley Unfunded Subregional Priorities



and the Westside, impacting local residents. The I-405 is also the primary route to LAX from the San Fernando Valley and the North County sub-region.

Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with cities in the San Fernando Valley to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available. These strategies include, but are not limited to:

> Improve operation of US-101 corridor by improving freeway exit lanes, freeway auxiliary lanes, parallel arterials, bus and rail transit enhancements/expansions, park-and-ride/transit center expansions, and provide continued support for transportation demand management strategies, subject to further community review and refinement and modification by affected agencies as recommended by the US-101 Freeway Corridor Study;
> Add one mixed-flow lane on US-101 between Topanga Canyon Bl and the Los Angeles/Ventura County line;
> Improve Balboa Bl Corridor between Rinaldi Bl and San Fernando Rd;
> Improve the US-101/SR-170/SR-134 interchange, including a new connector between the northbound US-101 and eastbound SR-134;
> Make operational improvements to the I-5/SR-14 interchange;
> Widening arterial streets and improving arterial/freeway interchanges;
> Implement low-cost signal synchronization and TSM projects to improve transportation system capacity; and
> Improving street landscaping and promoting pedestrian and bicycle mobility.

The 2009 Plan is a living document that will be continually updated. Metro will work with the San Fernando Valley subregion on an ongoing basis to ensure that its priorities are taken into consideration during each update. San Fernando Valley unfunded subregional priorities identified by the City of Los Angeles are shown in Figure 2.5.

SAN GABRIEL VALLEY SUBREGION

Cities

Alhambra, Arcadia, Azusa, Baldwin Park, Bradbury, Claremont, Covina, Diamond Bar, Duarte, El Monte, Glendora, Industry, Irwindale, La Puente, La Verne, Monrovia, Monterey Park, Pasadena, Pomona, Rosemead, San Dimas, San Gabriel, San Marino, Sierra Madre, South El Monte, South Pasadena, Temple City, Walnut, West Covina, and parts of unincorporated Los Angeles County.

Setting

The San Gabriel Valley is located in the easternmost portion of Los Angeles County. This subregion is bounded on the west by the cities of Pasadena, South Pasadena, Alhambra and Monterey Park, on the north by the San Gabriel Mountains, on the east by the Los Angeles County/ San Bernardino County line, and on the south by the City of Diamond Bar as well as the communities of Hacienda Heights and Rowland Heights. Figure 2.13 illustrates the San Gabriel Valley subregion.

The area covers approximately 355 square miles and is approximately 99 percent built-out, leaving very little undeveloped land for commercial or industrial uses. The subregion encompasses 31 jurisdictions and a portion of an unincorporated county area whose combined population represents 18 percent of the total population of Los Angeles County. The sub-region is home to 750,000 jobs within Los Angeles County (or 20 percent). The San Gabriel Valley subregion is characterized by socioeconomic and ethnic diversity and is comprised of some of the most affluent as well as the lowest income communities within Los Angeles County.

Major Transportation Facilities

One of the unique transportation features of this subregion is the significant number of freeways that traverse it; namely, San Bernardino (I-10), Foothill (I-210), Pasadena (SR-110), Orange (SR-57), Pomona (SR-60), Chino Valley (SR-71), San Gabriel River (I-605) and the Long Beach (I-710) freeways.

The Foothill Freeway has a carpool lane in each direction through the entire San Gabriel Valley subregion. Carpool lanes also exist on portions of I-10, I-605 and SR-60. The El Monte Busway on the I-10 serves both buses and carpools and is the highest-volume carpool facility in Los Angeles County.

The Alameda Corridor East (ACE) Project generally parallels the San Bernardino and Pomona Freeways along the Union Pacific and former Southern Pacific rail lines. The ACE project's aim is to improve mobility, reduce air pollution, foster economic vitality, enhance safety and mitigate the effects of increased rail freight traffic from the ports. Phase I of the ACE project, currently underway, includes safety upgrades, traffic signal control measures and roadway widening at 42 railroad crossings as well as 10 grade separations throughout the corridor.

The San Gabriel Valley subregion is served by the San Bernardino and Riverside Metrolink lines whose combined ridership accounts for approximately 42 percent of the system's total weekday ridership. The Metro Gold Line, which opened in July 2003, serves the subregion with seven stations located in the cities of South Pasadena and Pasadena and extends to East Los Angeles.

Metro, Foothill and Montebello Transit provide bus service to the subregion. Most cities in this subregion provide dial-a-ride services within their city limits to seniors and persons with disabilities, with some providing additional service to the general public through community shuttle programs.

Mobility Challenges

Mitigating the impacts of traffic generated by the movement of goods via trucks and rail is one of the foremost mobility challenges for the subregion. More than 40 percent of the nation's freight traffic carrying goods from the ports of Los Angeles and Long Beach to the eastern states traverse the subregion. About 50 percent of the goods move via the area's freeways, specifically SR-60 and I-10, en route to neighboring counties and other major cities in the nation. Railroads carry the other 50 percent of the goods leaving the subregion. Blocked arterial grade crossings often create traffic delays and accidents and remain a priority for the subregion. To this end, the subregion supports completion of the Metro Multi-County Goods Movement Action Plan for identifying how to further reduce congestion on severely crowded freeways.

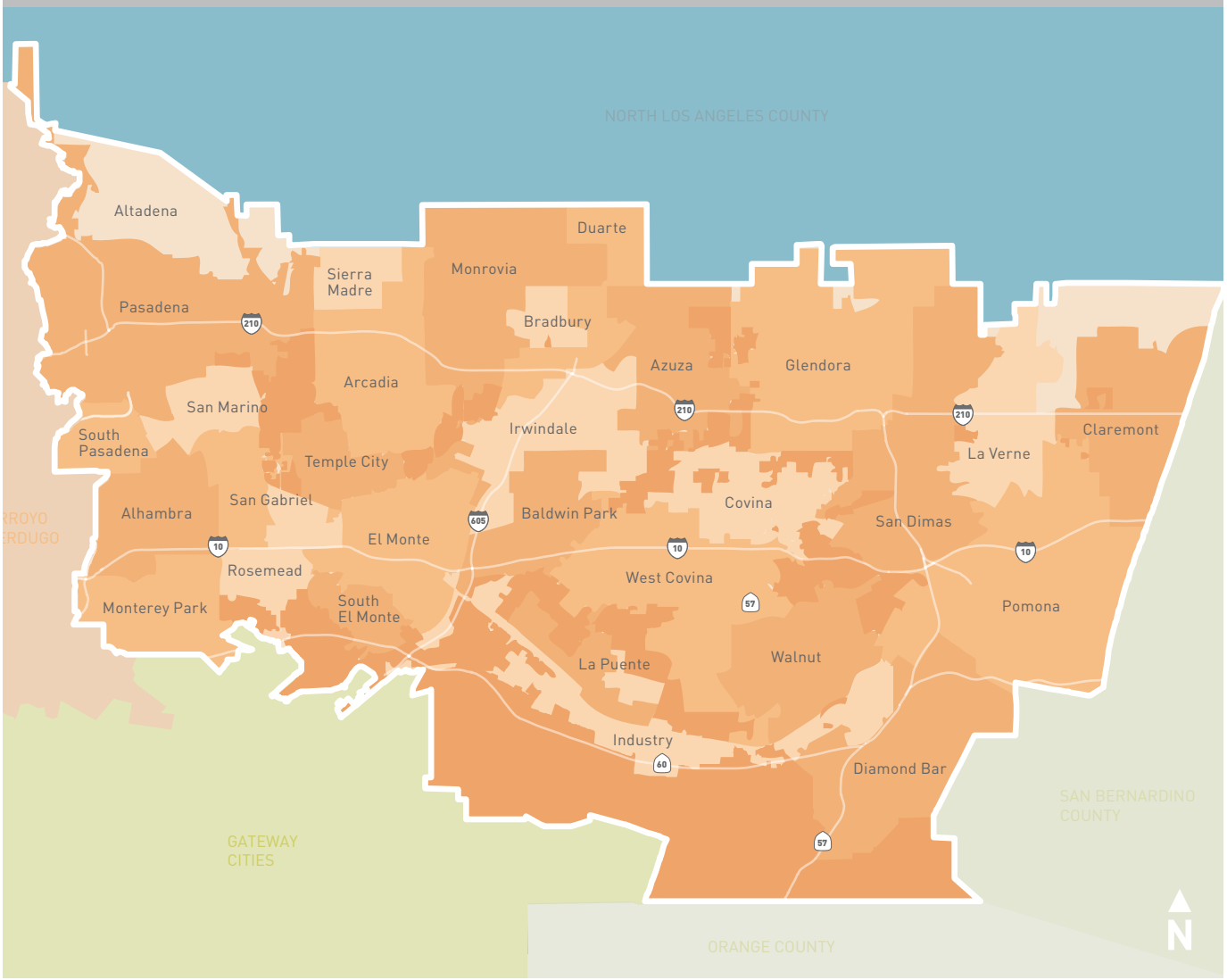
A high percentage of traffic within this subregion is interregional commuter traffic from neighboring counties (i.e., San Bernardino, Riverside and Orange) destined for employment sites in downtown Los Angeles as well as other subregions of Los Angeles County. This is problematic at the SR-57 and SR-60 interchange, where the commuter traffic merges from the neighboring counties. In the westernmost portion of the subregion, north/south mobility is severely hindered by the SR-710 freeway gap. Both Metro and SCAG performance criteria indicate that connecting SR-710 from the I-10 to the I-210 would reduce overall freeway congestion and air pollution. The majority of jurisdictions within the subregion are interested in a viable alternative with minimal impact to residences that will allow extension of SR-710 to close this gap.

Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with the San Gabriel Valley Council of Governments to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should

FIGURE 2.13

San Gabriel Valley Unfunded Subregional Priorities



additional funds become available through 2040. These strategies include, but are not limited to:

> I-710 Gap Closure with preliminary engineering by 2009 and constructed by 2040;
> Complete all carpool lane gaps within the subregion;
> An East-West Corridor Goods and Freight Movement Improvement Study (including the impacts of truck lanes);
> Metro Gold Line Foothill Extension construction completed by 2011 to Azusa (by the Authority) and operated (by Metro) within 90 days of completion. Construction completed (by the Authority) to Montclair by 2015 and operated (by Metro) within 90 days of completion;
> Interchange upgrade of SR-57/SR-60;
> Implement SR-71 freeway upgrade;
> Implement I-10/I-605 interchange upgrade;
> Increase transit services along major corridors by implementing bus signal priority and expanding Metro and municipal operator services in the subregion;
> Expand Metrolink service and capacity on San Bernardino and Riverside lines;
> Mitigate the impacts of traffic generated by the movement of goods;
> Continue to implement TDM and bicycle and pedestrian improvements to provide connections to transit and to provide a viable alternative to the single occupant drivers;
> Improve mobility and capacity on arterial streets through signal synchronization, transit coordination and other ITS technologies;
> Increase the capacity of major east-west and north-south arterials through improvements such as roadway widening, grade separations, gap closures and intersection improvements; and
> Revitalize local communities to ensure a more livable environment within the San Gabriel Valley region.

The 2009 Plan is a living document that will be continually updated. Metro will work with the San Gabriel Valley region on an ongoing basis to ensure that its priorities are taken into consideration during each periodic update. Figure 2.14 lists a variety of unfunded subregional priorities identified by the San Gabriel Valley COG.

FIGURE 2.14

San Gabriel Valley Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway		
Alhambra, LA, South Pasadena	I-710	Gap Closure – Tunnel Feasibility Study
Diamond Bar, Pomona	SR-57	Add HOV lane from SR-60 to I-210 (both directions)
Industry, LA, LA Co, Montebello, Monterey Park, South El Monte	SR-60	Add HOV lane from US-101 to I-605 (both directions)
LA	I-10	Expansion of FSP Corridor-wide
Alhambra, Baldwin Park, El Monte, Rosemead, San Gabriel, West Covina	I-10	Conduct Eastern Gateway Freeway Corridor Improvement Study I-710 to San Bernardino County Line
Alhambra, Baldwin Park, El Monte, Rosemead, San Gabriel, West Covina	I-10	Expand FSP for San Gabriel Valley
Baldwin Park	I-10	Modify interchanges along I-10 in Baldwin Park-Walnut Grove & I-10 (at Frazier, Francisquito and others in Baldwin Park)
Pomona, San Dimas	I-10	Construct truck climbing lane on WB I-10 to WB SR-57 connector, modify off-ramp
Baldwin Park, West Covina	I-10	Widen overcrossing and relocate ramps at Cesar Chavez Dr
LA Co	SR-60	Add a WB auxiliary lane along SR-60 from Hacienda Bl to 7th Av
Montebello, Rosemead	SR-60	Widen SR-60 to add EB 5th lane from Paramount Bl to San Gabriel Bl
City of Industry, LA Co	SR-60	Add storage lane from WB SR-60 to I-605 Connector
City of Industry, LA Co	SR-60	SR-60/I-605 interchange – Carry WB 4th lane through the I-605 interchange, which is currently 3 lanes
City of Industry, LA Co	SR-60	SR-60/I-605 interchange – Merge two lanes SB I-605 connector to WB SR-60 prior to merging with WB SR-60 mainline
	SR-60	Expand FSP throughout San Gabriel Valley
LA Co, San Gabriel Valley	I-10	Redesign on-ramp shoulders to accommodate Express Bus service Corridor-wide
San Gabriel	I-10	I-10 at San Gabriel Bl – Study, design and reconstruct the off-ramps to provide signalized control
San Gabriel	I-10	I-10 at Del Mar Av – Study, design and reconstruct the off-ramps to provide signalized control
San Gabriel	I-10	I-10 at New Av – Study, design and reconstruct the off-ramps to provide signalized control
Pomona	SR-71 Expansion Project	I-10 to SR-60
Pomona	SR-71/Mission Bl overpass project	
Freeway to Freeway Interchanges		
San Gabriel Valley	SR-60	Improve SR-71 and SR-60 interchange
San Gabriel Valley	I-10	Improve I-10 and I-605 interchange
Pasadena, South Pasadena	SR-110	Redesign and construction of exit and entrance ramps
Arterial		
LA	I-10	Re-stripe various arterials for turn pockets and additional lanes Corridor-wide
LA	I-10	Arterial reconfiguration to facilitate directional flow such as reversible lanes Corridor-wide
LA	I-10	Implement direction-based traffic signal coordination Corridor-wide
Rosemead	I-10	Improve signal coordination along I-10 at City of Rosemead
El Monte, Rosemead	I-10	Implement signal coordination along I-10 near Santa Anita Race Track
City of Industry, Diamond Bar, El Monte, LA Co, La Puente, Walnut	I-10/SR-60	Review signal timing for synchronization on Valley to Colima
City of Industry, Diamond Bar, El Monte, LA Co, La Puente, Walnut	I-10/SR-60	Upgrade signals on Valley and Colima
City of Industry, Diamond Bar, LA Co	Colima	Widen Colima from Hacienda to Diamond Bar

FIGURE 2.14 CONTINUED

San Gabriel Valley Unfunded Subregional Priorities

City	Route	Project Limits/Description
Alhambra, El Monte, Monterey Park, Rosemead, South El Monte	Garvey Bl	Add 1 lane each direction on Garvey Bl (from Atlantic to Rosemead Bl)
Alhambra, El Monte, Rosemead, San Gabriel	Valley Bl	Add 1 lane each direction on Valley Bl (from I-710 to Santa Anita)
City of Industry, La Puente, Walnut, West Covina	Valley Bl	Widen Valley Bl from I-605 to SR-57
Grade Separations		
Various	Alameda Corridor Phase II	
Transit		
Arcadia, Azusa, Claremont, Duarte, Glendora, La Verne, Monrovia, Pasadena	Gold Line Phase II Extension	Extend Metro Gold Line from Sierra Madre to Claremont
	I-10	Expand bus service along El Monte Busway by increasing route and line capacity with high occupancy buses along El Monte Busway
	I-10	Implement the Foothill Transit Bus Priority Project, which includes increased service, improved service coordination with Metro and other transit services, and new express bus routes. Bus transit priority – Foothill Transit
LA Co, San Gabriel Valley	I-10	Install bike racks on buses along I-10 parallel arterials Corridor-wide
LA Co, San Gabriel Valley	I-10	Additional bus service along I-10 corridor Corridor-wide
Alhambra, El Monte, San Gabriel	I-10	Expand bus service along El Monte Busway by increasing route and line capacity with high-occupancy buses
	I-10/SR-60	Bus transit priority – Foothill Transit – Implement the Foothill Transit Bus Priority Project, which includes increased service, improved service coordination with Metro and other transit services, and new express bus routes
	SR-60	Add trains to Metrolink's Riverside Line – Expand Metrolink's Riverside Line
	SR-60	Expand Inland Empire Metrolink Service – Expand Metrolink's San Bernardino Line
	SR-60	Increase bus service/Metro Rapid/BSP I-5 to County Line
	SR-60	Add/expand various park-and-ride lots from I-605 to San Bernardino County Line throughout SR-60 corridor
	SR-60	Construct multimodal station with Metrolink, Foothill Transit, HOV direct connection to Brea Canyon Station at various locations to be determined
El Monte	El Monte Busway Transit Station	Rebuild to meet current and projected needs of transit commuters
El Monte	Bus-Only Lane	Develop dedicated bus-only lane between El Monte Busway Transit Station and Flair Business Park
Covina, Baldwin Park, El Monte	Mid-Valley Rapid Bus Transportation Corridor	Ramona Bl and Badillo Av alignment, terminating at El Monte Busway Transit Station
TSM/TDM		
LA	I-10	Promotion of ridesharing and TDM strategies Corridor-wide
LA	I-10	Coordinate pedestrian, bicycle, and transit information and amenities Corridor-wide
LA	I-10	Expansion of park-and-ride facilities Corridor-wide
LA	I-10	Corridor-wide – Install CCTV and other communications systems
LA	I-10	Corridor-wide – Upgrade surveillance system throughout this segment of I-10
LA	I-10	Corridor-wide – Coordinate construction schedules to avoid additional traffic conflicts
Long Beach, Paramount, Monterey Park	I-710	Continuous high mast illumination (at freeway-to-freeway interchanges: 405/710, SR-91/710, 105/710, I-5/710, SR-60/710)
Bell, Bell Gardens, Commerce, Long Beach, Lynwood, Monterey Park, Paramount, South Gate, Vernon	I-710	Improved signage on I-710 (added overhead signs, advanced notification)
Bicycle		
San Dimas, La Verne, Pomona, Claremont		San Gabriel Valley East Regional Bikeway

FIGURE 2.14 CONTINUED

San Gabriel Valley Unfunded Subregional Priorities

City	Route	Project Limits/Description
	San Gabriel River Bikeway	Arrow Highway Gap Closure

SOUTH BAY CITIES SUBREGION

Cities

Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, City of Los Angeles–San Pedro/Wilmington Harbor Corridor, Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance, and parts of unincorporated Los Angeles County.

Setting

The South Bay cities are located at the southern end of the Santa Monica Bay – bounded by the Pacific Ocean on the west and south; the Port of Los Angeles and the Harbor Freeway (I-110) on the east and the Marina Freeway (SR-90) and the City of Los Angeles on the north. Figure 2.15 illustrates the South Bay Cities subregion.

The area is almost entirely built-out in terms of residential uses and has somewhat limited growth available for commercial and industrial uses. However, because of the desirability of the South Bay, re-development of both housing and business stock is occurring at higher densities than the existing land use. Typically, residential development follows a general pattern where the communities in the Beach cities and on the peninsula are largely high-income areas, and the central and eastern portions of the subregion contain middle-income communities.

Major Transportation Facilities

The Glenn Anderson (Century, I-105), Harbor (I-110) and the San Diego (I-405) freeways serve the South Bay area. The Artesia Freeway (SR-91) weaves in and out of the easternmost portion of the subregion. A transitway, which provides elevated carpool lanes and a busway, runs down the center of the Harbor Freeway from USC in Central Los Angeles southwards to SR-91. A unique feature of the carpool lanes on the I-110 and I-105 freeways is that they flow directly into each other via an elevated direct connector interchange, bypassing the at-grade interchange used by other traffic.

In addition, the South Bay is traversed with major arterials that carry equal capacity to the local freeway system. These major arterials include Hawthorne Bl, Pacific Coast Hwy, Sepulveda, Crenshaw, Artesia, Lomita Bl, Manhattan Beach Bl, Douglas St, Rosecrans Av, and 190th St as well as others.

The Metro Green Line runs in the median of the I-105 Freeway from Norwalk in the east to the southern edge of Los Angeles International Airport (LAX) then south to Redondo Beach. A long segment of the Alameda Corridor runs along the subregion's eastern border.

The area has regional and local transit services provided by Metro, Torrance Transit, Municipal Area Express (MAX), Gardena Municipal Bus Lines, Long Beach Transit, Palos Verdes Transit, Beach Cities Transit, Carson Circuit, Lawndale Beat, and LADOT's Commuter Express. In addition, many local jurisdictions operate transit and dial-a-ride services within their boundaries.

Mobility Challenges

The South Bay has two major transportation hubs near its borders — LAX, and the ports of LA and Long Beach. LAX passenger trips substantially add to traffic volumes on the freeways and surface streets traversing the area. Cargo and truck traffic also impact the subregion's transportation system. During the economic downturn in the 1990s, the South Bay adapted existing business structures to warehousing, which has led to increased truck traffic, added congestion and associated pavement damage on arterials and freeways (I-405 and I-110). At the same time, transporting goods into and out of the subregion has added traffic volumes to the freeways, placing additional capacity pressure on the aging on-ramps. In addition, major trip generators/attractors such as the Los Angeles Air Force Base, Home Depot Center, The Forum, and Hollywood Park, add to the considerable demand for commuter and entertainment travel and overall travel mobility needs of the subregion.

The greatest needs for the subregion are to upgrade the east-west and north-south arterials so they can provide alternative routes to I-405 and I-105, to improve freeway on- and off-ramps to accommodate increasing traffic volumes and to alleviate bottlenecks. Transit connections are also important. These highway and transit projects are embodied in the Coastal Corridor Transportation Initiative.

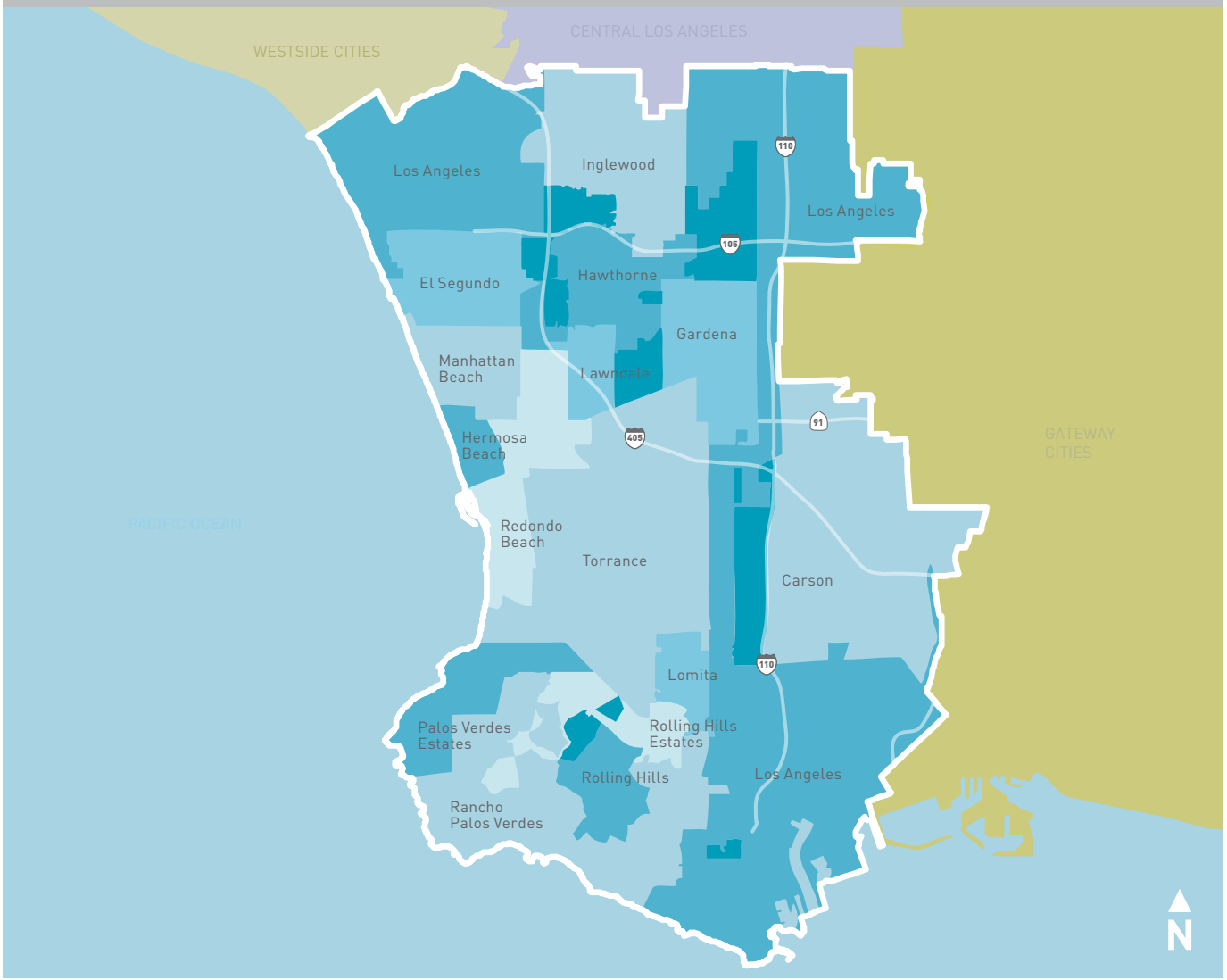
Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with local jurisdictions, stakeholders, and representatives of the South Bay Cities Council of Governments to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available through 2040. These strategies include, but are not limited to:

> Improve mobility and capacity on arterial streets through innovative signal synchronization, bus signal priority, and other ITS technologies;
> Increase the capacity of major east-west and north-south arterials through improvements such as roadway widenings, grade separations, gap closures and intersection improvements;

FIGURE 2.15

South Bay Cities



> Increase transit services along major South Bay corridors by expanding the Metro Rapid program along key corridors such as Hawthorne Bl, Sepulveda Bl and Manchester Av, providing bus signal priority and expanding express bus service provided by municipal operators and Metro to the region's major activity centers and destinations such as LAX, the Galleria and the beaches;

> Improve mobility on arterials through completion of projects in the Coastal Corridor Initiative, which is a living document that will be updated on a periodic basis. The Initiative consists of transportation projects throughout the South Bay including those identified in the Rosecrans and I-405 studies;

> Work with Metro to expedite the completion of a major investment study to extend the Metro Green Line to Long Beach using the Harbor Subdivision right-of-way owned by Metro to the extent feasible. Immediate stops would also be identified which could include the South Bay Galleria, Lomita Av and an extension from the right-of-way to the Harbor Transitway Pacific Coast Highway Station. Upon completion of the Major Investment study, secure a schedule for implementation of the project;

> Promote the Harbor Transitway;

> Construct the Crenshaw/LAX Transit Corridor;

> Improve the southbound and northbound I-405 on- and off-ramps at numerous locations including those identified in the I-405 Corridor Study such as Avalon and Wilmington by re-configuring, widening and altering metering/signalization timing;

> Improve traffic flows along Western Av between Ninth St and the I-405 Freeway;

> Construct or widen auxiliary lanes at various locations along I-405 primarily in the northbound direction;

> Address increased truck traffic on the I-110 (Harbor Freeway) and arterials impacted from trucks diverting from the I-710; and

> Revitalize local communities to ensure a more livable environment within the South Bay region by piloting a neighborhood vehicle project.

The 2009 Plan is a living document that will be continually updated. Metro will work with the South Bay Cities subregion on an on-going basis to ensure that its priorities are taken into consideration during each update. Figure 2.16 lists a variety of unfunded subregional priorities identified by the South Bay COG.

FIGURE 2.16

South Bay Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway		
Lawndale, Redondo Beach	I-405	Widen NB on-ramp at Inglewood Av
LA, Inglewood	I-405	South of SR-90 near LAX – Re-align I-405 south of SR-90, where it bends sharply just north of Manchester Bl
LA	I-405	Widen SB on-ramp from Western Av/190th St and I-405
LA, Inglewood	I-405	Construct SB auxiliary lane from Manchester Bl to Century Bl
LA, LA Co, Inglewood	I-405	Add connector metering between I-105 and SR-90 interchanges
LA, Inglewood	I-405	Construct SB auxiliary lane from Florence Av to Howard Hughes Pkwy
Carson	I-405	Modify the SB on-ramp at Avalon Bl
Torrance	I-405	Modify NB off-ramp at Crenshaw
Caltrans	I-405	Add NB auxiliary lane from Inglewood Av to Rosecrans
Lawndale	I-405	Add NB auxiliary lane from Redondo Beach Bl to Hawthorne
LA	I-405	Widen SB on-ramp at 190th (just west of Western Av) from Western Av to 190th St
Hawthorne	I-405	Widen SB off-ramp to Hindry Av and I-405 at Rosecrans
Hawthorne	I-405	Implement I-405 at Rosecrans Access Point improvement project
Lawndale	I-405	Add NB auxiliary lane from Hawthorne to Inglewood Av
Caltrans	SR-91	HOV connector at SR-91 and I-110 (partial connector – from east to south and from east to north)
Hawthorne	I-105	Add EB auxiliary lane from Yukon to Crenshaw
Hawthorne	I-105	Add WB auxiliary lane Crenshaw off-ramp to Crenshaw on-ramp
Inglewood	I-105	Add WB auxiliary lane from Crenshaw on-ramp to Crenshaw off-ramp
Caltrans	I-405	Add NB auxiliary lane from Inglewood Bl to Rosecrans Av
Lawndale	I-405	Add NB auxiliary lane from SR-107 to Inglewood Bl
Hawthorne, Lawndale, Redondo Beach	I-405	Add NB lane from Hawthorne to I-105
Hawthorne	I-405	Signalize intersection at bottom of SB Rosecrans off-ramp
LA	I-405	Widen from 3 to 4 lanes through I-10 interchange
Lawndale, Redondo Beach	I-405	Widen NB Inglewood loop on-ramp
Arterial		
Inglewood	La Cienega Bl	Corridor Improvement Project
LA, Carson	Del Amo Bl	Main St to Vermont Av – Widen from 2 to 6 lanes
Carson	Sepulveda Bl	Alameda St eastward to the Carson city limits – Widen from 2 to 4 lanes
Carson	I-405	New 4-lane connector road to Del Amo Bl – Avalon Bl to Main St (at I-405 junction)
Inglewood	I-405	Channelize and raise Manchester Bl median at Ash Av and La Cienega Bl
Torrance	Crenshaw Bl at 182nd St	Widen 182nd St to provide 2 designated WB left turn lanes, 2 WB through lanes and a new EB through right lane. Widen the east side of Crenshaw Bl to provide 3 NB through lanes. Modify signal
Torrance	Crenshaw Bl and 190th St	Reconstruct intersection (remove median and re-stripe) – add on Crenshaw NB left turn lane at Crenshaw Bl and 190th St
Torrance	Crenshaw Bl and Carson St	Street widening (including add'l ROW) – Crenshaw and Carson St – Add 4th through lane on Crenshaw at intersection; and transition to merge back to 3 NB lanes
Torrance	Crenshaw Bl and Sepulveda Bl	Street widening (including add'l ROW) – Crenshaw at Sepulveda Bl. On Crenshaw: add dual NB right-turn on Sepulveda; add dedicated EB right-turn lane and 4th through lane
Torrance	Crenshaw and Torrance Bl	Street widening (including add'l ROW) – Crenshaw and Torrance Bl. Provide dedicated SB right turn lane
Torrance	I-405	Widen SB on-ramp from 190th Street WB onto I-405
Torrance	182nd St and Crenshaw Bl	Widen NB off-ramp onto 182nd St and modify signal at terminus
Torrance	I-405	At Crenshaw Bl, construct new SB on-ramp from NB Crenshaw Bl
Torrance	I-405	At Artesia Bl, modify NB on-ramp from Artesia Bl WB to add a third lane onto NB I-405
LA, LA Co	I-405	Complete the missing segment of Del Amo Bl between Denker Av and Normandie Av. Complete missing segment from Normandie to Vermont Av
Lawndale	I-405	I-405 ramp improvements at Hawthorne Bl. (1) Reopen SB Hawthorne to NB I-405 (2) Upgrade signalization at I-405 SB and NB off-ramps Hawthorne Bl

FIGURE 2.16 CONTINUED

South Bay Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Lawndale, Redondo Beach	Inglewood Av	Widen Inglewood Av from Manhattan Beach Bl to I-405 to add right-turn lane, SB – Redondo Beach, NB – Lawndale
Hawthorne, Lawndale	Inglewood Av	Inglewood Av from Rosecrans to Marine Av within ROW. Widen Inglewood Av 4 feet to the west
Torrance	Anza Av and Pacific Coast Hwy	Street widening and re-stripe to add SB through lane and signal modifications (for concurrent (NB/SB left-turns)
Lomita, Torrance	Crenshaw and Lomita Bl	Street widening (including add'l ROW) on Crenshaw – add dual NB right-turn and a single SB lane. Lomita – add dedicated WB right-turn lane and 4th through lane
Lawndale	Hawthorne Bl and PCH	Add dedicated right turn lanes and left turn pockets
Torrance	Prairie Av and 190th St	Street widening (including add'l ROW) – On 190th add dual NB right-turn and re-striping to provide 3 through lanes for WB and EB. Also prohibit on-street parking
Inglewood	La Brea Av/La Brea Dr/Market St/ Spruce Av	Reconfigure from six-legged intersection to T-intersection and eliminate dog-leg in La Brea Av alignment and replace with a continuous S-curve alignment (La Brea Av intersection with La Brea Dr, Market St, and Spruce Av)
Inglewood	I-405	Widen NB-405 off-ramp to Manchester Bl and close Ash Av
Torrance	Maple Av at Sepulveda Bl	Construct SB right turn pocket
LA	Sepulveda Bl at Western Av	Widen and re-stripe to provide dual EB left turn lane and WB right turn lane
Torrance	Torrance Bl	Widen to 3 WB through lanes from Crenshaw to Madrona Av
Torrance	Van Ness Av and 190th St	Widen signalized intersection. On 190th, restripe to add 3 through lanes for both WB and EB and prohibit on-street parking and upgrade traffic signal
LA County	I-110	Torrance Bl/I-110 undercrossing widening
Inglewood	La Brea Av	LA Brea Avenue realignment improvement
Inglewood	La Cienega Bl	La Cienega Bl at La Tijera Bl & Centinela Av
El Segundo	Park Place	Park Place extension and railroad grade separation between Allied Wy and Nash St
El Segundo	Aviation Bl	Widen Aviation Bl between Imperial Hwy and Hawaii St
El Segundo, Hawthorne, Manhattan Beach	Rosecrans Av Corridor Improvements	Developer improvements of approximately $5M will be made in next 5 years
Rolling Hills Estates	Palos Verdes Dr North	To increase capacity, add WB lane at intersection of Dapplegray School
Rolling Hills Estates	Hawthorne Bl	To improve level of service and reduce congestion, add 3rd NB lane and dual WB and dual SB left turn lanes at Silver Spur Rd
Rolling Hills Estates	Palos Verdes Dr North	To increase capacity, add second WB and EB lanes and protected left turn phasing at intersection of Rolling Hills Rd
Transit		
Lawndale, Redondo Beach	Metro Green Line	Extend Metro Green Line from Marine/Redondo to South Bay Galleria
Downey, LA, LA Co, Lynwood, Norwalk, Paramount	I-405	Increase feeder bus service to Metro Green line and Harbor Transitway – Metro Green Line (Lines 40, 232, 439), Harbor Transitway (Lines 442, 445, 550)
El Segundo, Hermosa Beach, Manhattan Beach, Redondo Beach	I-405	Increase Airport express bus service from LAX to South Bay
Redondo Beach		Development of Regional Transit Center
Torrance	I-405	Increase Express bus service (Torrance Transit), Connect to South Bay Activity Centers
Torrance		Development of Regional Transit Center
Torrance		Fleet modernization project-replacement of diesel buses with hybrid buses by the end of 2015
LA, Long Beach, Redondo Beach, Torrance	I-405	Add transit service connection to downtown Long Beach to South Bay Galleria
Various	I-405	Additional bus service in South Bay and LAX
LA, LA Co, Inglewood	I-405	Increase Metro Rapid Service – Crenshaw
Various	I-405	Reduce peak period headways on selected local and express transit at various locations to be determined

FIGURE 2.16 CONTINUED

South Bay Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
TSM/TDM		
Metro	I-405	Expand Artesia Station park-and-ride facility
Metro	I-405	Expand operations of FSP throughout Segment B of I-405
Metro	I-405	Expand operations of FSP Corridor-wide
Inglewood		2 projects funded – ITS Deployment of Integrated Intelligent Transportation Infrastructure in Inglewood
Bikeways		
Inglewood	Crenshaw Bl	I-105 to 90th St
El Segundo	Douglas St	Imperial Hwy to Utah St
LA, LA Co	Imperial Hwy	Aviation Bl to Arlington Av
Torrance	Prairie Av	Artesia to Redondo Beach Bl
Redondo Beach	Torrance Bl	Catalina Av to Redondo Beach city boundary
Torrance	Cabrillo Bikeway	Sepulveda Bl to Torrance Bl
Torrance	Western Av	223rd St to 190th St
Hawthorne	135th St	Isis St to Crenshaw Bl
Torrance, Hermosa Beach, Redondo Beach	190th St/ Herondo Anita	South Bay Bike Trail to Western Av
Inglewood	90th St	Prairie Av to Crenshaw Bl
Torrance	Anza Av	Sepulveda Bl to PCH
LA, Inglewood	Arbor Vitae St	Crenshaw Bl to Arlington Av
LA, Inglewood	Arbor Vitae St	Sepulveda Bl to Prairie Av
	AT & SF Rail ROW	Imperial Hwy to Central Area boundary
Gardena, Torrance	Dominguez Creek Channel	Near El Camino College to Western Av
El Segundo	Grand Av	Douglas St to Whiting St
LA, Inglewood	La Brea Av	Exposition Bl to Imperial Hwy
Lomita	Lomita Bl (east segment)	Crenshaw Bl to Western Av
Torrance	Lomita Bl (west segment)	Anza Av to Hawthorne Bl
LA, Lawndale, Manhattan Beach, Redondo Beach	Manhattan Beach Bl	South Bay Bike Trail to Dominguez Channel
County of LA, Lawndale, Gardena, Torrance	Redondo Beach Bl	Hawthorne Bl to Western Av
Torrance	Torrance Bl (east segment)	Cabrillo Av to Western Av
Various Jurisdictions	I-405	Implement bikeway projects throughout the I-405 corridor (approx. 24 miles of Class II and 1.6 miles of Class I) Corridor-wide
Grade Crossing		
Carson, LA, LA Co, Torrance	Carson St	Improve striping
Torrance	Crenshaw Bl	Adjust signal timing to relieve queuing at Torrance Bl crossing
	Imperial Hwy	Additional signage and improved striping
Redondo Beach, Lawndale	Inglewood Av	Adjust signal timing and install raised median
	La Brea Av	Installation of a pre-signal, additional signage and improved striping
	La Cienega Bl	Additional signage and improved striping
Lawndale	Manhattan Beach Bl	Improve drainage to prevent failure of crossing gates
Redondo Beach, Hawthorne	Marine Av	Additional signage and improved striping (and intersection modification)
LA, Torrance (Caltrans)	Sepulveda Bl	Adjust signal timing at Western Av/Sepulveda Bl to reduce queuing over tracks
	Western Av	Revise warning time and gate down operations related to train switching maneuvers
Metro	Metro Green Line	Miscellaneous capital and operational improvements to existing line
Manhattan Beach, El Segundo, Hawthorne	Aviation & Rosecrans	

FIGURE 2.16 CONTINUED

South Bay Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
ITS		
Torrance		ITS short term deployment
Torrance		ITS long Term deployment

WESTSIDE CITIES SUBREGION

Cities

Beverly Hills, Culver City, Santa Monica, West Hollywood, parts of the City and County of Los Angeles including Pacific Palisades, Brentwood, Century City, Westwood, Westchester, Baldwin Hills, Ladera Heights, Marina del Rey, Venice, and parts of unincorporated Los Angeles County.

Setting

The Westside subregion covers an area of approximately 102 square miles and is bounded by Mulholland Dr to the north, the Pacific Ocean to the west, the South Bay cities subregion to the south and the Central Los Angeles subregion to the east. The subregion is a series of developed and mature communities with a mix of low, medium and dense residential, employment and activity centers clustered within close proximity of each other. Some of the Westside cities almost triple in population during the day as they attract hundreds of thousands of people to employment, educational, commercial, cultural and recreational destinations from all over the Los Angeles region. Some of the Westside's neighborhoods (such as parts of Santa Monica, West Hollywood, Westwood and Venice) have population densities almost 10 times the county average, and more people will be calling the Westside home in future years. Figure 2.17 illustrates the Westside Cities subregion.

The Westside cities' road infrastructure is completely built-out and cannot accommodate any more road capacity without adverse community impacts.

Major Transportation Facilities

The Santa Monica (I-10), the San Diego (I-405) and Marina (SR-90) freeways serve the Westside area. Several major east-west and north-south boulevards parallel I-10 and I-405, providing primary access to and within the Westside area. While the subregion has no fixed guideway transit, the area has an extensive network of regional and local transit services provided by Metro, LADOT's Commuter Express, Santa Monica Big Blue Bus and Culver City Bus. Community shuttles such as LADOT's DASH, the Santa Monica Breeze and West Hollywood's Cityline provide neighborhood transit service. In addition, several local jurisdictions operate dial-a-ride services within their boundaries. Currently, Metro Rapid bus service operates along Wilshire Bl, La Cienega Bl, and parts of Sepulveda Bl. Big Blue Bus operates Metro Rapid service along Lincoln Bl. These lines provide connections to the Metro Purple Line at the Wilshire/Western Station, the LAX City Bus Center, the Metro Green Line, and the downtown Santa Monica transit center. More lines and transit centers are scheduled to be connected within this Plan's time frame.

Mobility Challenges

The greatest needs for the subregion are to improve access within and around the subregion while ensuring that the quality of life is maintained. The subregion will look at giving more priority for multimodal transportation options to increase the people-moving capacity on the heavily-traveled arterial roads and provide more vertically mixed land use developments. Nine of the County's 20 highest volume bus routes are within the subregion and collectively provide up to 30 percent additional people-moving capacity along these corridors. Transit plays a vital role in the Westside's mobility. However buses operating in mixed-flow traffic are challenged to provide reliable service on these ever-increasing congested roads, making transit less effective. Improving the connectivity between arterials and the freeway system is also a key concern. In addition, closing the gaps to complete the I-405 carpool lanes through the Westside and over the northbound Sepulveda Pass is vital for the region's mobility.

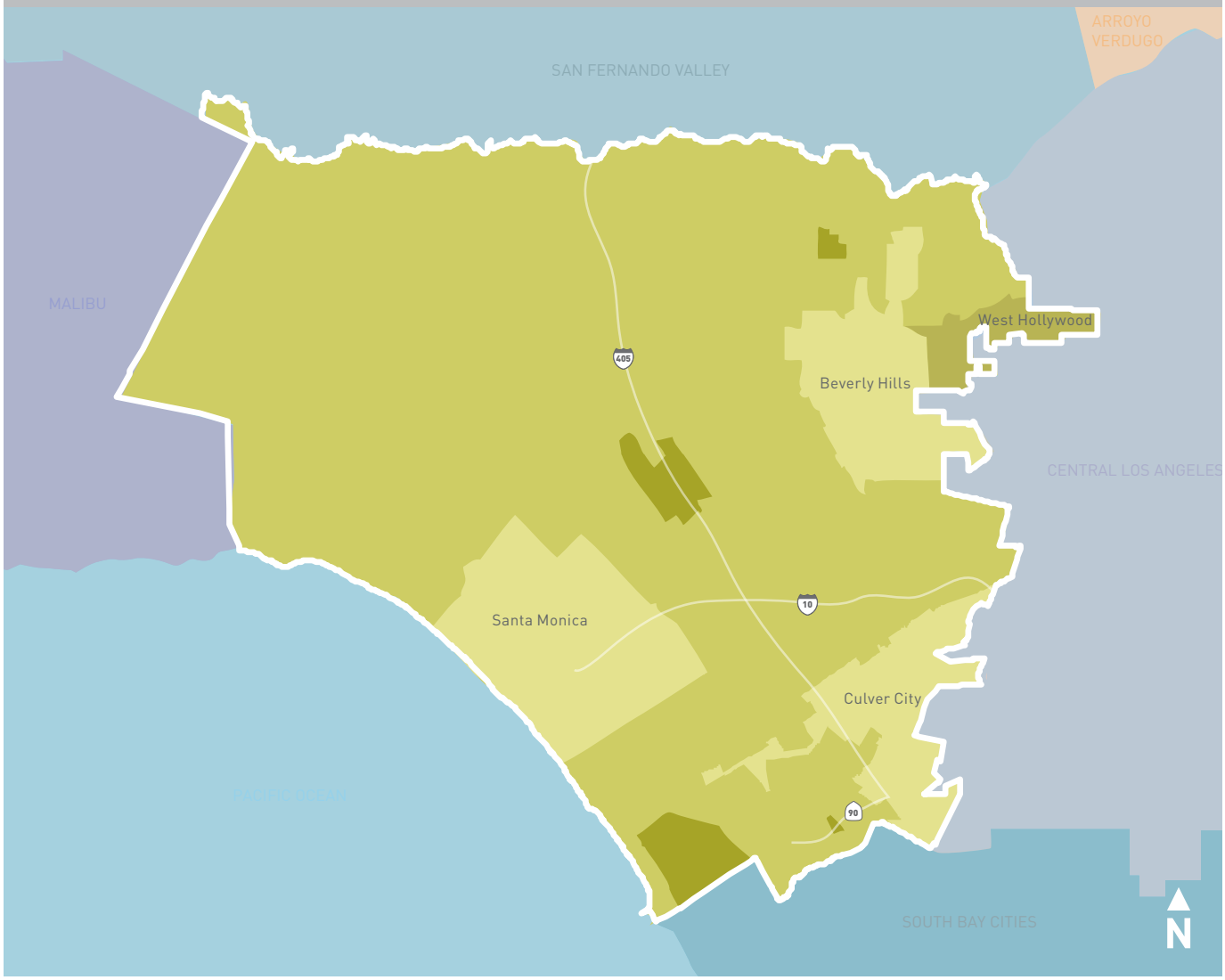
Stakeholder Recommendations

During the development of the 2009 Plan, Metro met with the Westside cities to gather input on additional subregional needs and priorities. These represent potential strategies that could be explored should additional funds become available through 2040. These strategies are identified in the Westside Mobility Study and include, but are not limited to:

> Increase access via fixed guideway rail and bus transit (Exposition LRT, LAX rail and BRT connection and Metro Red/Purple Line subway extensions) and expand bus service provided by municipal operators to the region's major activity centers;
> Improve mobility and person-carrying capacity on the major east-west and north-south arterial roads identified by the Westside cities as "grand boulevards" through transit signal synchronization, transit coordination, dedicated bus and bike lanes, and other ITS technologies;

FIGURE 2.17

Westside Cities Unfunded Subregional Priorities



> Expand the Metro Rapid program in the Westside, providing transit patrons with clean, comfortable and convenient service both at the transit stop and on the transit vehicle;
> Improve the I-10 and I-405 on and off ramps at numerous locations by re-configuring, widening and altering metering/signalization timing and, constructing or widening auxiliary lanes at various locations along the I-405;
> Continue to implement Transportation System Management options and identify Clean Mobility Transit Centers with electric bicycle and car sharing and LAX access facilities in Santa Monica, Culver City, Westwood, Century City, Beverly Hills, and West Hollywood;
> Improve transit vehicles to be able to provide for cross-mountain transit connections from the Valley to the Westside and to accommodate needs such as luggage-carrying capacity for buses bound for LAX;
> Implement TDM/ITS systems such as car parking information management to reduce vehicle miles traveled;
> Continue to implement bicycle lane gap closures and pedestrian linkage improvements in Beverly Hills, Los Angeles, and Santa Monica to provide connections to transit and to provide viable options to single occupant drivers; and
> Promote transportation improvements in local communities that promote a more livable and sustainable transportation environment within the Westside subregion.

The 2009 Plan is a living document that will be continually updated. Metro will work with the Westside subregion on an ongoing basis to ensure that its priorities are taken into consideration during each update. Figure 2.18 lists a variety of unfunded subregional priorities identified by the Westside Cities subregion.

FIGURE 2.18

Westside Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Freeway		
LA	I-10	Install ramp metering on both lanes of the EB Bundy Dr on-ramp to I-10
LA	I-10	I-10 freeway on- and off-ramps at Robertson – Elimination of auto/pedestrian conflicts at Robertson and Exposition terminus
LA	I-10	Widen over-crossing and modify ramps at Overland Av
LA	I-10	Add WB lane to I-10 from Harcourt Av to Overland Av
LA	I-10	Corridor-wide – Expansion of Freeway Service Patrol
LA, Culver City	I-405	Add NB 405 auxiliary lane on I-405 from Howard Hughes on-ramp to Sepulveda off-ramp
Culver City	I-405	Modify NB and SB collector/distributor from SR-90 off-ramp to SR-90 on-ramp
LA, Culver City	I-405	Construct NB HOV lane on SR-90 to I-10
LA	I-405	Add NB 405 auxiliary lane on I-405 from La Tijera on-ramp to Howard Hughes on-ramp
LA	I-405	Widen SB on-ramp at Skirball Center Dr and I-405
Culver City	I-405	Add connector metering at SR-90 connector ramps to I-405
LA	I-405	Reconfigure both NB and SB on/off-ramps at Sunset Bl & I-405
LA, Inglewood	I-405	Construct SB auxiliary lane on I-405 from Manchester Bl to Century Bl
LA, LA Co, Inglewood	I-405	Add connector metering between I-105 and SR-90 interchanges
LA, Inglewood	I-405	Construct auxiliary lane on SB I-405 from Florence Av to Howard Hughes Pkwy
LA	I-10	Corridor-wide – Redesign on-ramp shoulders to accommodate Express Bus service
LA	I-10	Add #5 lane to EB through LA Brea Av interchange
LA	I-10	Add EB lane through interchange. Construct Bundy Dr on-ramp fly-over to EB I-10
Santa Monica	I-10	Add WB auxiliary lane from Cloverfield to Centinela Av
	I-10	Install CCTV and other communications systems
LA	I-10	Meter 2-SOV lanes at EB Bundy Drive on-ramp
LA	I-10	NB 405 to EB I-10 connector to Overland Av
LA	I-10	Re-align and widen EB on-ramp at Bundy
LA	I-10	Realign and widen EB on-ramp at Robertson
LA	I-10	Realign and widen WB off-ramp at Bundy North
Santa Monica	I-10	Realign and widen WB off-ramp at Cloverfield Bl
LA	I-10	Realign and widen WB off-ramp at Robertson
LA	I-10	Realign and widen WB off-ramp to National
	I-10	Upgrade Surveillance System
LA	I-10	Widen EB Barrington on-ramp
LA	I-10	Widen Overland Av bridge and improve WB on-ramp
LA	I-405	Add additional lane at National on-ramp
Culver City, Hawthorne, LA, LA Co	I-405	Add auxiliary lanes from SR-90 to I-105
LA	I-405	Add NB auxiliary lane from Florence to Hughes Parkway
Culver City, LA	I-405	Add NB auxiliary lane from LA Tijera to Culver Bl
Culver City, LA, Inglewood	I-405	Add SB auxiliary lane from Culver Bl to Manchester Av
Inglewood	I-405	Add SB auxiliary lane from Manchester Bl to Century Bl
Culver City	I-405	Construct new NB collector-distributor road at Jefferson Bl ramps
Culver City, Hawthorne, LA, LA Co	I-405	Install connector metering at I-105 and SR-90 interchanges
LA, Beverly Hills, Culver City	I-10	Major interchange reconfiguration on I-10 at Robertson and Venice; explore other possible reconfigurations along I-10 and I-405
Beverly Hills, LA, Santa Monica, Culver City	I-405, I-10	Added HOV capacity on I-405 Fwy and I-10 Fwy corridors (subject to detailed consideration of major investment possibilities)
LA	I-10	Corridor-wide – Restripe various arterials for turn pockets and additional lanes
LA	I-10	Corridor-wide – Arterial reconfiguration to facilitate directional flow such as reversible lanes
LA	I-10	Corridor-wide – Implement direction-based traffic signal coordination
LA	I-405	Sepulveda Bl between SR-118 and I-10 – Additional arterial improvement to Sepulveda Bl, including signal synchronization

FIGURE 2.18 CONTINUED

Westside Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Culver City	I-405	SB off-ramp to WB Jefferson Bl – add acceleration lane to WB Jefferson Bl for free right-turn move
Culver City	SR-90	Reconfigure EB SR-90 ramp from NB Sepulveda Bl to wrap under and around the SR-90 and raise up over Sepulveda Bl to create new ramp to NB I-405
Culver City	I-405	NB on-ramp from Jefferson Bl – Widen and extend 2 meter lanes and 1 HOV metered lane and lengthen merging length
Culver City	I-405	SB on-ramp from Howard Hughes Pkwy – Widen and extend 2 meter lanes and 1 HOV metered lane and lengthen merging length. Construct auxiliary lane between on- and off-ramps between Howard Hughes Dr and La Tijera Bl
Arterial		
Beverly Hills, Culver City, LA, Santa Monica, West Hollywood	I-10/Roberton/ National	Area Circulation Improvement
LA	I-405	Add a reversible peak period transit lane on Sepulveda Bl Between US-101 and Getty Center Dr
LA, Culver City	I-405	Upgrade 11 existing traffic signals to ATSAC standards in the Fox Hills area of Culver City (Jefferson Bl, Slauson Av, Centinela Av, Bristol Pkwy, Sepulveda Bl)
Culver City, LA, Inglewood	I-405	Impose peak period parking restrictions along major connecting and parallel arterials (Sawtelle Bl, Santa Monica Bl, Centinela Av, La Cienega Bl)
Culver City	Culver Bl	Sepulveda Bl to Elenda St
Culver City	Sepulveda Bl	Playa St to Green Valley Circle
LA Co	SR-90	Extension from Lincoln Bl to Admiralty Way
LA Co		Admiralty Way widening from Via Marina to Fiji Way
Santa Monica		Lincoln Bl and Pico Bl
Santa Monica		Lincoln Bl corridor improvements (Santa Monica & Los Angeles)
Beverly Hills	Wilshire Bl	Regional street corridor capacity enhancements at appropriate intersections such as Wilshire/Santa Monica in Beverly Hills
Beverly Hills, Culver City, LA, Santa Monica, West Hollywood	Lincoln Bl corridor, Venice Bl corridor, and Robertson/ La Cienega/ Fairfax corridors	Added multimodal capacity
Culver City	Culver Bl	Centinela Av to I-405 – Improve flow by providing turn lanes at intersections
Culver City	Centinela Bl	Sepulveda Bl to La Cienega Bl – Improve by adding travel lane in peak direction
Culver City	La Cienega	Grade separations with Centinela Av and La Tijera Bl
Culver City	Slauson Av	Flyover from WB Slauson Av to WB SR-90
Culver City	Sepulveda	Flyover from NB Sepulveda Bl to WB Centinela Av
Culver City	Lincoln Bl	Flyover from NB Lincoln Bl to WB Washington Bl
Culver City	Major Av	Centinela Av to Sepulveda Bl – Extend
Transit		
LA, Beverly Hills	Wilshire Bl	Extend Metro Purple Line from Wilshire/Western to Century City
LA, Santa Monica	I-10	Implement Rapid Bus Transit Improvements along major arterials (Lincoln Bl, Sepulveda Bl and Pico Bl)
Culver City, LA, Santa Monica	I-10	Downtown to Culver City and Santa Monica – Construction of Exposition Light Rail Line
Culver City, LA, Santa Monica	I-10	Expand Metro Rapid bus service along Pico Bl, Venice Bl, Jefferson Bl, Sunset Bl
LA, Santa Monica	I-10	SR-1 to I-5 parallel to I-10 – Improved Transit Services by increasing frequency, signal priority, dedicated transit lanes and high-capacity buses
Beverly Hills, Montebello, LA, Santa Monica	I-10	Increase service frequency of Wilshire Metro Rapid (Line 720)
LA	I-10	Corridor-wide – Install bike racks on buses along I-10 parallel arterials
LA	I-10	Corridor-wide – Additional bus service along I-10 corridor
LA	I-405	Implement cross mountain bus service along Coldwater Canyon Dr, Beverly Glen Bl, Benedict Canyon Dr
LA, Santa Monica	I-405	On Lincoln Bl – New express bus Big Blue Bus
LA, Culver City	I-405	Implement BRT Service on Sepulveda Bl (Culver City Bus)

FIGURE 2.18 CONTINUED

Westside Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
Beverly Hills, LA, West Hollywood	I-405	Robertson Bl – Increase headways to Airport bus service between Beverly Hills, West Hollywood and LAX
LA, Culver City	I-405	Increase Metro Rapid Service – Sepulveda Bl
LA	I-405	Sepulveda Pass – Increase express bus service over Sepulveda Pass, with collector/ feeder service throughout West LA and the San Fernando Valley
LA	I-405	Various locations to be determined – Increase service frequency of high capacity buses, bus signal priority and/or Metro bus service on parallel bus routes
LA	I-405	Various locations to be determined – Increase frequency and add bus signal priority at key intersections on existing service: Santa Clarita, San Fernando Valley, the Westside
LA, LA Co, Inglewood	I-405	Increase Metro Rapid Service: Crenshaw Bl
	I-405	Various locations to be determined – Reduce peak period headways on selected local and express transit
LA, Culver City, Santa Monica	I-10	Exposition Light Rail from downtown LA through Culver City to downtown Santa Monica
Culver City, Santa Monica, LA	I-405	Express Bus Improvements (e.g., peak period shoulder lane) on I-405
Culver City, LA, Santa Monica	I-405	Rail Line in I-405 Fwy corridor from LAX to Westside and San Fernando Valley
LA, Beverly Hills, Culver City, Santa Monica, West Hollywood		Major transportation hubs in strategic locations on the Westside to link Metro, pedestrian, bicycle, parking and car-sharing resources
LA, West Hollywood		Rail Line through West Hollywood and connected to the regional rail system and other areas of the Westside
Beverly Hills, Culver City, LA, Santa Monica, West Hollywood		Extensive local public transit circulators on fixed or flexible routes to move people between neighborhoods and major bus and rail transit lines without use of private vehicles
Culver City		Improve for peak and off-peak conditions
Culver City	Expo Line	Enhance transit technology for interface with Expo Line
TSM/TDM		
Santa Monica	I-10	Corridor-wide – Santa Monica Smart Corridor System Phase II
LA	I-10	Install fiber optics infrastructure to signal coordination on Lincoln and Pico boulevards
LA	I-10	Corridor-wide – Promotion of Ridesharing and Transportation Demand Management Strategies
LA	I-10	Corridor-wide – Coordinate pedestrian, bicycle, and transit information and amenities
LA	I-10	Corridor-wide – Expansion of park-and-ride facilities
LA	I-10	Corridor-wide – Install CCTV and other communications systems
LA	I-10	Corridor-wide – Upgrade surveillance system throughout this segment of I-10
LA	I-10	Corridor-wide – Coordinate construction schedules to avoid additional traffic conflicts
LA	I-405	Throughout I-405 corridor – Expand operations of FSP
	I-405	Throughout Segment B of I-405 – Expand operations of FSP
	I-405	Corridor-wide – Expand operations of FSP
Bikeways		
LA, Culver City	Exposition Right-of-Way	I-10 to La Brea Av
LA	Motor Av	I-10 to Venice Bl
Santa Monica	Pearl St	16th St to Bundy Dr
LA	Pershing Dr	Culver Bl to Imperial Hwy
LA	Sepulveda Flood Control Channel	I-10 to Ballona Creek
LA, Santa Monica	23rd St/ Walgrove Av	Pearl St to Venice Bl
LA, Inglewood	Arbor Vitae St	Crenshaw Bl to Arlington Av
LA, Inglewood	Arbor Vitae St	Sepulveda Bl to Prairie Av
LA	Beach Bikeway	Washington Bl to Ballona Creek
LA	Culver Bl	Braddock Dr to Vista Del Mar
Culver City	Culver Bl	Elenda St to Venice Bl
LA	Fiji Wy	Admiralty Wy to western terminus

FIGURE 2.18 CONTINUED

Westside Cities Unfunded Subregional Priorities

City	Route	Project Limits/Description
LA, Inglewood	La Brea Av	Exposition Bl to Imperial Hwy
LA, Santa Monica	Lincoln Bl	I-10 to Westchester
LA, Culver City	Slauson Av	Jefferson Bl to Arlington Av
LA	Teale St (Bluff Creek Dr)	Lincoln Bl to Centinela
LA, Culver City	Washington Bl	West of Lincoln Bl to Sepulveda Bl
	I-405	Corridor-wide – Implement bikeway projects throughout the I-405 corridor (approx. 24 miles of Class II and 1.6 miles of Class I)
Culver City, LA, Santa Monica	I-405	Alternative multimodal linkage from the Westside to the San Fernando Valley and LAX, taking pressure off of the I-405
Beverly Hills, Culver City, LA, Santa Monica, West Hollywood		Land use and parking incentives coordinated among the cities in selected areas along grand boulevards

While not a subregion, the County of Los Angeles unincorporated area is adjacent to each subregional agency and impacts each subregion. As such, the County of Los Angeles has identified unfunded subregional priorities in Figure 2.19.

FIGURE 2.19

Other Unfunded Subregional Projects submitted by the County of Los Angeles

County	Route	Project Description
Signal Synchronization		
	1st St	Indiana St to Mednik Av
	Alameda St	Slauson Av to Nadeau St
	Amar Rd/Temple Av	Nogales St to Golden Springs Dr
	Anza Av	190th St to Pacific Coast Hwy
	Arroyo Parkway	Colorado Bl to Glenarm St
	Atlantic Bl/Atlantic Av	Pine St to Pacific Coast Hwy
	Baldwin Av	Foothill Bl to 10-Fwy
	Barranca Av/Barranca St	Sierra Madre Av to Cameron Av
	Base Line Rd	Foothill Bl to County Line
	Beverly Bl	Pomona St to Painter Av
	Bouquet Canyon Rd	Plum Canyon Rd to Soledad Canyon Rd
	Broadway	124th St to 157th St
	Citrus Av	Foothill Bl to Arrow Hwy
	City Terrace Dr	Indiana St to Eastern Av
	Colorado Bl	Orange Grove Bl to Michillinda Av
	Colorado St	Michillinda Av to Colorado Place
	Compton Av	Slauson Av to 92nd St
	Compton Av	Imperial Hwy to El Segundo Bl
	Del Amo Bl	Avalon Bl to Bloomfield Av
	Diamond Bar Bl/ Mission Rd	Brea Canyon Rd to County Line
	Duarte Rd	San Gabriel Bl to Highland Av
	E Victoria St	Santa Fe Av to Susana Rd
	El Segundo Bl	Broadway to N Central Av
	Floral Av	Eastern Av to Mednik Av
	Foothill Bl	Lowell Av to Briggs Av
	Fremont Av	Columbia St to Garvey Av
	Garey Av	College Wy to 60 Fwy
	Garfield Av	Pine St to Olympic Bl
	Garvey Av	Rosemead Bl to Durfee Av
	Grand Av	Rowland St to Longview Dr

FIGURE 2.19 CONTINUED

Other Unfunded Subregional Projects submitted by the County of Los Angeles

County	Route	Project Description
	Hasley Cyn Rd/ Commerce Center	Burlwood Dr to I-5 Fwy
	Hawthorne Bl	104th St to Manhattan Beach Bl
	Hawthorne Bl	244th St to Palos Verdes Dr W
	Hooper Av	Slauson Av to 92nd St
	Huntington Dr/Foothill Bl/ Alosta Av	Fair Oaks Av to County Line
	Imperial Hwy	Mona Bl to 1st Av
	Indian Hill Bl	American Av to Holt Av
	Inglewood Av	104th St To 111th Pl
	Irwindale Av	Foothill Bl to Arrow Hwy
	Irwindale Av	Badillo St to Cameron Av
	La Brea Av	Centinela Av to Century Bl
	La Crescenta Av	Orange Av to 210 Fwy
	Lambert Rd	Washington Bl to Grayling Av
	Leffingwell Rd	Imperial Hwy to Valley View Av
	Laurel Park Rd	E Victoria St to Alameda St
	Lennox Bl	Inglewood Av to Freeman Av
	Lone Hill Av	Route 66 to Covina Bl
	Lyons Av	Wiley Canyon Rd to Newhall Av
	Main St	El Segundo Bl to Redondo Beach Bl
	Manchester Av	Hooper Av to Ivy St
	Manhattan Beach Bl	Manhattan Av to Van Ness Av
	McBean Pkwy/ Stevenson Ranch Pkwy	Copper Hill Dr to The Old Road
	Miramonte Bl	76th St to 83rd St
	Mission Rd	Winchester Av to Santa Anita St
	Montebello Bl/ Greenwood Av	Paramount Bl to Union St
	Montrose Av	Florencita Av to Del Mar Rd
	Mountain Av	Foothill Bl to Duarte Rd
	Myrtle Av/Peck Rd/ Workman Mill Rd/ Norwalk Bl/San Antonio Bl/Pioneer Bl	Huntington Dr to Carson St
	Nadeau St	Hooper Av to Santa Fe Av
	Normandie Av	89th St to El Segundo Bl
	Norwalk Bl	Rosecrans Av to Carson St/Wardlow Rd
	Oceanview Bl	Foothill Fwy to Florencita Av
	Olympic Bl	Indiana St to Concourse Av
	Pacific Bl	Live Oak St to Broadway
	Pennsylvania Av	Orange Av to 210 Fwy
	Pico Canyon Rd	Dead Horse Cyn to I-5 Fwy
	Prairie Av	118th St to Redondo Beach Bl
	Ramona Bl/Badillo St/ Covina Bl	Santa Anita Av to 210 Fwy
	Ramsdell Av	Orange Av to Montrose Av
	Redondo Beach Bl/ Compton Bl/Somerset Bl	Freeman Av to Woodruff Av
	Rosecrans Av	Broadway to Mercado Av
	Rosemead Bl	San Gabriel Bl to Huntington Dr
	Rosemead Bl	Rush St to Telegraph Rd
	Rosemont Av	Foothill Bl to Montrose Av
	Rye Canyon Rd/ Copper Hill Rd	The Old Road to McBean Pkwy

FIGURE 2.19 CONTINUED

Other Unfunded Subregional Projects submitted by the County of Los Angeles

County	Route	Project Description
	San Dimas Av	Foothill Bl to Via Verde
	San Pedro St	El Segundo Bl to 157th St
	Santa Anita Av	Foothill Bl to Durfee Av
	Santa Fe Springs Rd/ Bloomfield Av	Whittier Bl to Firestone Bl
	Seville Av	Grand Av to Broadway
	Slauson Av	Compton Av to Stamy Rd
	Soledad Canyon Rd	Golden Oak Rd to Gateton Rd
	South St	Atlantic Av to Carmenita Rd
	Stevenson Ranch Pkwy	Pico Cyn to I-5 Fwy
	Susana Rd	Victoria St to Del Amo Bl
	Telegraph Rd	Eastern Av to Springview Dr
	Temple City Bl	Duarte Rd to 10 Fwy
	The Old Road	Hasley Cyn to Pico Cyn
	Towne Av	Base Line Rd to 60 Fwy
	Union Pacific Av	Indiana St to Marianna Av
	Valley Bl	Temple City Bl to Durfee Av
	Valley View Av	Leffingwell Rd to Firestone Bl South
	Washington Bl	Grand Vista Av to Sorensen Av
	Western Av	104th St to 111 St
	White Av	Foothill Bl to Lexington Av
	Whittier Bl	Indiana St to Paramount Bl
	Willow St	I-710 Fwy to I-605 Fwy
	Willowbrook Av	124th St to Stockwell St
PARTIALLY FUNDED PROJECTS		
ITS		
	South Bay Forum ITS Improvements	Various
	Gateway Cities Forum ITS Improvements	Various
	San Gabriel Valley Forum ITS Improvements	Various
	San Fernando Valley Forum ITS Project	Various
Arterials		
	Colima Rd at Fullerton	Intersection improvements
	Del Amo Bl	Construction of a roadway to close the gap between Normandie Av and Vermont Av
	Gale Av Widening	Widen from four to six lanes from Fullerton Rd to Nogales St
	Tunnel Lining Projects	Malibu/Kanan Dume
Grade Separation Improvements		
	SR 126/Commerce Center Drive	Widening and Interchange Reconfiguration
	Fullerton Rd under UPRR (at Gale Av)	
	EL Segundo Bl over UPRR and LACMTA at Willowbrook Av	
	Sierra Highway/Barrel Springs Rd Under SCRRA	
	Avenue S over SCRRA (west of Sierra Highway)	
Highway Bridge Project		
	Various Bridges Countywide	

FIGURE 2.19 CONTINUED

Other Unfunded Subregional Projects submitted by the County of Los Angeles

County	Route	Project Description
Bike Path Project		
	Arroyo Seco Bike Trail	Bike Trail Class 1 Facility/Connector from Avenue 26 to San Fernando Rd
ARTERIALS — UNFUNDED PROJECTS		
	I-5 Lake Hughes Rd	Intersection improvements and widening to provide additional lanes on EB and WB Approaches
	I-5 Parker Road	Intersection Improvements including bridge widening and lane additions
	Hacienda Bl at Gale Av Et Al.	Intersection Improvements
	Fullerton Rd at Pathfinder Rd, Et Al.	Intersection Improvements
	Colima Rd – Halliburton Rd/Diamond Bar City Boundary	Road Widening
	The Old Road	From Hillcrest Pkwy to Lake Hughes Rd
	Avenue L and K Et Al.	Widening between 40th St and 50th St
	SR-90 Extension to Admiralty Wy	Extension from Lincoln Bl to Admiralty Wy
	Admiralty Wy Widening	Admiralty Wy Widening from Via Marina to Fiji Wy
BIKE PATH PROJECTS		
	San Jose Creek Bike Trail Phase 2B	Bike Trail Class 1 Facility/Connector between the San Gabriel River Bike Train and the San Jose Creek Bike Trail
	Dominguez Channel Bike Trail	Bike Trail Class 1 Facility/Connector between Vermont Av and Western Av
	Dominguez Channel Bike Trail	Bike Trail Class 1 Facility/Connector from Main St to Wilmington
	Compton Creek Bike Trail	Bike Trail Class 1 Facility/Connector between Del Amo Bl and LA River Bike Trail
		All Regional Bike Trail Projects Identified in Metro's BTSP
SAN GABRIEL COG FREEWAY PROJECTS		
City of San Gabriel	I-10 at San Gabriel Bl	I-10 at San Gabriel Bl – Study, design and reconstruct the off-ramps to provide signalized control
	I-10 at Del Mar Av	I-10 at Del Mar Av – Study, design and reconstruct the off-ramps to provide signalized control
	I-10 at New Av	I-10 at New Av – Study, design and reconstruct the off-ramps to provide signalized control
City of Pomona	SR 71 Expansion Project from I-10 to I-60	
	SR 71/Mission Bl over pass project	

While not a subregion, Caltrans has identified unfunded subregional priorities in Figure 2.20.

FIGURE 2.20

Caltrans Unfunded Projects

Caltrans	Route	Project Limits/Description
Freeway Improvements		
Los Angeles County	I-210	Rosemead Bl to SR-57
	I-210	SR-57 to San Bernardino Co Line
	I-10	I-10 Busway
	SR-138	I-5 to SR-14
	I-5	I-10 to SR-2
	I-5	SR-2 to SR-134
	I-710	I-5 to I-10
	I-110	Adams Bl to US-101

Climate Change and Sustainability

> **More than 81 percent of Los Angeles County residents surveyed in 2008 agree that air pollution is a serious problem, and the threat of climate change to the economy and our quality of life is serious.**

> **This 2009 Plan builds upon Metro's actions as a leader in more sustainable transportation options, transit-oriented development, and renewable power.**

> **The single most effective action a household can take to reduce their carbon emissions footprint* (up to 30 percent) is replacing one car in a two-car family with transit and bicycling.**

> **Metro is exploring reuse, resource use reduction, conservation and smart growth opportunities in all of our operations to meet the environmental challenge.**

* A carbon footprint is the total amount of carbon dioxide (CO_2) and other greenhouse gases emitted over the full life cycle of a product or service consumed.

Introduction

Los Angeles County depends on a well-functioning transportation system that is safe, clean, reliable and accessible. The way we plan, build, operate and maintain this transportation system can have profound social, economic and environmental impacts – now and in the future. In order to be sustainable over the long-term, our transportation system must meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

Historically, transportation investment in Los Angeles County has focused on accommodating the automobile, with carpools, transit, walking, and biking meeting the remainder of transportation needs. This model of investment has proven to be unsustainable, leaving roads and freeways in gridlock, communities dependent on fossil fuels and vulnerable to shifts in fuel prices, and the air quality compromised. The transportation sector, as a leading contributor to greenhouse gas emissions (GHGe) in California and Los Angeles County, is an important local driver of climate change.

To keep Los Angeles healthy and moving, Metro has increasingly focused its resources on diversifying the transportation system and providing a broader range of travel modes. This new, more sustainable approach to transportation is intended to maximize efficiency and the effectiveness of the transportation system for Los Angeles County. It also serves to improve the quality of life in the region by reducing air pollution, improving health, and increasing social equity. The 2009 Plan is supportive of many sustainable transportation projects. Many of the 2009 Plan's strategies are designed to provide an alternative to the single occupant automobile. Examples of environmentally-friendly strategies include expanding our carpool lane system, constructing new transit corridors, deploying information technologies and system management tools, implementing the Metro Rapid and Orange Line bus rapid transit programs, rideshare and vanpool programs, as well as bike, pedestrian and transit-oriented development programs, and supporting local Smart Growth initiatives.

This chapter explores the impacts of transportation on air quality and greenhouse gases in California and Los Angeles, recent legislative actions related to sustainability and climate change, the benefit of the 2009 Plan in reducing greenhouse gases, and further steps that Metro is taking to foster a more sustainable transportation system.

Air Quality and Greenhouse Gas Emissions

The Los Angeles basin has some of the highest levels of air pollution in the U.S. Like greenhouse gases, air pollutants pose a risk to human health. Los Angeles has, however, made dramatic progress in addressing air pollution over the last 20 years. According to the Air Resources Board (ARB) records, the number of days that Los Angeles County has exceeded the state one-hour ozone standard

has decreased by 63 percent in the last 20 years, falling from 206 days in 1988 to 76 days in 2008.

These pollution reductions are especially notable because between 1980 and 2000, Los Angeles County's population grew by 29 percent and total automobile mileage grew by 70 percent, according to Caltrans. For air quality to improve as total vehicle mileage increases, emissions per mile of driving must decline sharply.

Our individual travel behavior and decisions on how much and when we drive also affect the amount of greenhouse gases emitted. As reported by the California Energy Commission (CEC), carbon dioxide (CO2) makes up most of our greenhouse gas emissions in California, primarily due to the use of gasoline and diesel to power our transportation fleet. According to the ARB, the transportation sector directly contributes to nearly 40 percent of California's GHGe or 182 metric tons of carbon dioxide equivalent (CO2e), the general reporting protocol metric established by the Intergovernmental Panel on Climate Change (IPCC).

Studies show that a more compact mixed-use neighborhood, with adequate pedestrian and bicycle facilities linked to transit, is more likely to result in shorter, fewer car trips and greater walking, bicycling and transit commute trips than in a typical single-use suburban neighborhood. If local land use is dominated by housing-only areas separated from employment, shopping and services, these transportation choices are reduced to driving, for most trips. In the area of climate change planning, the relationship between land use and transportation is undeniably linked and it will take coordination between many agencies to ensure that the two categories are more synchronized with the funding policies that provide complete transportation choices to the public.

California Climate Change and Sustainability Actions

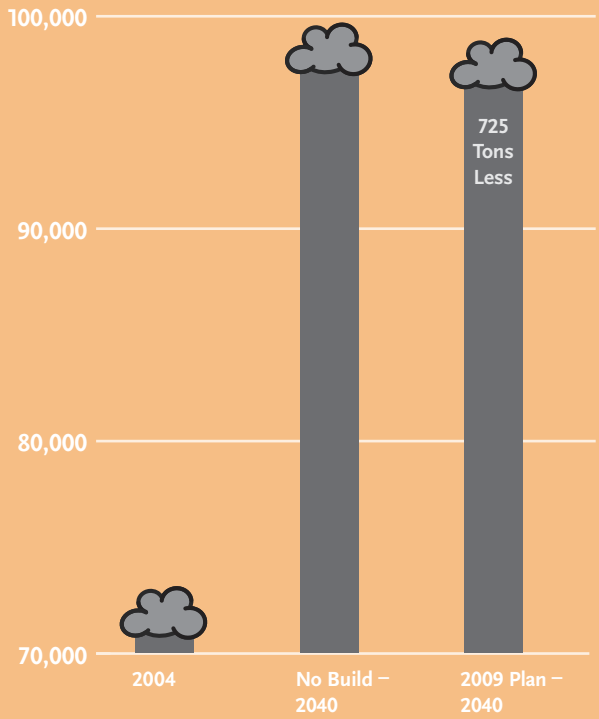
California has historically been a national and international leader when it comes to the environment and has taken bold leadership in Global Warming Reduction and Climate Change programs. These actions include the following:

> In October 2001, the California Climate Action Registry (CCAR) was established to help companies and organizations with operations in the state establish GHGe baselines and credits, against which any future reduction requirements may be applied. Since then, more than 360 organizations, representing the public, private and community sectors, have registered their baseline emissions and are developing programs to monitor and reduce their emissions.

> In March 2005, the Governor's GoCalifornia initiative identified the linkages between Smart Growth and Vehicle Miles Traveled (VMT) reduction strategies as key elements to sustainable transportation infrastructure development.

FIGURE 3.1

Greenhouse Gas Emissions



> The Executive Order S-03-05, signed by Governor Arnold Schwarzenegger, established the following greenhouse gas targets for the state:
  – By 2010, reduce to 2000 GHGe Levels,
  – By 2020, reduce to 1990 GHGe Levels, and
  – By 2050, reduce to 80 percent below 1990 Levels.

> AB 32 was approved by the legislature and enacted in January 2007 as an overarching law to protect the state from serious economic, environmental and social consequences of global climate change. The Act requires ARB to:

> Establish a statewide GHGe cap for 2020, based on 1990 emissions, by January 1, 2008.

> Adopt mandatory reporting rules for significant sources of GHGe by January 1, 2009.

> Adopt a plan by January 1, 2009 indicating how emission reductions will be achieved from significant GHG sources via regulations, market mechanisms and other actions.

> Adopt regulations by January 1, 2011 to achieve the maximum technologically feasible and cost-effective reductions in GHGe, including provisions for using both market mechanisms and alternative compliance mechanisms.

> Complementing the CCAR is The Climate Registry. The Registry has recently been organized as a non-profit collaboration among North American states, provinces, territories and Native Sovereign Nations that sets consistent and transparent standards to calculate, verify and publicly report greenhouse gas emissions into a single registry. The Registry, launched on May 8, 2007, is modeled after the California Climate Action Registry.

> In August 2007, SB 97 was signed into law. It required the analysis of the effects of GHGe in California Environmental Quality Act (CEQA) documents. It also required the Office of Planning and Research to develop Significance Criteria for inclusion in the CEQA checklist (known as Appendix G).
> In September 2008, SB 375 was signed into law. Also known as California's Sustainable Communities Strategy and Climate Protection Act, SB 375 calls for the integration of transportation, land use, and housing planning to reduce greenhouse gas emissions from passenger vehicles. The bill requires Metropolitan Planning Organizations, such as SCAG, to:
  – Prepare a Sustainable Communities Strategy (SCS) as part of the 2012 Regional Transportation Plan (RTP). The SCS will meet a state-determined regional GHG emission reduction target, if it is feasible to do so.
  – Prepare an Alternative Planning Strategy (APS) that is not part of the RTP, if the SCS is unable to meet the regional reduction target.
  – Integrate regional planning processes to ensure that the Regional Housing Needs Assessment (RHNA) is consistent with the SCS at the jurisdictional level.
  – Allow for subregions in Southern California to develop their own SCS/APS as part of MPO-wide SCS/APS.
  – Develop a substantial public participation process involving all stakeholders.

Sustainable Revenue Sources Needed to Meet AB 32 and SB 375 Sustainability Goals

Metro programs more than three-quarters of available funds for sustainable transportation (transit, carpool/vanpool, bicycling and pedestrian improvements). The remainder of funds are pass-through funds, which are not under Metro's direct control, or they are for debt service. Even if Metro could use all the funds for sustainable transportation, the AB 32 goals still could not be achieved without the parallel change in land use, parking management and wide-scale adoption of congestion demand management.

The issue of sustainable revenues is a significant concern, as the state and federal government funding programs continue to fall far short (due to flat fuel taxes and budget deficits) of what is needed to maintain the existing networks and provide for new infrastructure. This 2009 Plan proposes to build many new transit corridors. Strategic unfunded projects could provide additional reductions in GHGe and air pollution; however, funding is insufficient to pay for them.

In order to reduce GHGe, significant resources will be needed to create the world-class multi-modal transportation system that we need. The next federal re-authorization will be an opportunity to prioritize the funding policies toward sustainable transportation modes and revenues. It is clear that any additional resources may require a mixture of increases in current fees, potentially including new carbon-based and congestion-based user fees to ensure a nexus between the user and the emissions generated. This will be critical if we are to generate adequate resources combined with travel behavior influences to achieve a low-carbon transportation system. Metro is also working through its Mobility 21 efforts to raise awareness of these funding issues and garner support for new revenues.

Calculating Los Angeles County's Transportation Footprint

Energy usage is calculated to assess the potential impacts on climate change. According to the Department of Energy (DOE), the transportation sector is currently consuming approximately 27 percent of the world's total energy production and is the fastest growing sector as developing economies rapidly urbanize and motorize. In addition, autos and trucks in the U.S. consume more than 59 percent of our nation's total transportation fuels, according to the U.S. DOE.

The 2009 Plan calculates GHGe using a VMT proxy that combines fuel economy and CO_2 emissions to determine the carbon dioxide equivalent (CO_xCO_2e) per mile in metric tons.

In 2004, LA County residents drove almost 160 million vehicle miles daily. This resulted in the release of about 72,700 metric tons of CO_2e. By 2040, the daily VMT could reach 230 million and the surface transportation GHGe could rise to 104,600 metric tons of CO_2e if left unabated.

The 2009 Plan is expected to generate about 227.1 million VMT and 103,200 metric tons of CO_2e. Figure 3.1 illustrates the CO_2e results for LA County.

For this analysis, regional highway and arterial VMT results were used that were available from Metro's travel demand model. Based on the projects recommended for funding in the 2009 Plan, the Plan results in the removal of approximately 400,000 annual metric tons of CO_2e from the highway system. It is possible that up to an additional 400,000 annual metric tons of CO_2e could be removed in 2040 from the local road system.

It is clear from this analysis that the 2009 Plan is heading in the right direction in reducing greenhouse gases. Within existing funding limitations, it is also clear that Metro's actions alone cannot reach the levels required by AB 32 or the Governor's Executive Orders to reduce the state's GHGe to 1990 levels by 2020 or 80 percent below 1990 levels by 2050.

The standards for calculating GHGe are in the development phases in California. As the methodologies are improved, they will be included in subsequent Long Range Transportation Plans.

Calculating Metro's Footprint

Metro has completed the process of developing a more comprehensive analysis for its operator and employer emissions and has published its greenhouse gas inventory in December 2008 and corresponding baseline sustainability report in June 2009. These efforts serve as guidelines to develop a comprehensive plan to reduce its internal carbon footprint. However, Metro cannot significantly achieve regional greenhouse gas emissions reduction alone. A comprehensive approach, including external partnerships, is necessary to ensure effective and successful outcomes.

Metro's Future Emissions Analyses

Federal and state legislation, in combination with increased public concern, has spurred local action to improve the models and tools available to project and evaluate sources of community-wide greenhouse gas emissions. These efforts, including those listed below, will help guide Metro in refining its policies and plans to create a more sustainable transportation system.

> As part of its requirements under SB 375, SCAG must quantify the greenhouse gas impacts of the Regional Transportation Plan, and in particular, assess the impact of land-use and transportation planning on emissions from passenger vehicles. This projection will determine whether the SCAG region achieves its greenhouse gas reduction target, as established by the State Air Resources Board.

> Metro is a member of the Los Angeles Collaborative for Climate Action and Sustainability (LARC), a coalition of governments, non-profits, and businesses focused on encouraging collaboration and the adoption of regional strategies to mitigate and prepare for climate change. LARC is conducting a comprehensive greenhouse gas inventory that accounts for emissions across all sectors.

As presented in our June 2009 Baseline Sustainability Report, a preliminary set of sustainable mobility indicators has been developed. These indicators will be used to track progress towards our parallel goals. The American Public Transportation Association (APTA) developed the document "Recommended Practice for Quantifying Greenhouse Gas Emissions from Transit" in August 2009 to provide guidance to transit agencies for quantifying their GHG emissions, including both emissions generated by transit and the potential reduction of emissions through mode shift, congestion reduction, and compact urban development. This protocol is based on The Climate Registry General Reporting Protocol. However, it is designed to be suitable for any other registry or organization to which a transit agency may wish to report emissions, including the Chicago Climate Exchange.

Sustainability – Metro Accomplishments to Date

Metro is at the forefront of environmental responsibility. We pride ourselves in running the largest compressed natural gas (CNG) bus fleet in the nation, years before regulation required the use of alternative fuel-powered vehicles. Through the planning and development of a multi-modal transportation system, we are providing opportunities for millions of people to make more sustainable transportation choices. Metro's continued leadership in environmentally cutting-edge transportation technology and innovative transportation programs was recognized by the American Public Transportation Association in 2006, by being named the best transportation agency in the nation.

Metro has also taken a number of steps to promote sustainability through its day-to-day actions. Examples of these are as follows:

POLICIES

> Metro Environmental Policy
> Metro Energy and Sustainability Policy
> Metro Construction and Demolition Debris Recycling and Reuse Policy
> Metro Environmental Liabilities Reduction and Reporting Policy
> Metro Water Use and Conservation Policy

METRO GREENER FLEETS

> Nation's first and largest CNG Fleet – 2,500 and 97 percent cleaner than retired diesel buses
> All buses have bike racks for multi-modal accessibility

METRO GREENER BUILDINGS AND DEVELOPMENTS

> LEED-Silver minimum on all new Metro projects and transit-oriented development
> Uses 33% less electricity and 50% less water
> Over 30 transit-oriented developments providing greater access to transit, walking and bicycling options

METRO GREENER POWER

> One of the largest total solar installations (1.8 megawatts) in the transit industry
> Metro saves more than $400,000 on electricity costs annually

METRO GREENER COMMUTES

> Partnerships with employers and businesses to increase transit, carpooling, vanpooling, walking, biking, car-sharing and telecommuting among employees
> Encourages "bikes with transit" as a first- and last-mile solution to expand the reach of transit and to provide a seamless, integrated transit trip

METRO GREENER TRANSPORTATION CORRIDORS

> Metro Orange Line Integrated Transitway, Bikeway and Landscaped Pathway
  – Used recycled materials, thousands of trees and drought-tolerant plants
  – One-third of new riders are former auto commuters along US-101
  – Similar elements are being adopted for all our Measure R projects

GREENER OPERATIONS — ENVIRONMENTAL MANAGEMENT SYSTEM

> Pilot Environmental Management System (EMS) to coordinate Metro's best management practices under one system
> Continuous improvement and positive impact on the environment, employees and customers.

Sustainability – Developing a Framework

Over the last several years, through task forces and ad hoc committees, Metro has been developing comprehensive and ambitious air quality and sustainability programs. These task forces and committees include: Clean Air Task Force (2006) and Ad Hoc Congestion Pricing Committee (2007). The Ad Hoc Sustainability Committee provides overarching leadership for sustainability and climate change. The Committee was formed in 2007 to promote sustainable efforts, specifically in terms of Metro's own capital projects/infrastructure, and also to promote smart growth, livable communities, green technologies, and the creation of a sustainable transportation system countywide. It does this by providing recommendations to the Metro Board on opportunities to promote sustainability through its transportation projects, planning policies and regional leadership. In late 2009, the Committee began development of a Sustainability Program Plan (SPP), a comprehensive strategy for project planning, development, and implementation. The SPP will serve to guide program development in the future, building upon existing efforts described below.

Sustainable Transportation Planning and Programming

Metro is pursuing an integrated approach to improving air quality and reducing greenhouse gas emissions by coordinating with local governments, employers and other key stakeholders to initiate land-use/transportation linkage programs that incorporate the principles of "universal design" (e.g., smart land uses and streets, green construction, operations and maintenance, and funding policies). This ongoing and iterative effort may include stakeholder partnerships with local, regional and federal agencies to support planning and programming decisions that could:

> Review the current Call for Projects evaluation criteria to incorporate sustainable mobility
> Encourage and designate transit-oriented development (TOD) land uses near well-served transit routes
> Include transportation demand management (TDM)/ parking strategies in developments around transit centers
> Re-design and plan new streets to support transit, bicyclists and pedestrians (e.g., "complete streets")
> Integrate bike, park-and-ride and car-sharing into transit centers
> Provide transit services to commercial neighborhood centers
> Look at sustainable mobility guidelines for funding. Examples could include encouraging funding priority for demand management, public-private partnerships, strategic capacity expansion for transit, and "green" complete streets
> Increase sustainable commute options for employers

Regional Policy Coordination

Metro understands that the climate change challenge requires further strengthening of the relationships with our land-use partners and coordinating with them to ensure we can achieve the AB 32 and SB 375 goals in a realistic and collaborative effort, with each of us doing our part. These partnerships are well under way. Metro is coordinating with key stakeholders to:

> Implement SB 375 by collaborating with SCAG, councils of governments, City of Los Angeles, Los Angeles County, the air quality management districts and other stakeholders on the development of regional and subregional Sustainable Communities Strategies that leverage land-use, transportation investments, and transportation policies to reduce greenhouse gas emissions from passenger vehicles.
> Work with the Los Angeles Regional Collaborative to develop a countywide Climate Mitigation and Adaptation Plan, including transportation strategies that go beyond passenger vehicles and SB 375 requirements.
> Continue the organization of the Annual Sustainability and Climate Change Summits at Metro to bring various agencies and businesses together to spur dialogue and develop a clearinghouse for sustainable mobility best practices.
> Explore new modeling capabilities that can capture land use, energy use, parking management, and congestion pricing, and perform energy analysis of transportation projects.
> Explore the use of blended fuels and pool our resources for the procurement of advanced hybrid-drive transit vehicles.
> Partner with the six Los Angeles Leadership in Environmentally Efficient Design Neighborhood Development (LEED ND) pilot recipients to incorporate sustainable mobility principles.
> Assist APTA, Climate Registry and CARB in developing transit/transportation industry protocols for registering carbon emissions and offsets from the transportation sector.
> Assist the Transportation Research Board/Department of Transportation efforts to develop nationwide sustainable transportation indicators to be applied to transportation planning and programming processes. These indicators will be part of an Annual Sustainability Report to provide

input for the Long Range Transportation Plan, Call for Projects and other planning and programming documents.

Energy-related Efforts

Transit facilities, stations, rights-of-way and vehicles require energy, and energy, for the most part, is still derived from fossil fuels. Metro has the nation's largest CNG fleet, and natural gas is the lowest carbon-content fossil fuel. While Metro does not exert any control over energy supplies, it is exploring new renewable energy sources for on-site production, transit fleet operations and greener rights-of-way.

To date, Metro has one of the largest solar power generation capabilities (1.8 megawatts) in the transit industry and is continuing to explore the expansion of its renewable energy portfolio to include solar power, biofuels, hydrogen-electric, regenerative braking technology, and other energy sources, in addition to its aggressive conservation efforts by:

> Incorporating energy efficiency and conservation as guiding principles in the planning, design and construction of new and remodeled facilities including transit divisions, support facilities, transit stations, and Metro headquarters.
> Conducting comprehensive energy and environmental compliance audits to identify opportunities for savings at all Metro-owned facilities.
> Integrating energy efficiency enhancements with ongoing facility maintenance.
> Developing a policy of becoming a dual-fuel generator/user with a potential of up to 30 megawatts of solar power production on Metro-owned real estate.
> Partnering with the United States Green Building Council to develop LEED Linear Infrastructure certification for transportation projects.
> Implementing wayside energy storage opportunities and regenerative power projects on the Metro Rail system.
> Exploring peak electricity consumption reduction methods such as traction power substations to reduce peaks.
> Installing Energy Management Systems to provide control and efficient management of energy in our facilities.
> Ensuring all new buildings will be built to LEED silver rating minimum or higher.
> Analyzing existing infrastructure to determine feasibility of applying LEED Existing Buildings Operations and Maintenance principles.
> Installing submeters and Energy Management Systems to better manage energy usage in all facilities.

In June 2007, Metro adopted an Energy and Sustainability Policy that affirmed its commitment to control energy consumption and embrace energy efficiency, energy conservation, and sustainability. The policy will help lower electrical and water bills and provide the baseline and business case to further sustainability goals at Metro.

On April 23, 2009, the Board adopted the Metro Environmental Policy signifying our commitment to environmental protection using Environmental Management Systems as a core tool for implementation. This policy also provides a platform for Metro's environmental commitment to using sustainable principles and practices in all of its planning, construction, operations, and procurement activities.

Other Efforts

Metro Environmental Management System (EMS)

Metro has been leading in many ways and currently is developing an Environmental Management System (EMS) that will capture Metro's, and the industry's, best management practices in planning, operations, procurement, administration, construction, and human resources under one system.

The first phase of the program includes a pilot program at the Metro Red Line Yard. Supported by the FTA, Metro is about to complete an EMS that will serve as a template for all of its facilities.

Metro Recycling and Reuse Policy and Sustainability Design Guidelines

Metro recently adopted a Recycling and Re-use Policy that ensures all materials and recycling are to be considered in all aspects of planning, design, construction, and procurement for all Metro and Metro-funded projects. Metro will ensure that all recyclable and disposable materials are only disposed at, or diverted to, licensed or permitted facilities. In addition, Metro has one of the highest water and waste oil recycling rates in the nation at its transit vehicle washing facilities and is pursuing increased water-recycling opportunities throughout the agency.

Spreading the Message – Metro Communications

Metro launched the Global Warming Campaign in November 2007 to a wide audience and received positive feedback, suggesting the importance to people in the County for sustainable transportation solutions. In addition to the ad campaign, Metro developed a brochure titled "Metro is Getting Greener" that outlines Metro's current efforts to achieving sustainability. This is one of the tools being developed for public outreach campaigns to raise the awareness of sustainable mobility options and to gather support in state and federal legislature on the importance of Metro's programs.

Metro has recently developed a training module entitled "Champions for Change," which received the National Transit Institute's 2009 Model Program Award. This training program helps staff understand the value of sustainability, not just as a directive from management, but as a way to keep Metro environmentally safe and economically viable. Our "Metro Speaks" program provides speakers to internal and external groups outlining our best and sustainable practices.

Other Tools

Metro has begun the development or implementation of various tools to support its initiatives:

> Developing a Sustainability and Climate Change portal on Metro's website *metro.net/sustainability*
> Initiating a hotline 213.922.1100 or *sustainability@metro.net* to encourage people to submit creative and innovative ideas to reduce the agency's carbon footprint and operations costs.
> Developing procurement practice details to transition toward use of more environmentally friendly products.

Next Steps

AB 32 and SB 375-related actions, regulations and outcomes are evolving. Metro will continue to monitor these issues very closely and work with partners in the region to identify opportunities and strategies to create a more sustainable transportation system.

Under the direction and leadership of the Ad Hoc Sustainability Committee, Metro will measure its operational footprint and the community-wide GHGe impacts of its transportation system. These analyses will be used to support the continued development of the Sustainability Program and refinement of its strategies and projects to improve the agency's performance.

We have outlined our overall strategy in our June 2009 Baseline Sustainability Report:

Sustainability Strategy	
1	Develop sustainability targets (for Board Adoption), which should, at a minimum, include GHGe, waste, fuel use and water reduction targets.
2	Report sustainability performance to the Board on an annual basis using the indicators outlined in this report, updating the indicator metrics as needed every three years
3	Establish a staff-level "Green Team" to inform, develop, and implement policies and procedures to meet the sustainability targets
4	Develop a Climate Action Plan to reduce GHGe.
5	Develop a Water Action Plan to reduce water use.
6	Develop a metric to measure GHGe reductions and the congestion relief benefits of Metro's transit system.
7	Improve data collection capabilities, by using the appropriate sub-metering and by aligning Metro's address data with that of the utility companies.
8	Improve the flow of information.
9	Align incentives with goals.
10	Consider life-cycle costs.

Using these strategies, we will continue to plan, construct, and operate our infrastructure and procure our materials considering the least impact and most cost-effective practices to our employees, patrons, and our environment using the sustainable principles embedded in our policies, criteria, and guidelines.

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Financial Model and Assumptions

> **Nearly $300 billion will be spent over the next 30 years to keep Los Angeles County moving. However, it won't be enough to meet all of our mobility goals.**

> **We need Sacramento to return the gasoline sales tax funding the voters ratified twice to improve the transportation system, first in 2002 (Proposition 42), and again in 2006 (Proposition 1A).**

> **We also need to explore new sources of funding, such as public-private partnerships, congestion mitigation fees, and all self-help approaches that would help fund new projects that reduce gridlock and keep us moving.**

> **In the end, we must all re-double our efforts to increase transportation funding and maintain existing resources. Our region's mobility and quality of life depend on it.**

Introduction

As the Regional Transportation Planning Agency for Los Angeles County, Metro has authority, in accordance with Public Utilities Code Section 130051, to plan and program transportation funds for Los Angeles County. The 2009 Long Range Transportation Plan (Plan) addresses significant changes that have occurred since the 2001 Plan. Most significantly, it incorporates the programs and projects contained in the Measure R Ordinance approved by the voters of Los Angeles County on November 4, 2008. The Plan identifies transportation needs and challenges that Los Angeles County will face through Fiscal Year (FY) 2040, and lays out a multi-modal set of programs and projects to help address those needs and challenges. The Plan is a framework to guide Board decisions and funding allocations.

Variations in specific funding commitments are not unusual in any long-range forecast. The long range funding strategy that supports the Plan must remain flexible to obtain the greatest possible benefit for Los Angeles County. The Plan financial forecast is a strategic guide for planning and programming projects and services without over-committing the funds forecasted to be available. While the Plan financial forecast should be constrained to the financial resources that can reasonably be expected to be available, it is dependent on the availability of revenues at the projected levels and is sensitive to unforeseen policy and economic changes.

The 2009 Plan financial forecast is intended to show our potential capital program funding partners, at state, federal, and local levels, that we anticipate having the resources to meet our financial commitments going forward to the Plan's 2040 horizon year. The financial forecast includes numerous cost and revenue assumptions challenges that could put these objectives at risk. Also, for federal New Starts transit funds, the Plan provides the basis to demonstrate to the Federal Transit Administration (FTA) that Metro has the financial capacity to build and operate new transit lines.

The 2009 Plan establishes priorities for projects and programs estimated at $298 billion countywide. This figure includes all forecasted public investment in transportation projects and services in Los Angeles County through 2040, including new funds assumed to be leveraged by Measure R. This Plan update adds funds due to:

1) The passage of Measure R;

2) The addition of ten years into the planning period from FY31 to FY40; and,

3) Funds leveraged for transit and highway capital improvements listed in Measure R.

FIGURE 4.1

Financial Assumptions

M = MILLIONS B = BILLIONS

Source	Description
INFLATION ASSUMPTION	
Consumer Price Index (CPI) for LA County	1.97% average beginning in FY08, based on July 2008 UCLA Anderson Forecast
Capital cost escalation	FY10 = 1%, FY11 = 2%, 3% thereafter
MAJOR REVENUE ASSUMPTIONS	
Local	
Local Sales Tax Revenues	3.55% average annual growth FY05-40
Metro Fare Revenues	Fares increase every 2 years beginning FY11 to achieve a 33% fare recovery ratio, beginning FY15
	Annual ridership growth: rail 1.25%, bus 0.7%
Metro lease and advertising revenues	Annual growth at CPI
Bond Financing	Substantial new financing assumed, 5.5% interest rate, 30-year term
State	
Proposition 1A – Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century (High-Speed rail bonds)	$114.9M is assumed for the Regional Connector
Proposition 1B - The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bonds Act of 2006	$5.318B assumed for Los Angeles County, $2.35B of which is for previously planned Metro capital projects
State Transit Assistance (STA)	Reinstatement assumed beginning FY14. Approximately 2.1% annual growth, no "Spillover"
State Transportation Improvement Program (STIP) – Regional Improvement Program (RIP)	$472M for FY10 through FY15, $150M per year beginning FY16
Traffic Congestion Relief Program (TCRP)	$948M of project allocations assumed through FY18
Federal	
American Recovery and Reinvestment Act of 2009 (ARRA)	Los Angeles County's formula share is included
Safe, Accountable, Flexible, Efficient Transportation Equity Act - A Legacy for Users (SAFETEA-LU)	Federal surface transportation act reauthorization assumed after SAFETEA-LU expired 9/30/09
Congestion Mitigation & Air Quality (CMAQ)	$120M beginning in FY11, $100M beginning in FY15, $80M beginning FY20, $60M beginning FY26
Regional Surface Transportation Program	1.4% annual growth
Section 5307 Urbanized Formula	1.4% annual growth
Section 5309 Fixed Guideway Modernization	1.4% annual growth
Section 5309 New Starts	$200M/yr assumed for new projects
Transportation Enhancements (TE)	10% of Surface Transportation Program funds/year; $11.8M up to 14.4M for FY11-19; then $14.6M to $18.9M
MAJOR EXPENDITURE ASSUMPTIONS	
Metro Bus Operations	3.6% annual escalation through FY17, CPI thereafter, 7.6M FY10 revenue service hours
Metro Rail Operations	2% annual escalation through FY17, CPI thereafter, plus new service, 676,000 FY10 revenue service hours
Municipal Bus Operations	2.4% approximate annual escalation
Municipal Operator Service Improvement Program (MOSIP)	$17.9M for FY08, then 3% annual escalation
Access Services, Incorporated (ASI) [paratransit]	Metro subsidy escalation is 6.5% through FY16, 2% thereafter
Metrolink operations and rehabilitation	Generally 4% annual escalation
New rail/fixed guideway projects	3% annual escalation beginning FY12
Contingency for rail yards and rail cars	$225M through FY14
Rail Rehabilitation and Replacement	$9.2B, FY05-40
Freeway projects	$11.65B from existing funding sources plus $20.8B from assumed new or increased funding (3% annual escalation beginning FY12)
Call for Projects	$3.59B for the 2009 and future Calls
Retrofit Soundwalls – Phase I	$2.4B, FY05-40
Freeway Service Patrol	CPI annual escalation
Rideshare/Vanpool Program	$556.5M, FY05-40
Debt Service – Proposition C 10%	Debt service percent of revenues limit changed from 40% to 50%
Debt Service – Proposition C 25%	Debt service percent of revenues limit changed from 60% to 85%

To complete the Plan and achieve the project schedules, several Board of Directors or other actions are assumed going forward. A significant assumption is that an identified Metro operating deficit in the first four years of the Plan will be resolved without using resources planned for project purposes elsewhere in the Plan's financial strategy.

The transportation funds in the financial forecast are consistent with state legislation and California Transportation Commission (CTC) funding policies. Also, existing Metro policies, including the Financial Standards and Debt Policy, guide the development of many of these assumptions. These financial plan assumptions reflect the best available estimate of future trends in revenues (sources) and costs (uses) through FY40 (June 30, 2040).

The prior financial forecast, adopted in 2001, includes the period through FY25. The Metro Board has not established official funding or policies beyond Measure R, so the period from FY25 to FY40 is included for planning purposes. Although these financial plan assumptions do not replace Metro Board actions or policies, certain future policies are assumed based on prior plans and recent actions of the Metro Board of Directors. The Board can make adjustments to financial schedules and funding allocations as needed to reflect the most current conditions with respect to project costs and readiness, annual revenue receipts, availability of state and federal funds, etc.

Table 4.1 summarizes the assumptions in the Countywide Financial Forecasting Model, including assumptions for inflation, revenue sources for local, state, and federal funds, and expenditures.

MAJOR REVENUE ASSUMPTIONS

Measure R, a 30-year half-cent sales tax approved by the voters in 2008, has been added. The financial forecast assumes that Metro will maintain the historical growth level of funding provided by current revenue sources, except for certain fund sources such as fares, Regional Improvement Program (RIP), and Congestion Management and Air Quality (CMAQ). If projected levels of funding are not reached, projects and programs will be reduced or delayed accordingly, unless comparable cost savings are achieved or alternative revenues are allocated. If federal or state funds increase, projects and services will be added in accordance with the available revenue and priorities of the Metro Board of Directors.

The Metro Board approved a federal New Starts funding strategy to seek funding in the next federal reauthorization period for both the Westside Subway Extension (Metro Purple Line) and the Regional Connector. These two projects are expected to be scored highly by the FTA and receive Full Funding Grant Agreements.

Since Measure R will fund only about 25 percent of the Measure R highway project costs, the Plan now assumes that $26.5 billion new non-Measure R funds will be leveraged to support the Measure R highway program. This includes, but is not limited to, $10.2 billion in private bond proceeds based on user tolls or other fees, $12.3 billion in new federal funds (above what was assumed previously for other projects in the 2008 Draft Plan), and $4 billion in assumed new state funding. If the assumed new revenues are not secured, projects may be delayed until full funding is secured. Measure R highway funds may require bonding and the bond interest and fee costs may be allocated back to projects.

Local Sales Tax Revenues

Sales Tax Revenues

Growth is based on the July 2008 taxable sales forecast for Los Angeles County by the University of California at Los Angeles (UCLA) Anderson Forecast. The real growth projections in this independent forecast have been further reduced to achieve an average sales tax growth rate of 3.49 percent through FY19. The actual percentage growth varies each year to capture fluctuations in the economic market as the independent forecast depicts. From FY05 through FY40, the annual growth averages 3.55 percent. The sales tax forecast is based on fiscal year 2008 audited values of $683.4 million for Proposition A and $683.5 million for Proposition C.

Proposition A, Proposition C, and Transportation Development Act

These sales tax revenues are assumed to grow at an average annual rate of 3.55 percent.

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. A portion of the revenues is returned to local jurisdictions, based on population, for use in public transit projects. Revenues, after 5 percent administration, are divided as follows:

Local Return Program	25%
Rail development and operations	35%
Discretionary	40%
(bus operations only per Metro Board policy)	

All Proposition A 40 percent discretionary funds are used for bus operations in accordance with established formulas. Proposition A Local Return revenues are spent on bus operations expenditures that are based on the Short Range Transit Plans of the local municipal operators and plans of the cities.

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. Revenues after 1.5 percent administration, are divided as follows:

Rail and bus security	5%
Commuter rail/transit centers/park and ride	10%
Transit-related streets/state highways	25%
Local return (direct to cities and county)	20%
Discretionary	40%

The 40 percent discretionary funds are assumed split among rail capital and operations and bus capital and operations. Allocations between bus and rail capital and operating requirements shift over time as capital projects are built and operations begin. These funds are also used for planned replacement and rehabilitation of capital items including buses, facilities and rail cars.

An allocation to Municipal Operators for bus expansion to offset Metro's use of Proposition C 40 percent was directed by the Metro Board of Directors. This Municipal Operators Service Improvement Program (MOSIP) is assigned Proposition C 40 percent discretionary funds of $17.9 million in FY08 and escalates at 3 percent annually thereafter through FY40.

A Proposition C 40 percent capital allocation to the non-Metro Operators of $88.5 million is assumed for FY08 through FY13 as mitigation for Proposition 1B State Infrastructure Bonds to provide a bridge, as directed by the Metro Board of Directors, between the identified Proposition 1B STA-formula funding and the Formula Allocation Procedure (FAP).

Most of the 25 percent transit-related highway funds are programmed for highway-related projects, such as carpool or 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 public mass transit improvements to railroad rights-of-way.

The Proposition C 10 percent funds are used for Metrolink commuter rail, debt service, and regional park-and-ride facilities and transit centers through the Call for Projects. Metrolink receives approximately 57 percent of the Proposition C 10 percent funds directly through the annual Metro budget.

Measure R

A half-cent sales tax effective July 1, 2010, passed by Los Angeles County voters in 2008, is used for projects and programs as specified in the Measure R Expenditure Plan. Revenues, after 1.5 percent administration, are divided as follows:

New Rail and/or Bus Rapid Transit Capital	35%
Metrolink Capital Imps. within LA County	3%
Metro Rail Capital System Improvements	2%
Highway Capital	20%
Local Return	15%
Rail Operations	5%
Bus Operations	20%

Transportation Development Act (TDA Article 4)

Revenues are derived from one-quarter cent of the 7.25 percent statewide base retail sales tax. The funds are apportioned to each county by the State Board of Equalization according to the amount of tax collected in the county. Each year, the actual funds are allocated according to the Metro FAP, but generally Metro receives approximately 75 percent and the Municipal Operators receive 25 percent. TDA Article 4 funds are available for bus and rail capital and operations.

Other Local Revenues

Benefit Assessments

A benefit assessment district has been in place for Metro Red Line Segment 1 since 1985 and expired in 2009 (FY10). Revenues in FY05 through FY10 are used only for debt service and are not included in the financial forecast. Metro was not required to conduct an election to assess levies on property owners. However, per State Proposition 218 in 1996, new assessment districts require a vote of property owners. The forecast no longer assumes this revenue source for any new projects.

Bonds/Financing Mechanisms: (Propositions A and C and Measure R Bonds)

Debt financing is necessary for the completion of scheduled major capital construction projects and to fully fund recognized priorities in the Plan. The forecast assumes that 5.5 percent interest bonds will be issued each year they are needed to fund major transit capital projects. The bonds proposed are for planning purposes only and to assist in making large-scale, long-range, financial decisions. At the time of actual need, bond issuances will be analyzed individually and must be approved by separate Metro Board action.

Capital Grant Receipts Revenue Bonds for the Metro Gold Line Eastside Extension were issued in 2005 in anticipation of future federal New Starts funds. This bond is for $264.9 million and is repaid over seven years (by 2012).

Substantial Proposition A 35 percent, Proposition C 40 percent, Proposition C 25 percent, and Measure R long-term bond proceeds of $13.8 billion are assumed to be available (for Measure R, up to $1.7 billion in proceeds plus interest and fees to repaid by the Transit Sub-fund, and up to $675 million in proceeds plus interest and fees to be repaid by the Highway Sub-fund). The main purposes for the Measure R borrowing are to leverage more federal New Starts funds, accelerate the forecasted Regional Connector opening date, accelerate some of the Measure R soundwall

program, and resolve an excess of Highway Sub-Fund demands. The interest and fees for the Measure R Transit long-term bond proceeds are derived from the "Capital Project Contingency (Transit) – Escalation Allowance..." (line 18 of the Measure R Expenditure Plan). In addition, $317.6 million of short-term borrowing (Commercial Paper) is assumed for the Measure R 2 percent Metro Rail Capital System Improvements program.

It is also assumed that the current Metro Debt Policy will be changed by the Metro Board to allow more Proposition C 25 percent and Proposition C 10 percent cash to be used for debt service. The debt service limits are assumed to increase as follows: Proposition C 25 percent – from 60 percent to 75 percent; and Proposition C 10 percent – from 40 percent to 50 percent.

Local Agency Funds (City of Los Angeles and other cities)

As recommended by the Los Angeles City Council and to continue the obligations made by the City for the Metro Rail System in the 1990s, City of Los Angeles contributions of $39 million are assumed for the Exposition Light Rail Line Phase I to Culver City. As reflected in the Measure R Expenditure Plan, Metro will pursue 3 percent local funding for all planned Measure R light rail and bus rapid transit projects.

Metro Fare Revenues

A 33 percent "Fare Recovery Ratio" between Metro transit fare revenues and transit operating costs is assumed to be achieved by FY15 and then maintained by periodic fare structure adjustments or cost savings throughout the entire Plan period through 2040. The transit rider will be paying for one-third of the operating cost to provide transit services on the Metro system. Metro sales tax or other revenues will be used to subsidize the remaining two-thirds of the transit operating costs.

Achieving this ratio will require a combination of strategies such as reducing unproductive service, achieving operating efficiencies, reducing costs, and increasing operating revenues. The number of riders anticipated on the Metro system is now declining due to the economic recession, and that has led to a corresponding decrease in fare revenues. If the decline in fare revenues is not matched by corresponding cost reductions and/or fare structure adjustments, the 33 percent Fare Recovery Ratio assumption will be at risk. The most current information available suggests that the estimated fare levels used in the Plan may be higher than actual fares by as much $50 million per year starting in FY11.

The Metro transit fare revenue forecast adjusts with inflation, media changes, and base recovery ratio of 33 percent. The actual fare recovery ratio varies annually but averages 33 percent of bus and rail operations costs during the Plan period. A new fare policy was implemented in May 2007 approving fare restructuring in FY08 and FY10 (since delayed to FY11). Fare adjustments are also assumed at the beginning of FY13 and FY15 to reach the 33 percent fare recovery ratio. Fares are assumed adjusted every two years thereafter to maintain that ratio. Fares are forecasted to increase: 1) based on expected growth in overall ridership at 1 percent annually, 2) every two years to maintain the 33 percent fare recovery ratio, and 3) with the opening of new rail projects.

The Metro operating plan assumes annual ridership growth of 0.7 percent for bus (except in years where a new rail line opens in which case no growth is assumed for bus operations that year) and 1.25 percent for rail. This is a conservative estimate. The 2001 Plan stated that fare recovery would be adjusted to reflect cost increases associated with operations over the life of the plan through 2025 and this has likewise been carried forward in the 2009 Plan and extended to 2040. The historical growth of fares over the last ten years has averaged 2.47 percent annually and the fare recovery ratio over the last twenty years has averaged 33 percent.

Municipal Operators Fare Revenues

Passenger fare revenues for the Municipal Operators are based on projections in their Short Range Transit Plans and FY06 operating budgets. The fare recovery ratio for the Plan period is approximately 22 percent. For FY07 and beyond, fare revenues are escalated annually by CPI.

Metrolink Fare Revenues

Passenger fare revenues for the Los Angeles County portion of Metrolink's service are based on Metrolink's FY06 budget and are escalated annually by 3.5 percent through FY16 and thereafter by CPI.

Lease Revenues, Advertising and Available Short-Term Funds

Annually, Metro receives approximately $12 million in leases of property and assets and $13.5 million in advertising. From time to time as conditions allow, Metro leases equipment and receives funds back as payments; these funds are limited in scope. Lease and advertising revenues are assumed to be available to fund programs including some capital needs. Metro has used the fund balances from these sources to offset costs associated with one-time allocations on an as-needed basis.

State Revenues

Proposition 1A High-Speed Rail Bonds

The Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century approved by the voters in November 2008 authorized $9.95 billion in bond funds to initiate construction of a high-speed passenger rail system. The bill under which this proposition was approved, Assembly Bill 3034 (2008), provides for $760 million allocated to eligible recipients based on a defined

formula. Los Angeles County's $241 million expected share of these funds is included in the financial forecast with $114.9 million for the Regional Connector and $126 million for Metrolink.

Proposition 1B State Infrastructure Bonds

The Highway Safety, Traffic Reduction, Air Quality, and Port Security Bonds Act of 2006, approved by the voters in November 2006, authorizes $19.925 billion statewide over ten years to fund existing and new transportation infrastructure capital programs and projects. For Los Angeles County, the financial forecast assumes $5.318 billion from 10 of the 12 bond programs. Of this amount, $2.35 billion represents funding for Metro for previously-planned capital projects. The risk to this source is that, due to ongoing State budget deficits, the State Legislature and Treasurer may be reticent to commit to long-term debt service commitments from the State General Fund in FY10 and perhaps beyond.

Proposition 42 sales tax on gasoline funds

Proposition 42, approved by the voters in March 2002, amended the State Constitution to permanently dedicate the revenues from the state sales tax on gasoline to specified state and local transportation purposes. Proposition 42 funds are allocated 40 percent to the State Transportation Improvement Program (STIP), 20 percent to the Public Transportation Account (PTA), and beginning in FY09, 40 percent to cities and counties for improvements to local streets and roads.

Proposition 1A of 2006 amended the State Constitution to limit future Proposition 42 suspensions to twice in any ten-year period, with repayment within three years and before any additional suspensions. Proposition 1A also provides that an equal share of any remaining debt related to the suspension of the Proposition 42 transfers in FY03-04 and FY04-05 be repaid in every year beginning FY06-07. The countywide financial forecast assumes annual continuation of Proposition 42 funds.

Regional Improvement Program (RIP) Funds

Most California state transportation funding is programmed in the STIP. The STIP is divided into a 75 percent regional local county share and a 25 percent interregional statewide share. The 75 percent RIP share allows Metro to select projects for funding upon approval by the CTC. Metro uses its local Call for Projects process and the Metro Long and Short Range Transportation Plans to select the projects to receive such funding and be programmed in the STIP. The Metro Board approves the programming of the RIP share for capital improvements to eligible highway, bus, rail, fixed guideway and other capital projects. The actual funding sources for the STIP are Federal Surface Transportation Program (STP) funds allocated to the State of California and State funds from the PTA.

The Financial Forecasting Model incorporates the RIP component of the 2008 STIP. The 2008 STIP added two new years (FY12 and FY13) to prior programming commitments but added no new programming capacity. This generally resulted in the rescheduling of projects already programmed, delaying many projects by two years or more. The CTC developed annual RIP programming targets for each agency and Metro reprogrammed all of its STIP projects to conform to the revised targets. Most of the funding in the 2008 STIP is PTA funds which are restricted to transit uses; Metro has assigned such funds accordingly, such as to the Exposition Light Rail Line. Senate Bill 717, which changed the formula for FY09 such that the STIP receives 25 percent of PTA funds instead of 50 percent, is assumed to be continued throughout the Plan period. RIP funding is assumed to be reduced by approximately 25 percent and remain at that constant level beginning in FY16.

South Coast Air Quality Management District (AQMD)

This agency administers state and federal funds for air quality improvement throughout Southern California. One funding program, created as part of State Assembly Bill 2766, is targeted to assist bus-operating companies in purchasing alternative-fueled buses. The source of funds is the additional $4 motor vehicle registration fee and 30 percent of these funds are awarded annually on a discretionary basis. Another funding program is the Carl Moyer Memorial Air Quality Standards Attainment Program that provides incentive grants for the incremental cost of cleaner-than-required engines and equipment.

Based on Metro's past experience receiving these funds, the financial forecast assumes that Metro will continue to receive grants from these two programs. In some years, grants may range around $4 million and are forecasted to be available every few years for alternative-fueled vehicles and other air quality enhancement activities.

State Gas Tax Subventions to Cities

These revenues reflect 6.46 cents per gallon of the state gas tax which is paid directly by the State Controller to the cities in Los Angeles County for local streets and roads. No growth is assumed since the gas tax is not indexed to inflation and revenues tend to remain flat.

State Highway Account Funding for Caltrans Operations

These revenues reflect Caltrans District 7's administration, planning, operations and maintenance costs for Los Angeles County. These revenues are based on Caltrans' FY05 budget, escalated by 2.5 percent per the FY05-FY06 State Budget.

State Transit Assistance (STA)

STA Funds are derived from the State PTA, which is funded mostly from sales tax statewide on gasoline and diesel fuels. The PTA also includes "Spillover" funds,

if any. "Spillover," not a funding source but a calculation, generally reflects higher gasoline prices and occurs when revenue derived from gasoline sales taxes is proportionately higher than revenue derived from all taxable sales. Due to its uncertainty and volatility, future "Spillover" is not assumed beginning FY10. Senate Bill 717, which changed the formula for FY09 such that STA receives 75 percent of PTA funds instead of 50 percent, is assumed to continue. Senate Bill X3 7 (2009) suspended STA for FY10 through FY13. Reinstatement is assumed beginning FY14.

The regional STA allocation for Los Angeles County is based on the County's shares of population and transit operator revenue compared to the rest of the state. The population portion of STA is used for Metro rail operations and the operator revenue share is used mostly for Metro and municipal operator bus operations.

Traffic Congestion Relief Program (TCRP) of 2000 Funds

This program provided funding for needed highway and transportation capital projects throughout Los Angeles County totaling $1.7 billion. The FY07-08 State Budget includes $929 million statewide for the TCRP program and the program will be budgeted for only $83 million in each of the subsequent nine years. The financial forecast has assumed all TCRP funding not already allocated by the CTC will be available for the TCRP projects. Metro received Letters of No prejudice for certain projects which allowed Metro to advance its own non-State funds to maintain project schedules and be reimbursed later by the State. All approved Letters of No Prejudice are assumed to be reimbursed by FY17.

Federal Revenues

Current federal funding programs

Reauthorization of Safe, Accountable, Flexible, Efficient, Transportation Equity Act – A Legacy for Users (SAFETEA-LU), the Federal surface transportation legislation, is assumed after its expiration at the end of federal FY09 (September 30, 2009). The provisions and funding programs specified in SAFETEA-LU, which include all federal highway, transit, and transportation programs, are assumed in the financial forecast. In the absence of clear federal transportation funding policy, existing funding levels for individual programs other than CMAQ are assumed to grow 1.4 percent annually beyond the SAFETEA-LU period.

The Surface Transportation Program (STP) and CMAQ are flexible programs that allow funds to be exchanged between highway and transit modes. These programs and their flexibility are assumed to continue. Portions of these funds are assumed to be flexed to transit capital and operating uses, in accordance with federal regulations, for either bus purchases or for the actual costs of the first three years of operating new transit segments.

Several small federal programs are not assumed in future years at this time. Among these are Section 5316 (Job Access and Reverse Commute), Section 5317 (New Freedom), and technical grants for specific purposes.

American Recovery and Reinvestment Act of 2009 (ARRA)

This economic stimulus legislation is a jobs preservation and creation bill meant to address the nation's economic crisis by accelerating the construction of needed transportation infrastructure. ARRA includes use-it-or-lose-it provisions with extremely tight deadlines for project delivery. Los Angeles County's formula share of the ARRA funds is included in the financial forecast.

Congestion Mitigation and Air Quality (CMAQ)

CMAQ program funding has been adjusted to reflect air quality improvements in Los Angeles County. Metro is part of the South Coast Air Quality Basin in Southern California and the deadline for compliance with the latest updated air quality standards is 2020. Metro forecasts continuation of CMAQ funds at $12 million below SAFETEA-LU levels from FY10 through FY14. The annual forecast is further reduced by $20 million beginning FY15, by another $20 million beginning FY20, and by another $20 million beginning FY26.

The CMAQ program is designed to fund projects that contribute to attainment of national ambient air quality standards. CMAQ funds cannot be used to construct facilities providing additional capacity for single-occupancy vehicles. It is assumed that all new rail lines and various Metro Rapid bus projects will receive CMAQ funding for their actual operating costs for the first three years of operation.

Earmarks

Earmarks through FY09 are included for the following SAFETEA-LU programs: High Priority Projects, Projects of National and Regional Significance, Transportation Improvement Projects, and the National Corridor Infrastructure Improvement Program. Because earmarks are discretionary, they are not assumed in future years.

Homeland Security Grants

Metro regularly receives Federal Homeland Security grants for transit security improvements. Future receipt of such grants is assumed.

Section 5307 Urbanized Formula

Funding is assumed as determined by federal and Southern California Association of Governments (SCAG) formulas. Funding is assumed to increase by 1.4 percent after the expiration of SAFETEA-LU.

Federal regulations allow Section 5307 funds to be used for preventive maintenance costs as well as capital costs. The financial forecast assumes the continued usage

of these funds by Metro for eligible bus preventive maintenance costs in the operating budget. These funds account for approximately 12 percent of the Metro bus operating funds for preventive maintenance through 2040.

The forecast also assumes that these funds will be allocated to all eligible bus operators by formula for identified capital requirements, pursuant to the current Capital Allocation Procedure (85 percent by formula and 15 percent discretionary). For financial modeling purposes only and to determine potential funds for the agencies, future discretionary funds are assumed split between the Municipal Operators and Metro based on the average of the last five years. The actual allocation of the 15 percent discretionary funds will occur annually and may vary from this modeling assumption.

The Municipal Operators use their formula portion of Section 5307 for capital facilities and purchasing replacement buses on a 12-year cycle. An additional 195 new buses for fixed route expansion are planned along with 31 smaller vehicles for the Municipal Operators, coupled with capital facilities to support this expansion program. In the event that the Municipal Operators convert from diesel fuel to cleaner-burning fuels, provisions for alternative fueling facilities are provided in the capital facilities funding component; several have initiated this conversion.

Section 5309 Bus and Bus Facilities/Section 5308 Clean Fuel Program

SAFETEA-LU Section 5309 bus earmarks are included in the year as approved by Congress. Using Metro's estimated share of the national formula in the Clean Fuel Program (which references the CMAQ formula), an average of $4.0 million is assumed annually. This forecast is based on the intent of the Clean Fuel Program and assumes that federal funding will be available to meet clean air requirements in Los Angeles County. For the last five years, Congressional appropriations have transferred the Clean Fuel Program allocation to the Section 5309 Bus and Bus Facilities discretionary section of the annual funding bill. These discretionary earmarks result in generally the same amount each year to Metro.

Section 5309 Fixed Guideway Modernization

These funds are used for rail operations, rail rehabilitation and other minor rail expenses. After the expiration of SAFETEA-LU in FY09, the program is estimated to grow at 1.4 percent annually. Additional miles will be included annually as Metrolink and Metro rail-service miles become eligible and are applied to the federal formula. This added revenue is assumed based on current formulas. Additional funding is expected seven years after new rail lines become operational.

Section 5309 New Starts and Small Starts

Metro New Starts funds of $1.5 billion are assumed to be available between FY12 and FY19 at an average of almost $200 million per year, with a maximum of $280 million at the construction peak (50 percent of the total project cost of the Westside Subway Extension Segment 1 and the Regional Connector).

No future funds have been assumed from the relatively new discretionary Small Starts program. Metro will pursue funding from this program in the future for projects such as limited-cost rail projects under $250 million or Bus Rapid Transit projects that can be implemented in twelve to eighteen months.

Section 5340 Growing State Program

This new SAFETEA-LU program is based on the amount of population growth anticipated and averages $7.7 million per year. Until a future census estimate is available, the 2000 census is used to determine the amount of revenue for Los Angeles County. This new revenue source is assumed used for rail purposes. The actual award of funds is done through the Section 5307 requirements and FTA grant management procedures.

Surface Transportation Program (STP)

STP funds are appropriated by Congress for highway improvements but are flexible and eligible for transit capital projects, Transportation Demand Management (TDM), and improvements to highways and arterial roads. Half of the STP allocation to the State is assumed to go to the California State Highway Account with the remainder allocated to the regions by formula in accordance with Section 182.6 of the California Streets and Highways Code. Most of Metro's Regional Surface Transportation Improvement Program (RSTP) share of STP funding is assumed converted to funds eligible for paratransit uses by Access Services, Incorporated. Some RSTP funds have been assumed for carpool lanes and freeway gap closures/ arterial widening in Los Angeles County.

Transportation Enhancements (TE)

Ten percent of each state's federal STP apportionment must be used for federal TE projects such as pedestrian and bicycle facilities, landscaping and other scenic beautification, and historical preservation and rehabilitation. Federal TE apportionments are programmed through the STIP. Los Angeles County projects are selected through the Metro Call for Projects process.

MAJOR EXPENDITURE ASSUMPTIONS

Metro Operating Deficit

A significant assumption is that an identified $396 million Metro operating deficit in FY11 through FY14 will be resolved without using resources planned for project purposes elsewhere in the financial strategy. More conservative fare and sales tax revenue forecasts already

are showing that this estimate may understate the deficit by $250 million or more. These forecasts would assume a deficit of $650 million or more over four years instead of $396 million. We have begun to identify the actual size of the deficit and propose solutions to addressing it.

Operating and Capital Inflation

Consumer Price Index (CPI) rates are based on the August 2008 UCLA Anderson Forecast for Los Angeles County which forecasts the average annual inflation rate from FY05 through FY40 at 2 percent. The financial forecast applies the annual inflation rate from the forecast to various operating costs. Metrolink operations and rehabilitation costs are increased at 4 percent annually based on commuter railroad cost history. Transit and highway capital projects are escalated at 1 percent for FY10, 2 percent for FY11, and 3 percent thereafter.

BUS PROGRAM ASSUMPTIONS

Bus Capital

Transit Operators – Funding is assumed for clean fuels, vehicle replacement, facilities, support equipment, and bus bonds as described below. All planned acquisitions for bus purchases and divisional facility improvements, including new divisions, emanate from the Metro Bus Fleet Management Plan, dated August 6, 2004. Municipal Operators developed a capital summary, dated June 21, 2005, for guiding future purchases, facilities and capital components of their fleets and grounds.

Clean Fuels – AQMD requirements are met by:

> converting vehicles and facilities to clean fuels;
> improving transit service incrementally so that work trips on transit as a percentage of all regional trips are enhanced by the year 2020 (when compliance is planned for air quality in the South Coast Air Basin; the previous compliance date was 2010); and
> local bus operators (Municipal Operators) currently using diesel fuel have been programmed to receive funds for converting fueling facilities and transitioning buses to cleaner burning fuels in the event such decisions are made. Such funding emanates from the Section 5307 funds allocated to the Municipal Operators.

Vehicle Replacement Schedule – Vehicle replacement is based on the following retirement schedule:

> Transit Buses (40 foot and Articulated) Metro/Municipal Operators fleets average 6+ years old	12-13 years
> Some Metro composite buses, overhaul at mid-life	18 years
> Heavy-Duty Smaller Buses (25-35 foot range)	10 years
> Dial-A-Ride Vehicles	3-7 years
(light-duty, mid-sized buses, less than 25 feet long)	7 years
(light-duty, small buses, cutaways, or modified vans less than 25 feet in length)	3-5 years

Vehicle Costs – Total vehicle costs, including wheelchair lifts, taxes, labor force accounts, spare parts and air conditioning are presented below. These costs assume replacements with alternative-fueled vehicles and are escalated annually by CPI starting in FY06.

2010 Costs of Buses and Vehicles

> Articulated (60 feet in length)	$884,000
> Buses – 45 feet	$651,000
> Buses – 40 feet, Metro and Municipal	$464,000
> Mid-Sized Buses (25 feet to 35 feet)	$241,000
> Small Buses (less than 25 feet)	$ 91,000
> Vans (price varies)	$50-70,000

Based on Metro's recent compressed natural gas bus procurements, the price in 2005 was $390,000 per standard 40-foot bus (includes extra parts from plant assembly, sales tax and labor force accounting of Metro expenses) and is escalated annually by CPI thereafter through 2040. An articulated bus is priced at $884,000 based on recent bids received by Metro and costs are escalated by CPI. A varying price is assumed for Metro and Municipal Operators for a 40-foot bus purchase, based on actual recent purchases, then escalated through 2040 by CPI. Since Municipal Operators purchase buses separately using criteria unique to their own needs and standards, the actual price may vary from the countywide forecast assumptions.

It is assumed that 200 buses (40-foot buses or large capacity equivalents) will be purchased annually to replace Metro's active bus fleet. The exact amount may vary by year, based on actual purchases and contract completion dates. However, the assumed planning average provides for the optimum efficient delivery of new buses and allows for equally spreading the age of the basic bus fleet over time. The 200 buses purchased annually have been adjusted through FY12 to reflect the purchase of up to 500 articulated buses instead of the 200 standard 40-foot buses. The use of articulated buses will increase the number of seats in the Metro active fleet.

Facilities and Support Equipment – Costs for bus capital projects are based on Metro's Office of Management and Budget Ten-Year Forecast, including the adjustments for articulated bus purchases in FY06 through FY15. Beyond FY15, an average annual expenditure projection is used based on CPI and an expanded depreciation schedule through 2040. Funding for a new Metro Bus Division near LAX has been assumed in FY19 through FY22, in addition to $85 million for the Union Division being developed by 2012. These two new divisions have been projected based

on the changing Metro bus fleet and emergence of articulated buses in the Metro active fleet.

The financial forecast also includes the adopted Metro Capital Program costs through FY10. These cost projections include expenditures for bus maintenance overhaul and rehabilitation, CNG fueling facilities, bus maintenance facilities improvements, non-revenue vehicles and communications support. For the Municipal Operators, a capital facilities and bus purchase assessment, completed in June 2005, outlines needed facilities, 195 fixed-route bus expansion program, and 31 smaller buses added through 2040. The Bus Operations Subcommittee of the Technical Advisory Committee assisted with that report and assumptions about future growth and expenditure needs.

Bus Capital Bonds – Thirty-year bonds will be issued as needed at 5.5 percent interest to support bus capital requirements within the Metro debt policy limits. Thirteen-year bonds for bus procurement are assumed.

Major Metro Rapid Bus Projects – In October 2005, Metro opened the 14-mile Metro Orange Line transitway project along an exclusive fixed guideway at a budget of $313 million. The right-of-way (ROW) was an abandoned railroad site that converted into a fixed guideway for buses only. This project runs in an east/west direction in the San Fernando Valley section of the City of Los Angeles and operates 27 articulated buses daily. The Orange Line Canoga Extension will extend the Orange Line four miles to the Metrolink station in Chatsworth and will open by FY13. Several other Metro Rapid bus capital projects are assumed for construction and operation over the term of the Plan. Funding for operating costs is assumed to come from existing operations being phased out as new service is introduced.

Metro, the City of Los Angeles, and Los Angeles County are considering the implementation of a Bus Rapid Transit project on Wilshire Boulevard. This project is scheduled to open by FY15. San Fernando Valley East North-South Rapidways, representing a multi-phased program of bus lines on four routes within the eastern San Fernando Valley, will be phased in by FY18.

Bus Operations

New Buses and Added Service – The current financial forecast estimate is for planning purposes only and does not commit Metro to any specific expenditure level or continuation of the service if restructured service can achieve the same passenger seat deployment or similar service delivery. Since usage of high-capacity buses will become a major component of the Metro bus fleet, it is assumed that total countywide bus and rail seats will increase although the number of buses will be reduced. An average of 200 new replacement Metro buses are proposed for purchase annually and, when averaged with the Municipal Operators' fleet, establishes a Metro and countywide bus fleet average age of approximately six to seven years that will gradually increase as the 13-year replacement cycle is implemented by Metro. The Metro Bus Fleet Management Plan, dated August 6, 2004, allows a bus to be operated for a 13-year period before a replacement is anticipated. The funding assumes this replacement cycle. Funding has been set aside for 200 40-foot buses annually, or their equivalent, in large-capacity buses.

Metro Bus Operations – Assumptions through 2040 are outlined below:

> Operations and maintenance cost projections are based on the Metro FY08 budget and related Ten-Year Forecast and are assumed to grow with the rate of inflation after 2016. There is additional service planned for population growth, congestion relief, and feeder buses as new light rail lines open. The number of buses assumed in this forecast is lower than the 2001 Plan due to the increase in seats countywide.

> TDA Article 4, Proposition A, and STA will continue to be allocated through the FAP in future years.

> Section 5307 funding of preventive maintenance is continued through FY40.

> Metro will continue to evaluate service design and service levels to identify capacity underutilization, inefficient network design, and duplication of bus/rail services in order to improve bus system efficiency. A Blue Ribbon Committee has been established to receive input from the region's Municipal Operators and other key stakeholders. Strategies proposed to develop a policy for Metro service delivery include service reallocation based on demand, service delivery diversification, bus operating speed improvement, and improved system access and regional service coordination. The level of bus revenue service hours assumed considers an efficient bus/rail network to serve the expanding transportation system.

> As of November 1, 2009, Metro had 391 articulated buses in its fleet. The Plan assumes 500 articulated buses in the near term and another 100 beyond FY20. Funding for these higher-cost vehicles is provided by allowing for an increased cost per replacement bus. Articulated buses have already entered the Metro fleet (on the Orange Line and some Metro Rapid bus corridors) and, as transit corridor capital budgets allow, up to 600 total articulated buses will be added. An increase in operating costs is not assumed when articulated buses become operational since potentially fewer buses are needed which offset the higher cost of maintenance and facilities to accommodate the articulated buses.

Municipal Operators – Operations and maintenance costs were based on the capital facilities report prepared in conjunction with the Municipal Operators and their

FY06 operating budgets. These cost estimates are used as the basis for future years' cost projections and escalated using CPI. The forecast assumes TDA Article 4, Proposition A, and STA funds will continue to be allocated via the FAP. Proposition C 40 percent for expansion buses has likewise been assumed for the entire planning period through 2040. Municipal transit operators receiving formula funding include:

> Antelope Valley Transit Authority
> Arcadia
> Claremont
> Commerce Municipal Bus Lines
> Culver City Municipal Bus Lines
> Foothill Transit
> Gardena Municipal Bus Lines
> La Mirada Transit
> Long Beach Transit
> Los Angeles Department of Transportation (LADOT)
> Montebello Municipal Bus Lines
> Norwalk Transit
> Redondo Beach
> Santa Clarita Transit
> Santa Monica Municipal Bus Lines
> Torrance Transit

Expansion Services – The financial forecast provides for ongoing operations for Metro services and the planned transit corridor projects. Operating funding of $2.4 billion is planned for expansion routes and new corridor service. Transportation System Management (TSM) and other techniques are assumed to ensure rapid movement of buses along highways.

The Municipal Operators are planning for 195 fixed-route expansion buses and 31 smaller expansion buses through 2040. Facilities and buses have been planned to accommodate this growth. This expansion is related to projected population growth and is assumed to be funded from their existing capital sources. Operating funds to implement the expansion will require extensive coordination between Metro and Municipal Operators to overcome projected countywide transit operating deficiencies and duplicative service.

Access Services, Incorporated (ASI) – The Plan funds complementary parallel transit services required by the Americans with Disabilities Act (ADA) at a Metro subsidy cost consistent with the FY10 budget plus inflation. In order for Metro to meets its share of cost growth for mandated parallel ADA services that exceed inflation, a combination of revenue increases or transit operating cost reductions will be necessary. The forecast assumes that Regional Surface Transportation Program (RSTP) funds will continue to be programmed to be flexed to the FTA for ASI. Proposition C 40 percent is also programmed to match the FTA funds. Allocating RSTP instead of only Proposition C 40 percent Discretionary funds allows Metro to make Proposition C 40 percent funds available for capital bonding. An independent consultant has completed a study for ASI that forecasts the need for increased service and funding. Any increases in funding will be evaluated on an annual budgetary basis and are not assumed in this forecast.

RAIL PROGRAM ASSUMPTIONS

Rail Capital

Rail Projects Capital Cost Estimates – Costs, including rail cars, for rail projects approved by the Metro Board are reflected as approved or budgeted. A Metro Fleet Rail Management Plan, dated February 25, 2004, is used to target and fund needed new rail cars and other major rail capital needs. Costs, including rail cars, for rail projects with no existing approved budget are calculated based on Metro's cost estimation guidelines from the Metro Construction Division and specialized consultants. The cost estimation process considers factors such as projected construction cost in current dollars (escalation is added by Metro financial modeling staff), construction start date, construction duration and cash demand curve during construction based on experience with past and current projects.

Near-Term Transit Corridor Projects - Six transit projects on six corridors will be fully constructed and operating by FY19. Details for each of the six rail projects follow the summary list. The funding sources shown are those assumed in the Plan but may change upon future Board programming actions.

> Exposition Light Rail Line Phase I between downtown Los Angeles and Culver City extending generally along Exposition Boulevard is under construction and is scheduled for completion in FY11;
> Exposition Light Rail Phase II extending approximately 6.9 miles from Culver City to downtown Santa Monica will be completed in FY15;
> Gold Line Foothill Extension extending approximately 11.3 miles from Pasadena east past Azusa by FY17;
> Crenshaw/LAX Transit Corridor Light Rail Line extending from Exposition Light Rail Station to Green Line Light Rail Extension to Los Angeles International Airport is assumed to be completed by FY18;
> Regional Connector directly connecting the Metro Blue Line with the Metro Gold Line and the Expo Line with the Metro Gold Line Eastside Extension through Downtown Los Angeles by FY19; and
> Westside Subway Extension Segment I extending the Metro Purple Line from Wilshire/Western to Fairfax Av by FY19.

Exposition Light Rail Transit Project Phase I to Culver City – Blue Line Extension (scheduled to open FY11) – Phase I is under construction and extends 8.6 miles from

7th and Flower streets in downtown Los Angeles to Venice Bl/Robertson Bl in Culver City. Phase I will have 11 stations, including two existing stations shared with the Metro Blue Line, and nine new stations, three of which are aerial. The project utilizes an abandoned railroad right-of-way that was purchased by Metro in 1990.

In accordance with State law, the Exposition Metro Line Construction Authority is constructing the project utilizing a design-build construction contract that will expedite completion and allow for cost savings. The project includes 16 light rail cars and an overnight storage and light maintenance facility. Metro will operate and maintain the line. Heavy maintenance will be performed at existing Metro facilities. The capital cost estimate including the Culver City station is $862.4 million:

Source	Amount	% Breakdown
Local Funds	$64.1 million	7.4 %
State Funds	$782.8 million	90.8 %
Federal Funds	$15.6 million	1.8 %
Total Project Cost	**$862.4 million**	**100 %**

*Numbers may not add up due to rounding

Exposition Light Rail Transit Project Phase II to Santa Monica (scheduled to open FY15) – This project would extend Phase I approximately 6.9 miles from Culver City to Santa Monica. The Final Environmental Impact Report has been certified for the preferred alignment along the Exposition Right-of-Way and Colorado Avenue. The Exposition Metro Line Construction Authority will also manage the construction of Phase II. For purposes of the Plan, the rough order of magnitude escalated capital cost estimate for an aerial alternative is $1,300 to $1,631.7 million:

Source	Amount	% Breakdown
Local Funds	$946.6 million	72.8 %
State Funds	$353.4 million	27.2 %
Federal Funds	none	
Total Project Cost	**$1,300.0 million**	**100 %**

Gold Line Foothill Extension (scheduled to open FY17) This light rail line would extend the Metro Gold Line approximately 11.3 miles from Pasadena east to Azusa/Glendora. In accordance with state law, the project will be built by the Metro Gold Line Foothill Extension Construction Authority and subsequently operated and maintained by Metro. The capital cost estimate is $851.1 million:

Source	Amount	% Breakdown
Local Funds	$836.1 million	98.2 %
State Funds	none	
Federal Funds	$15.0 million	1.8%
Total Project Cost	**$851.1 million**	**100 %**

Crenshaw/LAX Transit Corridor (scheduled to open FY18) The Draft Environmental Impact Statement/Environmental Impact Report (DEIS/EIR) is complete and the Light Rail Transit alternative, with six potential design options, is recommended as the Locally Preferred Alternative. This Plan update reflects the light rail alternative for purposes of ensuring that Metro can construct and operate it.

The Crenshaw/LAX Transit Corridor is approximately 8.5 miles with seven stations, one of which will be aerial. From a northern terminal at the Exposition/Crenshaw station, the alignment would follow Crenshaw Bl south to the South Bay Metro Green Line Extension and then follow the South Bay Metro Green Line Extension to a connection at the Metro Green Line Aviation/LAX station. The capital costs assumed for a light rail line are $1,715.0 million:

Source	Amount	% Breakdown
Local Funds	$1,532.5 million	89.4 %
State Funds	$2.7 million	0.1 %
Federal Funds	$179.7 million	10.5 %
Total Project Cost	**$1,715.0 million**	**100 %**

*Numbers may not add up due to rounding

Regional Connector (scheduled to open FY19) – The 1.8-mile Regional Connector will create a transit link between the Metro Gold and Blue lines through downtown Los Angeles and also will eventually connect the Metro Expo Line and Metro Gold Line Eastside Extension. By providing continuous through-service between these lines, the Regional Connector Transit Corridor will improve access to both local and regional destinations and help create a true transportation network for the region.

The Alternatives Analysis has been completed and the Draft EIS/EIR is underway. An at-grade alternative via Second St with a couplet on Main and Los Angeles streets, an underground alternative via Second St crossing First and Alameda streets at-grade, and a fully underground alternative via Second St are being considered. The estimated capital cost is $1,073.0 million:

Source	Amount	% Breakdown
Local Funds	$388.1 million	36.2 %
State Funds	$116.9 million	10.9%
Federal Funds	$568.0 million	52.9%
Total Project Cost	**$1,073.0 million**	**100 %**

Westside Subway Extension Segment 1 (scheduled to open FY19) – This project will extend the Metro Purple Line 3.2 miles from Wilshire/Western to Fairfax Avenue. The estimated capital cost is $1,950.0 million:

Source	Amount	% Breakdown
Local Funds	$973.0 million	49.9 %
State Funds	$2.9 million	0.1 %
Federal Funds	$974.1 million	50.0 %
Total Project Cost	**$1,950.0 million**	**100 %**

Medium-Term Transit Corridor Projects

Seven transit projects on five corridors will be fully constructed and operating after FY19:

> Westside Subway Extension Segment 2 to Century City – open FY26, $2,450 million capital cost estimate;
> West Santa Ana Branch ROW Corridor – open FY27, $649 million cost estimate;
> Metro Green Line Extension to Los Angeles International Airport (LAX) – open FY28, depending on LAX contribution, $330 million capital cost estimate;
> South Bay Metro Green Line Extension – open FY35, $555 million capital cost estimate;
> Metro Gold Line Eastside Extension Phase II – open FY35, $2,490 million capital cost estimate;
> San Fernando Valley I-405 Corridor Connection (mode is TBD) – open FY39, $2,468 million capital cost estimate; and
> Westside Subway Extension Segment 3 to Westwood – open FY36, $1,615 million capital cost estimate.

High-Speed Rail – Proposition 1A, the Safe, Reliable High-Speed Passenger Train Bond Act for the 21st Century, approved by California voters in November 2008, provides $9 billion in bonding capacity to build a high-speed train network from San Francisco to San Diego. Also, the federal American Recovery and Reinvestment Act (ARRA) authorizes $8 billion nationwide for high speed trains. The California High-Speed Rail Authority has identified Union Station as one of the major stops for the new high-speed rail line. The Plan assumes $3 billion of the ARRA funds for a high-speed train from Los Angeles to Anaheim. Proposition 1A funds assumed include $126 million for Metrolink and $114.9 million used for the Regional Connector.

Congestion Reduction Demonstration Project (ExpressLanes) – This is a demonstration project consisting of transit improvements and the conversion of carpool lanes on I-10 and I-110 to high occupancy toll (HOT) lanes. The project will convert the existing carpool lanes on I-10 from Alameda St/Union Station to I-605 and on I-110 from 182nd St/Artesia Transit Center to Adams Bl. The $290.6 million budget is funded with a $210.6 million U.S. Department of Transportation grant and $80 million in Proposition 1B funds. The budget will cover the toll technology, toll infrastructure and operational improvements required to complete the conversion.

Contingency – $225 million is included in the near-term for new rail yards and/or new rail cars.

Planning for New Transit Projects – $25 million for short-term planning is included for FY11-12 and $50 million for future planning is included in FY25 through FY28.

Rail Fleet Procurement – Fifty additional light rail cars are assumed in FY05 through FY09 including 10 rail cars for the Eastside Light Rail Project programmed at $3.8 million each. The Eastside rail cars are funded as part of the overall Eastside project construction budget. Metro will procure 50 additional rail cars to acquire the new rail cars for the Exposition Light Rail Line Phases I and II and the Crenshaw/LAX Transit Corridor Line. The costs for additional rail cars to meet opening day demand are included in the individual capital project budgets for each new rail line. In 2012 and 2013, an additional five rail cars each year have been proposed for overall fleet purchase to accommodate growth from the new rail lines. These 10 rail cars are funded outside of the project budgets.

Sixteen additional Metro Red Line heavy rail cars are planned for purchase in FY16 through FY18 and seventeen light rail cars are planned for purchase in FY27 through FY28 to ensure full implementation of the Rail Fleet Management Plan. These cars are in addition to those light rail vehicles described above.

Project	# of Cars to be procured
Eastside LRT	10
Exposition Phase I LRT	16
Exposition Phase II and Crenshaw/LAX Transit Corridor	34
Five Cars per year in FY12 and FY13	10
Metro Red Line heavy rail cars in FY16 through FY18	16
Light rail cars in FY27-28	17

Metrolink Commuter Rail – The Southern California Regional Rail Authority (SCRRA) is a Joint Powers Agency that plans, constructs, and operates Southern California's Metrolink commuter rail system. Metro contributes funds for the portion of the capital and operating costs for commuter rail lines and projects located within Los Angeles County. The current Metrolink system includes 388 unduplicated route miles, 186 of which are in Los Angeles County, and 55 stations, 26 of which are in Los Angeles County. The financial forecast assumes continued funding for the current commuter rail system. SCRRA staff has provided operating cost projections. Los Angeles County's share of commuter rail costs is funded with Proposition C 10 percent revenues.

The Metro funding assumptions for Metrolink are:

> $33.1 million for FY08 operating subsidy, escalated by 4 percent in subsequent years;
> $15 million for FY08 capital maintenance, escalated by 4 percent in subsequent years; and
> $372 million through 2040 for capital.

Other Rail Costs and System Improvements – In addition to the costs associated with the construction of individual rail lines, some costs to upgrade the overall rail system and for miscellaneous enhancements are included.

Rail Rehabilitation and Replacement – Projected rail line rehabilitation and replacement costs are based on a methodology originally developed by Robert Peskin of KMPG Peat Marwick (commonly called the Peskin Model) based on actual rehabilitation and replacement costs experienced by the Washington Metropolitan Area Transit Authority (WMATA) compared to original installation capital costs. The Metro rail rehabilitation and replacement costs were calculated in the same manner, based on the original installation capital costs of the Metro Blue, Red, Gold and Green lines (details follow on these projects). The rehabilitation and replacement costs are estimated to begin six years after a rail line begins revenue operations. Some limited capital costs are assumed in the forecast for the first few years as reflected in the five-year Metro Capital Program and from Metro Rail Operations for specific items.

The costs for rehabilitation and replacement of rail capital are mostly funded with Propositions A and C bond proceeds. Based on the Metro Office of Management and Budget near-term forecast and the Peskin Model in the later years, the rail rehabilitation and replacement costs through 2040 are:

Metro Facilities	Amount
Rail Line Rehabilitation/Replacement	$9,206.4 million
Wayside Systems	$258.7 million
Facilities Maintenance	$861.3 million
Vehicle Maintenance	$315.5 million
Total Cost	**$10,641.9 million**

Previous Rail Projects – shown for information only

Metro Red Line Subway Segment 1 (opened in January 1993) – This heavy rail line extends 4.4 miles with five stations through downtown Los Angeles, from Union Station/ Gateway Transit Plaza to the Westlake/MacArthur Park station. Costs included:

Source	Amount	% Breakdown
Local Funds	$515 million	36 %
State Funds	$228 million	16 %
Federal Funds	$696 million	48 %
Total Project Cost	**$1,400 million**	**100 %**

Metro Red Line Subway Segment 2 (opened in two phases in July 1996 and June 1999) – Totaling 6.7 miles, this heavy rail segment consists of two rail corridors:

> *Wilshire Corridor* – Opened in July 1996, this corridor extends from the Westlake/MacArthur Park Station northwest to Wilshire/Vermont intersection, and west along Wilshire Bl, terminating at the Wilshire/Western Station. (This corridor is now known as the Metro Purple Line)
> *Vermont/Hollywood Corridor* – Opened in June 1999, this corridor extends north from Wilshire/Vermont intersection along Vermont Avenue, turning west along Hollywood Boulevard to the Hollywood/Vine Station.

The costs for Metro Red Line Segment 2 were:

Source	Amount	% Breakdown
Local Funds	$936 million	52 %
State Funds	$185 million	10 %
Federal Funds	$667 million	37 %
Total Project Cost	**$1,800 million**	**100 %**

Numbers may not add up due to rounding

Metro Red Line Subway North Hollywood Segment 3 (opened in June 2000) – This heavy rail segment is 6.3 miles with three stations beginning just west of the Segment 2 Hollywood/Vine Station and continuing west under Hollywood Bl to the Hollywood/Highland Station and north under the Santa Monica mountains to the Universal City Station, finally terminating in North Hollywood. The costs for Segment 3 were:

Source	Amount	% Breakdown
Local Funds	$217 million	16 %
State Funds	$336 million	26 %
Federal Funds	$762 million	58 %
Total Project Cost	**$1,300 million**	**100 %**

Metro Green Line (opened in August 1995) – This light rail line extends 20 miles with 14 stations along the center of the 105 Freeway (Studebaker Rd) and the I-605 Freeway (in Norwalk) to Freeman Bl and Marine Av in Redondo Beach. The total costs were:

Source	Amount	% Breakdown
Local Funds	$612.1 million	85 %
State Funds	$105.9 million	15 %
Federal Funds	none	
Total Project Cost	**$718.0 million**	**100 %**

Metro Blue Line (Opened in July 1990) – This light rail line extends 22 miles, with 22 stations, from the downtown Los Angeles station (7th St/Metro Center) to Long Beach. The Metro Blue Line was expanded to three-car train lengths in 2002, funded through Metro's annual budgetary process. The original construction costs were:

Source	Amount	% Breakdown
Local Funds	$877 million	100 %
State Funds	none	
Federal Funds	none	
Total Project Cost	**$877 million**	**100 %**

Metro Gold Line - Pasadena (opened July 2003) – This light rail line extends 13.7 miles from Sierra Madre Villa in the City of Pasadena to Union Station in downtown Los Angeles and has 14 stations. The "Pasadena Metro Blue (renamed "Gold Line") Line Construction Authority" (PMBLCA) constructed the project and Metro operates it. The capital project budget was:

Source	Amount	% Breakdown
Local Funds	$430.5 million	50 %
State Funds	$428.5 million	50 %
Federal Funds	none	
Total Project Cost	**$859.0 million**	**100 %**

Metro Gold Line Eastside Extension (opened November 2009)
The Eastside project is a six-mile light rail transit project running from Union Station to the intersection of Pomona and Atlantic boulevards in East Los Angeles. A Full Funding Grant Agreement with the FTA, signed on June 1, 2004, allocated $490.7 million in Section 5309 New Starts funds. From the Pasadena Gold Line station at Union Station, the alignment extends across US-101 along a 1,000 foot long aerial structure, continues on Alameda St to the intersection with First St, then proceeds easterly to First and Lorena streets, and then transitions south along Indiana St to Third St and proceeding east via Third St/Pomona Bl to the Pomona/Atlantic boulevards terminus. The system is primarily at-grade, but includes a 1.7-mile tunnel segment along First St between First/Gless and First/Lorena.

The Gold Line Eastside Extension includes eight stations: First and Alameda streets, First and Utah streets, First St and Boyle Av, First and Soto streets, Third and Indiana streets, Third St and Ford Bl, Third and Mednik streets, and Pomona and Atlantic boulevards. The estimated escalated capital cost, including 10 light rail cars, is $898.8 million:

Source	Amount	% Breakdown
Local Funds	$160.6 million	17.8 %
State Funds	$225.2 million	25.1 %
Federal Funds	$513.0 million	57.1 %
Total Project Cost	**$898.8 million**	**100 %**

Rail Operations

Rail operations costs are based on an Operating and Maintenance cost model that was also used in the adopted 2001 Long Range Transportation Plan and recent Metro annual budget process. The model is consistent with the methodology specified by the FTA for Alternatives Analysis studies. Staffing requirements, labor costs, and non-labor expenses are calculated based on the projected quantity of service supplied (e.g., peak vehicles, revenue vehicle-miles) and the physical size of the system (e.g., route-miles, number of stations). A build-up calculation for future rail lines based on the FY09 Metro budget was completed. A precise analysis for each new rail line will be conducted as part of its environmental review. Operating costs are included for all planned rail lines based on revenue service hours and escalated by CPI in future years.

HIGHWAY PROGRAM ASSUMPTIONS

The highway component adds the estimated total escalated cost of all Measure R highway projects. Spending from the local funding sources (Measure R, Proposition C 10 percent and Proposition C 25 percent) is forecasted on a cash flow basis. State and federal funding sources are forecasted on a programming basis.

Environmental Enhancement & Mitigation (EEM) – The financial forecast assumes that Los Angeles County will receive $1.0 million annually from FY08 through FY40 for eligible projects. The State did not budget this program in FY06 and FY07. The CTC awards funds for projects and Caltrans administers the program.

Freeway Carpool Lanes [High Occupancy Vehicle Lanes (HOV)] – The financial forecast provides for the implementation of HOV projects identified in this 2009 Plan. Unescalated project cost estimates were provided by Caltrans District 7 or the Metro Planning department. Carpool lanes are assumed for $6.1 billion (escalated) including any outstanding prior commitments.

Freeway Gap Closures, Interchanges, & Arterial Widenings – Unescalated project cost estimates were provided by Caltrans District 7 or the Metro Planning department. These projects are assumed for $5.543 billion (escalated).

Freeway Service Patrol – Continued funding for this program is assumed funded primarily through Proposition C 25 percent, Freeway Service Patrol State

Highway Account Funds, and HOV violation funds. The Proposition C 25 percent funding is assumed to grow annually by CPI.

Freeway Traffic Systems Management (TSM) & Traffic Operations System (TOS) – The financial forecast assumes Caltrans will continue providing the operating costs for these measures. Project completion is funded by Proposition C 25 percent funds.

Gerald Desmond Bridge Replacement – The financial forecast assumes $375 million partial funding (Proposition 1B Trade Corridors Improvement Fund and SAFETEA-LU Projects of National and Regional Significance earmark). The estimated $476 million cost balance is not included and is assumed covered by other future state and/or federal funding.

Intelligent Transportation System (ITS) – This program aims to efficiently utilize advanced technologies in Southern California's transportation systems. For the Regional Integration of the ITS, the financial forecast assumes an average of $1.7 million of Proposition C 25 percent funds for FY10 through FY16, $1.6 million beginning FY17, and thereafter escalated by CPI. Federal Intelligent Transportation System funds are not assumed.

Local Streets and Roads – Estimated State Gas Tax subventions and Proposition 42 funds of $15.5 billion are assumed received by the County and the cities in Los Angeles County through FY40.

Operations, Caltrans – Estimated State Highway Account funds of $8.7 billion are assumed for Caltrans District 7 operations.

Retrofit Soundwalls – The Retrofit Soundwalls program encompasses freeways previously constructed without necessary soundwalls. This program and its $2.4 billion backlog of projects has been a Metro responsibility since Senate Bill 45 took effect in 1998. The program has two phases: three priorities in Phase I and unprioritized Phase II. Completion of Phase I for a total of $411.6 million is assumed from FY05 through FY18 funded with Proposition C 25 percent, Measure R, and RIP funds. Phase II, for soundwalls on freeways without carpool lanes and therefore not eligible for Proposition C 25 percent, is funded with RIP funds for $791.5 million from FY31 to FY38. The remainder of Phase II is estimated at $1.197 billion to be funded with assumed new state funds.

Rideshare/Vanpool Program – Since FY03, Metro has directly operated countywide rideshare services with over 100,000 registrants currently. In May 2007, the Vanpool Program was added, providing lease and fare incentives to new and existing vanpools. Total funding of $556.5 million (Proposition C 25 percent and RIP) is assumed through FY40.

Service Authority for Freeway Emergencies (SAFE) – A separate legal entity that is housed within Metro, SAFE operates call boxes along the freeways, the #399 Mobile Call Box program, and the 511 Traveler Information System. It is funded by a $1 surcharge on each of the seven million registered vehicles in the County. Cost estimates and assumptions are based on the SAFE Ten-Year Financial Plan and include capital requirements and operations and maintenance expenses. An increase in the number of registered vehicles in the county would be the only mechanism, other than legislation, to increase revenues.

State Highway Operation and Protection Program (SHOPP) – Freeway Rehabilitation – Every four years, Caltrans prepares a SHOPP plan that identifies needed projects for maintenance and safety repairs. Caltrans administers this program and allocates funding throughout California as-needed. An estimated amount allocated to Los Angeles County is assumed for reference and comparison to other counties.

Traffic Congestion Relief Program (TCRP) – In 2008, the CTC adopted an Allocation Plan which gives priority to Tier 1 projects and allocates funding to Tier 2 projects on a first-come, first-served basis. Tier 1 includes projects with approved Letters of No Prejudice which Metro received for certain projects that allowed Metro to advance its own local funds to maintain project schedules and be reimbursed later by the State. The financial forecast assumes that all approved Letters of No Prejudice are reimbursed and all remaining unallocated highway projects are allocated by FY17.

MULTIMODAL PROGRAM ASSUMPTIONS

The Call for Projects is Metro's biennial process for allocating discretionary regional capital funds to local jurisdictions, transit operators, and other public agencies for regionally significant, non-freeway, multimodal transportation projects in seven modes. After completion of a competitive, merit-based evaluation, projects are selected and approved by the Metro Board of Directors. Funding is included as necessary for projects prior to the 2009 Call. For the 2009 and future Calls, $3.59 billion regional funding is assumed, mostly beginning in FY11. Each mode's share will be determined through the Call process. Funding sources are Proposition C 25 percent, Proposition C 10 percent, RIP, TE, CMAQ, and RSTP funds. Also, recipients must provide matching funds which are not included in the forecast since they are assumed funded from cities' Local Return funds.

Call For Projects Categories

Regional Bikeways and Pedestrian Improvements – Funding sources consist of TDA Article 3, RSTP, TE, federal SAFETEA-LU earmarks, and local agency match.

Regional Surface Transportation Improvements (RSTI) – Generally arterial street projects. Funding sources are Proposition C 25 percent, local agency matching funds, RIP, RSTP, SAFETEA-LU earmarks, and TCRP.

Signal Synchronization and Bus Speed Improvements-Local Transportation Systems Management (TSM) – Funding sources consist of Proposition C 25 percent, CMAQ, and local agency matching funds.

Transit Capital (Park and Ride Facilities/Transit Centers) – Funding sources are primarily Proposition C 10 percent, local matching funds, TE, CMAQ, SAFETEA-LU earmarks, and TCRP.

Transportation Demand Management (TDM) – Funding sources consist of CMAQ, RSTP, and local agency matching funds.

Transportation Enhancement Activities (TE) – Funding source is primarily federal TE funds.

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Travel Demand Model and Assumptions

> Whether you're going to work or to the grocery store, everyone wants faster travel, more transportation options, and less traffic.

> However, freeway traffic speeds could drop an average of 16 miles per hour by 2040, largely becasue of population and employment growth.

> This 2009 Plan will invest nearly $300 billion over the next 30 years to develop a balanced transportation system that will provide new options for travel.

> This 2009 Plan calls for investments to expand the Metro Rail system by another 105 miles and build 170 more miles of carpool lanes.

> The success of this 2009 Plan relies not only on local funding but on receiving our fair share of state and federal funds.

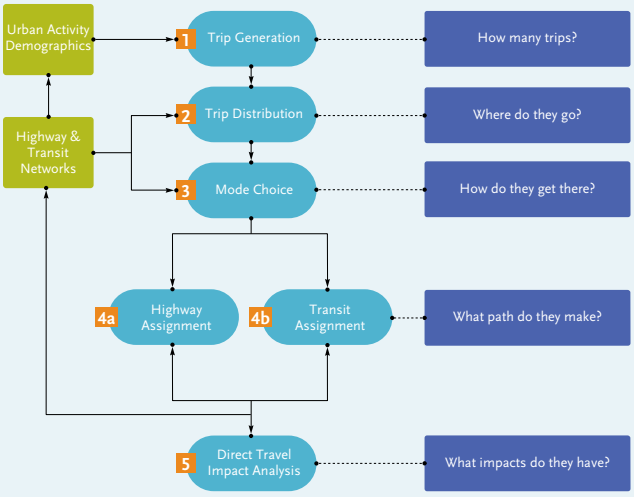
The development of the 2009 Plan was preceded by a rigorous assessment of the analytical tools, assumptions and performance criteria that would be employed in the evaluation of potential Plan alternatives. The primary analysis tool is the Metro Travel Demand Simulation Model. This report provides a technical summary of the travel demand modeling process and performance measure analyses conducted as part of the 2009 Plan effort.

Model Structure

The Metro Travel Demand Simulation Model uses the traditional four-step process generally employed by travel forecasting modelers throughout the United States. The four steps are trip generation, trip distribution, mode choice, and network assignment. Figure 5.1 is a conceptual representation of the four-step modeling process. The implementation of the travel demand modeling process is achieved through a series of 17 computer simulation modules. Figure 5.2 is a flowchart that illustrates the process.

FIGURE 5.1

Travel Demand Modeling Process



Each module has been calibrated from observed data, typically from a sample of household interviews from which detailed demographic and travel characteristics are collected through written questionnaires. The current Metro Travel Demand Simulation Model is the Year 2004 Model that was developed for the 2009 Plan. The 2004 Model is the latest and most sophisticated evolution of the Metro Model originally developed in the early 1970s.

The trip generation component of the Metro Model is primarily based on the 1967, 1976, and 1991 home interview surveys for the Los Angeles metropolitan area that were conducted by Caltrans and the Southern California Association of Governments (SCAG). The trip distribution and mode choice modules were updated using

FIGURE 5.2

Metro Long Range Transportation Plan Base Year (2004) Model Flowchart

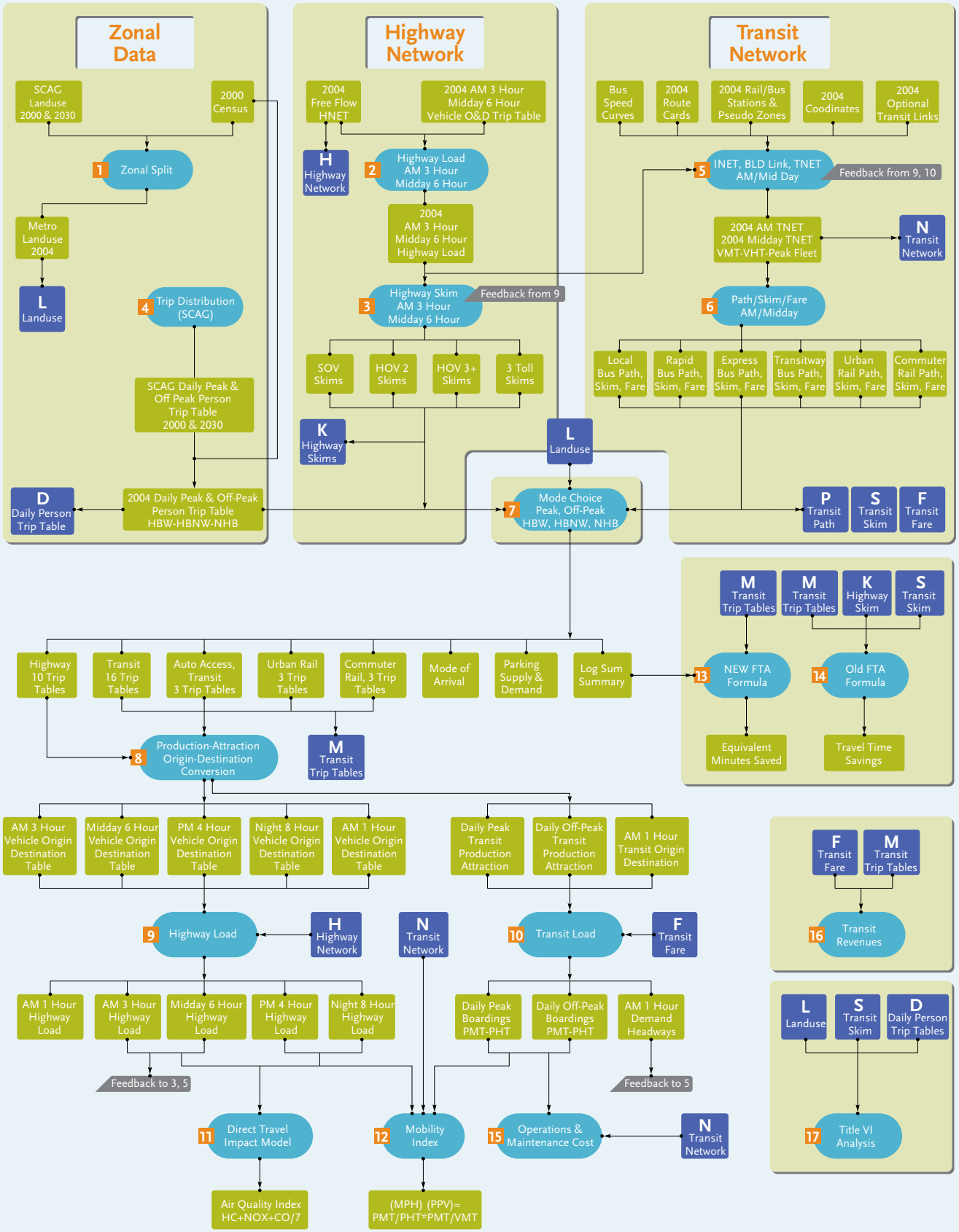
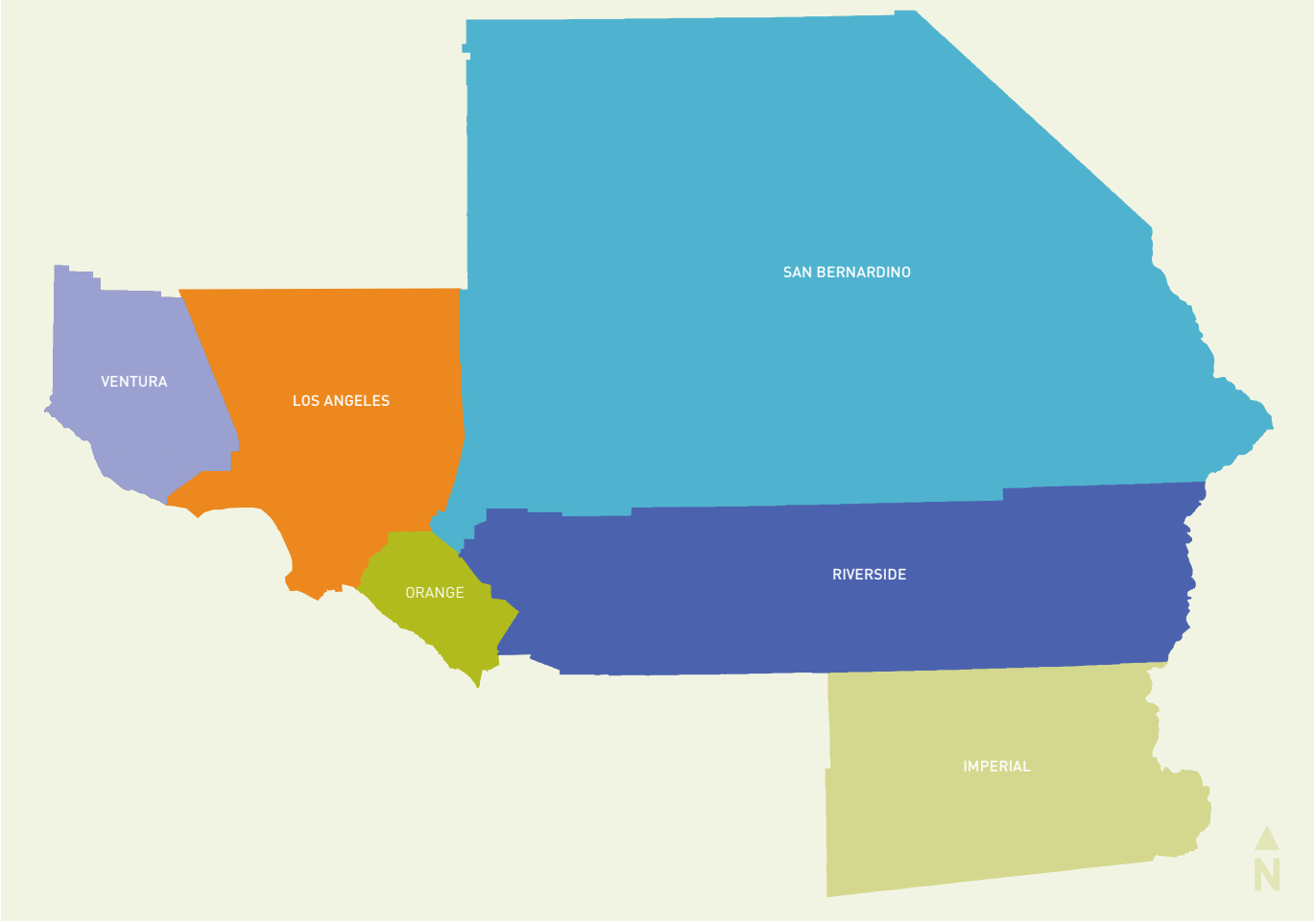


FIGURE 5.3A

Travel Demand Model Area



the 2000 Census, the Year 2000 Post-Census Regional Travel Survey, the 2001 on-board surveys on light-rail, heavy-rail and bus patrons, and the 2002 on-board survey of commuter-rail patrons.

The 2004 Model was validated for its ability to replicate 2001 travel patterns and conditions using the survey data from which it was calibrated as well as transit ridership statistics. The model performed within standard limits for all components including average trip length, mode shares, and comparisons of transit boardings.

For the 2009 Plan, the 2004 Model has been updated to reflect 2004 as the base year and 2040 as the forecast year. The process includes updating the input socioeconomic data and the modification of highway and transit networks for the years 2004 and 2040.

The Metro modeling area is identical to the SCAG modeling area which encompasses six counties, namely Los Angeles, Orange, Riverside, San Bernardino, Ventura, and Imperial counties. It is illustrated in Figure 5.3A. The area is represented by a total of 3,720 transportation analysis zones (TAZs), of which 3,010 are in the internal modeling area, 40 represent cordons, and 670 are transit station zones. 2,261 TAZs are located in Los Angeles County and illustrated in Figure 5.3B. They are aggregated into nine subregions and are illustrated in Figure 5.3B.

Model Assumptions

Each input to the Metro Model is a representation of the characteristics of the trip, the trip maker or the transportation system. This information is usually employed at the census tract level, but may include some distributions of characteristics within the census tract. All inputs for the 2004 validation used empirical data compiled from a variety of sources as described in Figure 5.4.

Projections for the planning horizon year 2040 were obtained from many of the same sources. The model then uses its econometric and behavioral formulations to project travel response and transportation system impacts under a variety of transportation system environments and conditions. However, there are several major assumptions that either reflect a continuation of existing trends or fall into the policy arena. If the future varies from these assumptions, the projected future year results will likely be different from those projected by the model. These assumptions are:

FIGURE 5.3B

Los Angeles County Subregions

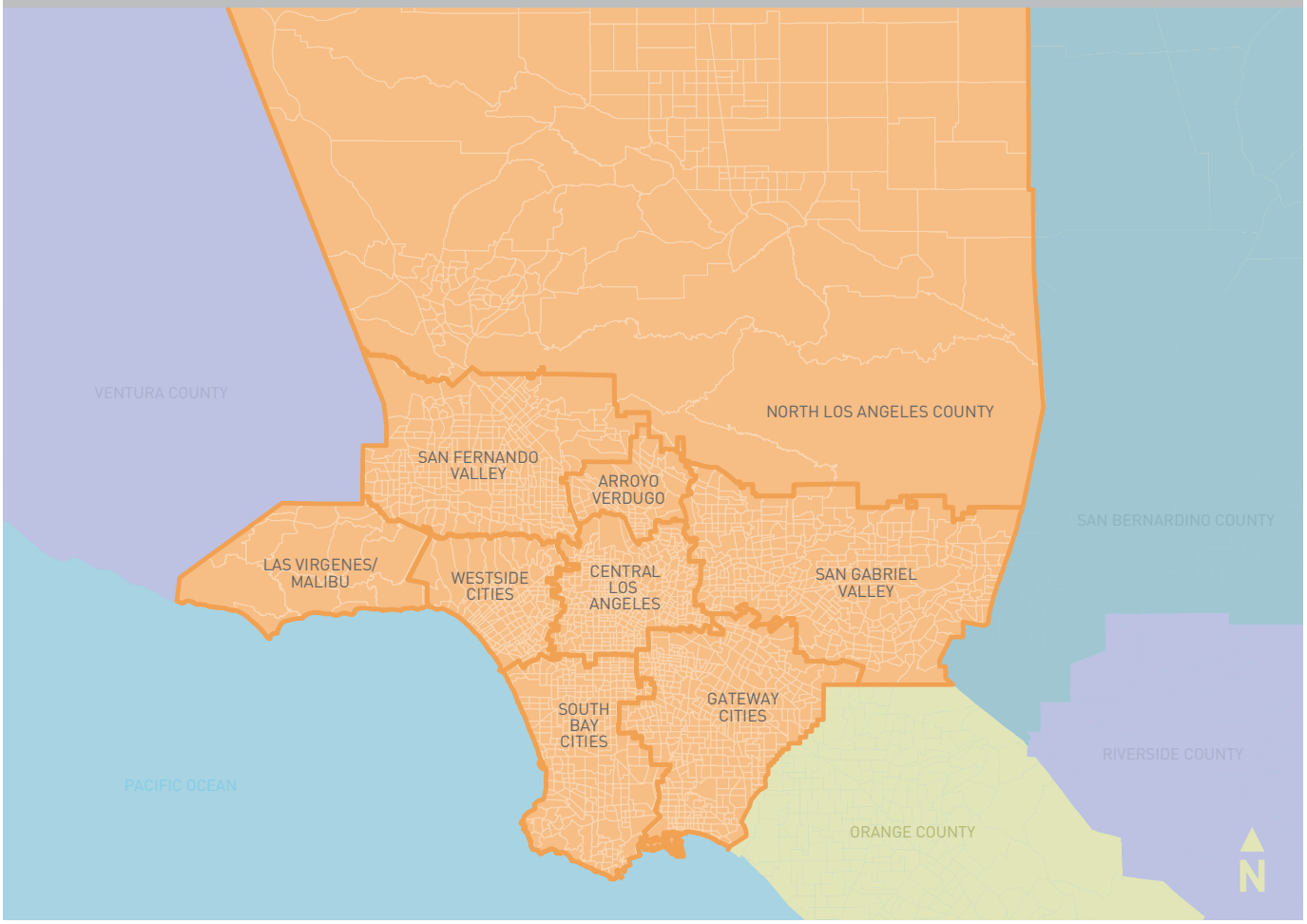


FIGURE 5.4

Model Validation Data

Model Component	Input Data	Data Source	Output Data
Urban Activity	General Plans, Population, Employment, Licensed Drivers	Municipalities, Census Bureau, Bureau of Labor Statistics, Dept. of Economic Development	Population, Employment, household demographic data by Zone
Highway & Transit Networks	Highway facilities, Transit services	Caltrans, Municipalities, Transit Operators	Zone-to-zone travel time and cost by time period
Trip Generation	Population, employment, household demographics	Southern California Association of Governments	Trip productions and attractions by zone
Trip Distribution	Trip productions and attractions by Zone & Zone-to-zone travel time	Southern California Association of Governments	Zone-to-zone trip volumes by purpose
Mode Choice	Zone-to-zone trip volumes, Zone-to-zone travel time, Zone demographic data, Parking costs, Fuel/auto operating costs, Transit fares	Trip Distribution Model, Transportation Networks, Urban Activity Model, Parking Posted Rate, Surveys Transit Operators	Zone-to-zone trips by purpose and mode of travel
Network Assignment	Transportation Networks, Zone-to-zone trips by purpose and mode	Transportation Networks, Mode Choice Model	Volumes on highway facilities and patronage on transit services

> The growth and distribution in population, employment, income, and vehicle ownership will occur in accordance with the projection adopted by SCAG in 2004;
> The per-mile vehicle operating cost will not change in constant dollars (i.e., changes in fuel prices and fuel economy offset one another but rise with inflation);
> The November 2003 transit fare structure was fully implemented and the regular inflationary adjustments will be made;
> Parking costs will rise with inflation and the location and application of parking costs will not change significantly from today (that is, the location of free versus pay parking and employer subsidies);
> The need or distribution of travel will not change dramatically due to a major movement to a round-the-clock business day or a major displacement of work trips by telecommuting; and,
> The current highway and transit levels-of-service will not change dramatically from today (except for planned system improvements and the projected congestion effects) due to potential large scale Intelligent Transportation System implementation.

Alternatives Modeled

Four model runs were conducted for the 2009 Plan. These include:

1. 2001 Existing (and Calibration Year);
2. 2004 Base (and Validation Year);
3. No Build (2040) – the 2040 demand on the base condition (2004), assuming implementation of no further projects; and
4. 2009 Plan (2040) – the 2040 demand on the transportation system adopted in this Plan.

Figures 5.5 and 5.6 summarize and illustrate the highway and transit projects that comprise the 2009 Plan. Several of the highway and transit projects in the 2009 Plan have opened since the 2004 base year model and are noted as such in Figures 5.5A and 5.6A. Each run assumes all of the projects from the previous runs.

Model Inputs

The basic inputs to a travel demand simulation model include socioeconomic data and the transportation networks (both highway and transit). This section describes the socioeconomic data and the network information used in the Model for the 2009 Plan.

FIGURE 5.5

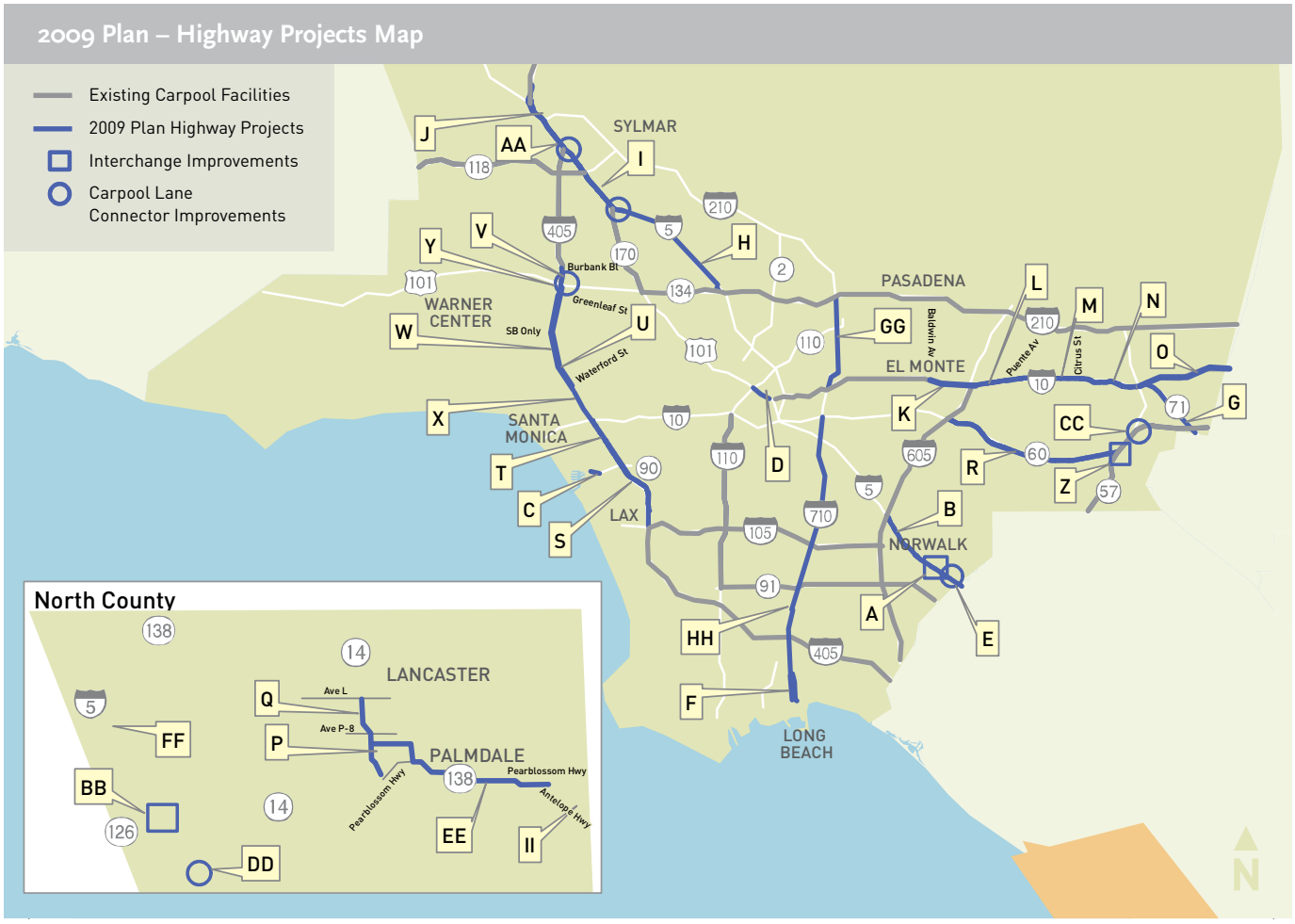


FIGURE 5.5A

2009 Plan – Highway Projects List

Map Label	Project Type	Description/Limits
A	Freeway Widening/Upgrade	I-5 at Carmenita Road Interchange Improvement
B	Freeway Widening/HOV Lane	I-5: I-605 to OC Line (widen from 3MF to 4MF+1HOV)
C	Freeway	SR-90 Freeway Extension to Mindanao Way (4MF)
D	Freeway Upgrade	US-101 Fwy and Ramp Realignment at Center St
E	Freeway Upgrade	I-5 at Valley View Interchange Improvement
F	Freeway Upgrade	I-710: PCH to Downtown Long Beach
G	Freeway Upgrade	SR-71: I-10 to Rio Rancho Rd (widen from 2 lanes to 2MF+1HOV)
H	HOV Lane	I-5: SR-134 to SR-170 w/ Empire (widen from 4MF to 4MF+1HOV)
I	HOV Lane	I-5: SR-170 to SR-118 (widen from 5MF to 5MF+1HOV)
J	HOV Lane	I-5: SR-118 to SR-14
		SR-118 to Mission Blvd (widen from 4MF to 4MF+1HOV)
		Mission Blvd to I-405 (widen from 3MF to 3MF+1HOV)
		I-405 to SR-14 (widen from 5MF to 5MF+1HOV)
K	HOV Lane	I-10: Baldwin Ave to I-605 (completed since FY04) (widen from 4MF to 4MF+1HOV)
L	HOV Lane	I-10: I-605 to Puente Ave (widen from 4MF to 4MF+1HOV)
M	HOV Lane	I-10: Puente Ave to Citrus St (widen from 4MF to 4MF+1HOV)
N	HOV Lane	I-10: Citrus St to SR-57 (widen from 4MF to 4MF+1HOV)
O	HOV Lane	I-10: SR-57 to SB Co Line (completed since FY04) (widen from 4MF to 4MF+1HOV)
P	HOV Lane	SR-14: Pearblossom Hwy to Ave P-8 (widen from 2MF to 2MF+1HOV)
Q	HOV Lane	SR-14: Ave P-8 to Ave L
		Ave P-8 to Ave M (widen from 3MF to 3MF+1HOV)
		Ave M to Ave L (widen from 2MF to 2MF+1HOV)
R	HOV Lane	SR-60: I-605 to Brea Canyon Rd (widen from 4MF to 4MF+1HOV)
S	HOV Lane	I-405: I-105 to SR-90
		I-105 to La Tijera Blvd (widen from 4MF to 4MF+1HOV)
		La Tijera Blvd to Howard Hughes Pkwy (widen from 5MF to 5MF+1HOV NB and 4MF to 4MF+1HOV SB)
		Howard Hughes Pkwy to SR-90 (widen from 5MF to 5MF+1HOV)
T	HOV Lane	I-405: SR-90 to I-10 (widen from 4MF to 4MF+1HOV)
U	HOV Lane	I-405 (NB): I-10 to US-101 Phase I
		I-10 to Pico Blvd (widen from 5MF to 5MF+1HOV)
		Pico Blvd to Santa Monica Blvd (widen from 4MF to 4MF+1HOV)
		Santa Monica Blvd to Mulholland Dr (widen from 5MF to 5MF+1HOV)
		Mulholland Dr to US-101 (widen from 4 MF to 4MF+1HOV)
V	HOV Lane	I-405 (NB): Greenleaf to Burbank (widen from 4MF to 4MF+1HOV)
W	HOV Lane	I-405 (SB):US-101 to Waterford (widen from 4MF to 4MF+1HOV)
X	HOV Lane	I-405 (SB): Waterford St to I-10
		Waterford St to Pico Blvd (widen from 4MF to 4MF+1HOV)
		Pico Blvd to I-10 (widen from 5MF to 5MF+1HOV)
Y	Mixed Flow Connector	I-405/US-101 Widening (completed since FY04)
Y	Mixed Flow Connector	I-405/US-101 Connector Gap Closure
Z	Mixed Flow Connector	SR-57/SR-60 (Mixed Flow Interchange Improvement)
AA	Mixed Flow Connector	I-5/I-405 (Partial connector south to north)
BB	Mixed Flow Connector	I-5/SR-126 Interchange (Magic Mtn Pkwy) Phase III
CC	HOV Connectors	SR-57 and SR-60
DD	HOV Connectors	I-5/SR-14 (N to/from S)
EE	Street Widening	SR-138: widen from 2 to 4 lanes from 60th St to Ave T
	Street Widening	SR-138: widen from 2 to 4 lanes from 77th St to 89th St
	Street Widening	SR-138: widen from 2 to 4 lanes from 96th St to 106th St
	Street Widening	SR-138: widen from 2 to 4 lanes from 126th St to Longview
	Street Widening	SR-138: widen from 2 to 4 lanes from Longview to 146th St
	Street Widening	SR-138: widen from 2 to 4 lanes from 146th St to 165th St
	Street Widening	SR-138: widen from 2 to 4 lanes from 175th St to Largo Vista
FF	Freeway Improvment and Gap Closures	I-5 North Capacity Enhancements Phase I – from SR 14 to Pico Cyn Phase II – from Pico Cyn to Parker Rd Phase III – from Parker Rd to Kern County

FIGURE 5.5A CONTINUED

2009 Plan – Highway Projects List		
Map Label	**Project Type**	**Description/Limits**
GG	Freeway Improvement and Gap Closures	SR-710 North Extension (tunnel) alignment TBD
HH	Freeway Improvement and Gap Closures	I-710 South and/or Early Action Projects
II	Freeway Improvement and Gap Closures	High Desert Corridor
The following projects are not depicted on Figure 5.5		
	Soundwalls	Phase I
	Street Upgrade	Sepulveda Blvd: provide 6 full-time lanes from Lincoln to Manchester
	Street Widening	Centinela Av: widen from 6 to 8 lanes from Washington to Short
	Street Widening	Aviation Bl: widen from 4 to 6 lanes from Marine to 33rd St
	Street Widening	Arbor Vitae St: widen from 4 to 8 lanes from La Brea to I-405
	Street Widening	Ave G: widen from 4 to 8 lanes from Rte 14 to 25th St W
	Street Widening	Overland Av: widen from 2 to 4 lanes from Palms to Washington
	Street Widening	Fremont Av: widen from 6 to 8 lanes from Valley to Commonwealth
	Street Widening	SR-1/Lincoln Bl: widen 1L NB (for 4NB/3SB) from La Tijera to LMU
	Street Widening	SR-1/Lincoln Bl: widen from 6 to 8 lanes from LMU to Fiji
	Street Upgrade	Nash/Douglas: convert to 2-way operation from El Segundo to Imperial
	Street Widening	Ave S: widen from 2 to 4 lanes from SR-14 to Ave 25
	Street Widening	National Bl: widen 1L EB/WB (for 3EB/4WB) from Sawtelle to Sepulveda
	Street Upgrade	Sepulveda Bl: add reversible center lane from Mulholland to Wilshire
	Street Widening	Alameda St/Spring St: widen from 4 to 6 lanes from Arcadia to LA River
	Street Widening	Arbor Vitae St: widen from 4 to 6 lanes from La Cienega to Airport
	Street Widening	Commercial St: widen from 2 to 4 lanes from Alameda to Center
	Street Widening	Beverly Bl: widen from 4 to 6 lanes from Montebello to Rio Hondo River
	New Street	Cross-Valley Connector: 8 lanes from Newhall Ranch to Copper Hill
	Street Widening	Magnolia Bl: widen from 2 to 4 lanes from Cahuenga to Vineland
	Street Widening	Anaheim St: widen from 4 to 6 lanes from Farragut to Dominguez Channel
	Street Widening	Santa Monica Bl N: widen 1L WB (for 2EB/3WB) from Doheny to Wilshire
	Street Widening	Moorpark Av: widen from 2 to 4 lanes form Woodman to Murietta
	Street Widening	Burbank Bl: widen from 2 to 4 lanes from Lankershim to Cleon
	Street Widening	Cherry Av: widen from 2 to 4 lanes from 19th St to PCH
	Street Widening	San Fernando Mission Bl: widen from 2 to 4 lanes from Sepulveda to I-5

Socioeconomic Forecast

The socioeconomic input data to the Metro model are consistent with the SCAG forecast. The latest official forecast released by SCAG is the "2004 RTP" version, used to develop the 2004 Regional Transportation Plan adopted by the Regional Council. Population and employment are the main socioeconomic input to a travel demand model. The socioeconomic forecasts for 2040 were developed by extrapolating from the 2003 and 2030 data sets at the zonal level. These forecasts are consistent with the SCAG forecast.

Population Forecasts

The analysis of population growth was conducted regionally by county and at the subregional level for Los Angeles County. Figure 5.7A shows that Los Angeles County's population is expected to grow by 33 percent from 9.8 million in 2004 to 13.1 million in 2040. The region's population is expected to grow by 44 percent during that period, from 17 million in 2004 to 24.6 million in 2040. Los Angeles County's share of the regional population is estimated to decrease from 58 percent in 2004 to 53 percent in 2040.

Figure 5.7B depicts population growth in the subregions in Los Angeles County. In 2004, the Gateway Cities was the most populous subregion with 2 million residents. In 2040, the San Gabriel Valley is expected to be the most populous subregion with 2.5 million residents. North Los Angeles County is expected to experience the most population growth, growing by 139 percent.

Employment Forecasts

Figure 5.8A shows that Los Angeles County's employment is expected to grow by 33 percent from 4.6 million in 2004 to 6.1 million in 2040. The region's employment is expected to grow by 48 percent during that period, from 7.7 million in 2004 to 11.4 million in 2040. Los Angeles County's share of the regional employment is estimated to decrease from 59 percent in 2004 to 53 percent in 2040.

Figure 5.8B depicts employment growth in the subregions in Los Angeles County. In 2004, Central Los Angeles had the most jobs, 900,000. In 2040, Central Los Angeles is expected to continue to have the most employment with

FIGURE 5.6

2009 Plan – Transit Projects Map

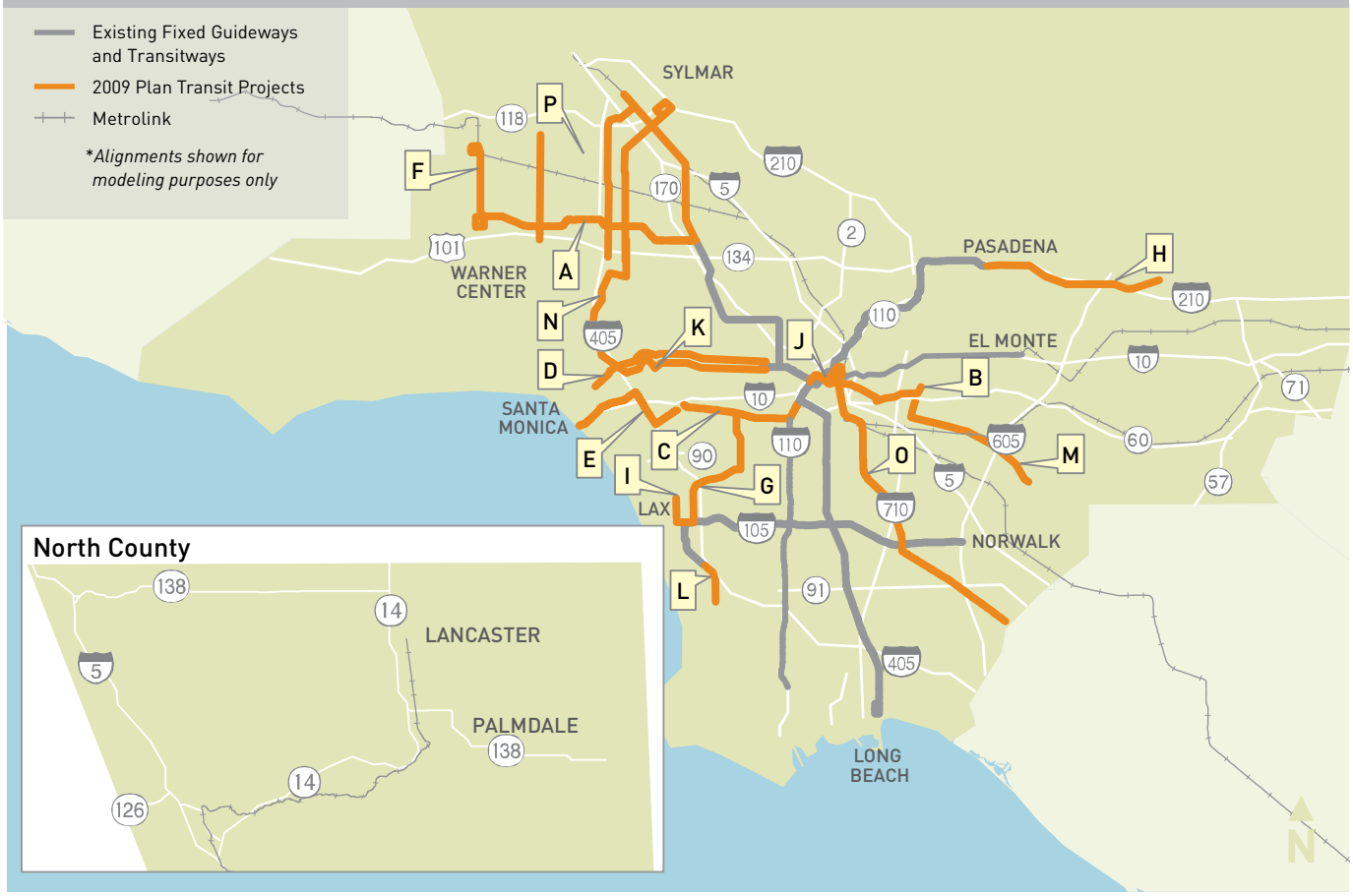


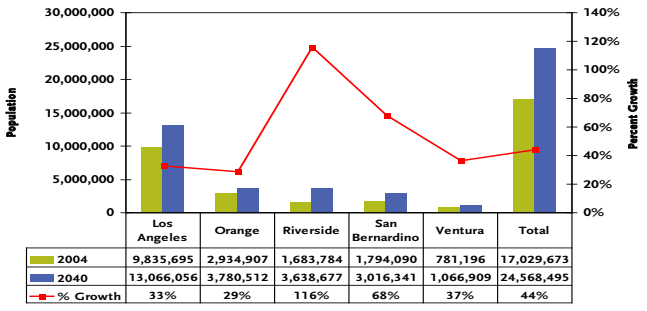
FIGURE 5.6A

2009 Plan – Transit Projects List

Map Label	Project Type	Description/Limits
A	Bus Rapid Transit	Metro Orange Line (completed since FY04)
B	Light Rail Transit	Metro Gold Line Eastside
C	Light Rail Transit	Exposition LRT Phase I to Culver City
D	Bus Rapid Transit	Wilshire Boulevard BRT
E	Light Rail Transit	Exposition LRT Phase II to Santa Monica
F	Bus Rapid Transit	San Fernando Valley North-South Metro Orange Line Extension
G	Fixed Guideway	Crenshaw Corridor (Technology to be determined)
H	Transit Corridors	Metro Gold Line Foothill Extension
I	Transit Corridors	Metro Green Line LRT Extension to LAX *(Aviation/Century Bl to Lot C)*
J	Transit Corridors	Regional Connector
K	Transit Corridors	Westside Subway Extension (Metro Purple Line) Segment 1 to Fairfax Segment 2 to Century City Segment 3 to Westwood
L	Transit Corridors	South Bay Metro Green Line Extension *(Redondo Beach Bl to South Bay Corridor)*
M	Transit Corridors	Metro Gold Line Eastside Transit Corridor Phase 2
N	Transit Corridors	San Fernando Valley I-405 Corridor Connection *(modeled as BRT)*
O	Transit Corridors	West Santa Ana Branch ROW Corridor
P	Transit Corridors	San Fernando Valley East North-South Rapidways

FIGURE 5.7A

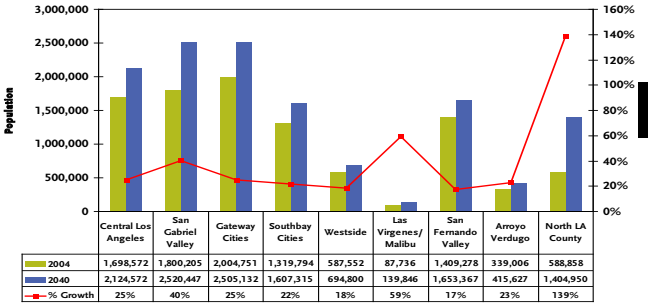
Population Growth by County (2004-2040)



	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total
2004	9,835,695	2,934,907	1,683,784	1,794,090	781,196	17,029,673
2040	13,066,056	3,780,512	3,638,677	3,016,341	1,066,909	24,568,495
% Growth	33%	29%	116%	68%	37%	44%

FIGURE 5.7B

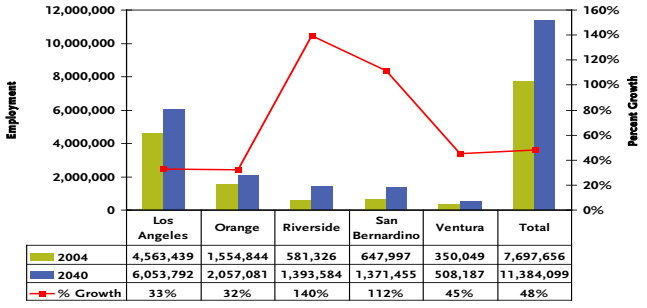
Population Growth by Subregion (2004-2040)



	Central Los Angeles	San Gabriel Valley	Gateway Cities	Southbay Cities	Westside	Las Virgenes/ Malibu	San Fernando Valley	Arroyo Verdugo	North LA County
2004	1,698,572	1,800,205	2,004,751	1,319,794	587,552	87,736	1,409,278	339,006	588,858
2040	2,124,572	2,520,447	2,505,132	1,607,315	694,800	139,846	1,653,367	415,627	1,404,950
% Growth	25%	40%	25%	22%	18%	59%	17%	23%	139%

FIGURE 5.8A

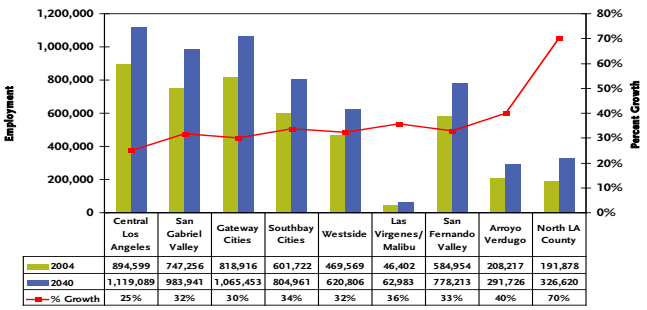
Employment Growth by County (2004-2040)



	Los Angeles	Orange	Riverside	San Bernardino	Ventura	Total
2004	4,563,439	1,554,844	581,326	647,997	350,049	7,697,656
2040	6,053,792	2,057,081	1,393,584	1,371,455	508,187	11,384,099
% Growth	33%	32%	140%	112%	45%	48%

FIGURE 5.8B

Employment Growth by Subregion (2004-2040)



	Central Los Angeles	San Gabriel Valley	Gateway Cities	Southbay Cities	Westside	Las Virgenes/ Malibu	San Fernando Valley	Arroyo Verdugo	North LA County
2004	894,599	747,256	818,916	601,722	469,569	46,402	584,954	208,217	191,878
2040	1,119,089	983,941	1,065,453	804,961	620,806	62,983	778,213	291,726	326,620
% Growth	25%	32%	30%	34%	32%	36%	33%	40%	70%

1.1 million jobs. North Los Angeles County is expected to experience the most employment growth, growing by 70 percent.

Transportation Networks

The transportation networks in the 2004 Model were updated from representing 2001 conditions to 2004 conditions. Networks representing year 2040 with 2009 Plan improvements were also developed.

2004 Base Year Conditions

Figure 5.9 depicts the highway links included in the computer network file representing the year 2004 highway network. The network consists of 20,971 nodes and 66,257 links. They cover all freeways as well as major, primary and secondary arterials within the five-county modeling area.

A summary of the 2004 highway network by facility type for each subregion is provided in Figure 5.10. Countywide, a total of 21,100 lane-miles of roadway are represented in the network. Among them, 4,550 lane-miles, or 21 percent are freeway. The San Gabriel Valley subregion has the highest amount of freeway lane-miles while the Gateway Cities subregion has the highest concentration of arterial facilities.

2004 transit service was coded in the computer network to reflect the conditions existing at that time. In Los Angeles County, this included approximately 462,000 route-miles of bus service, 14,000 route-miles of Metro Rail service, and about 8,000 route-miles of commuter rail service in the region.

2009 Plan (2040 Future Year)

The 2009 Plan includes highway and transit improvement projects listed in Figures 5.5A and 5.6A. These projects are assumed to be completed by 2040. The 2004 Base Year highway network and transit network were modified to reflect the completion of these projects.

The highway projects included in the 2009 Plan will add 850 lane-miles of freeways and 600 lane-miles of new/upgraded arterials. Combined, they represent a 19 percent increase in freeway lane-miles and four percent increase in arterial lane-miles in Los Angeles County.

In addition, the 2009 Plan will add substantial transit infrastructure to the network.

The 2040 transit service was coded in the computer network to reflect the future planned transit network. In Los Angeles County, this included approximately 543,000 route-miles of bus service, 44,000 route-miles of Metro Rail service, and 20,000 route-miles of commuter rail service in the region. These increases over 2004 represent additional lines as well as increased service on existing lines.

FIGURE 5.9

2004 Highway Network

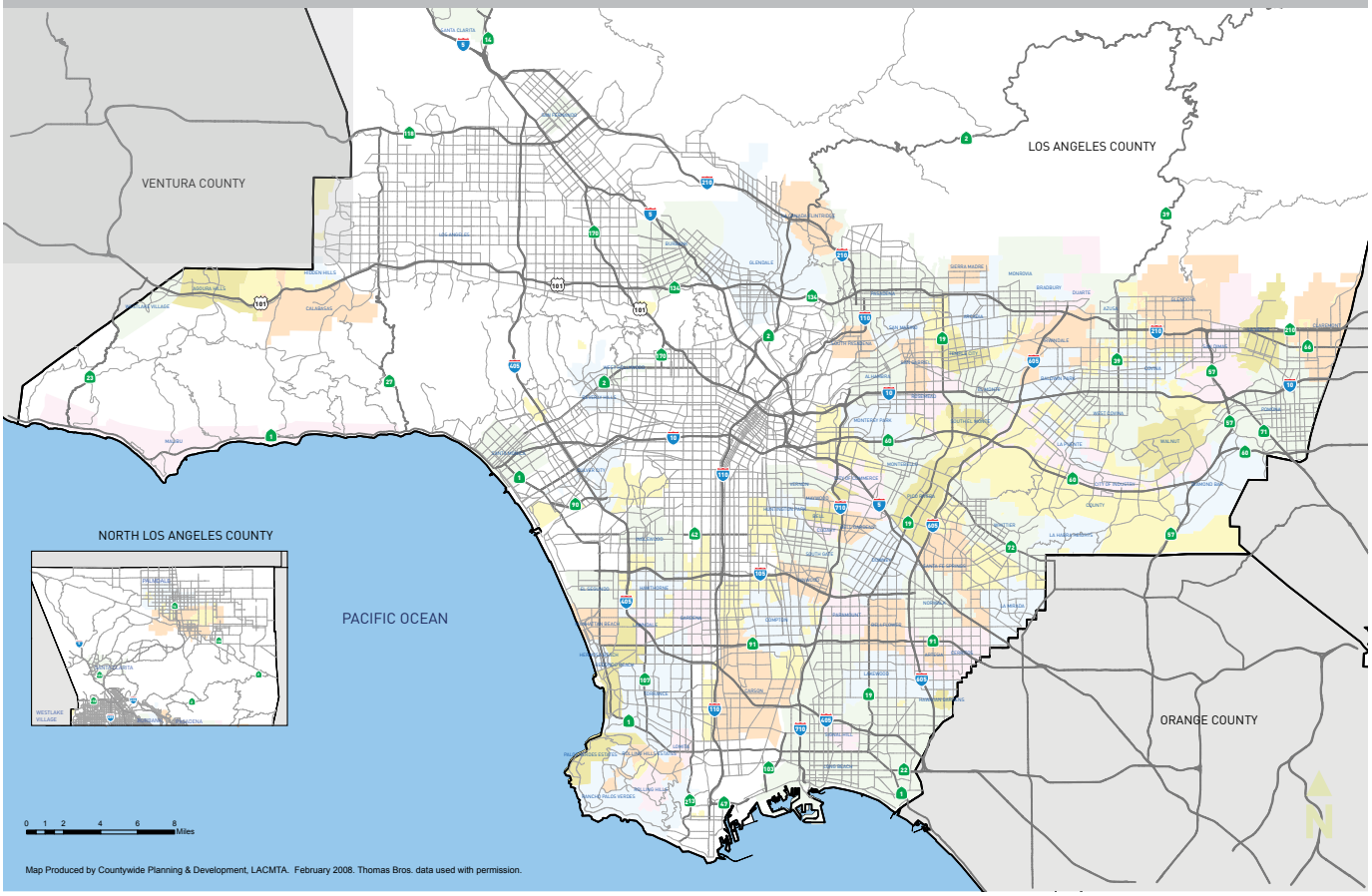


FIGURE 5.10

Summary of Highway Lane-Miles by Facility Type and Subregion in Los Angeles County (2004 and 2040)

	2004			2040		
Subregion	**Freeway**	**Arterial**	**Total**	**Freeway**	**Arterial**	**Total**
Arroyo Verdugo	182	454	636	188	454	642
Central Los Angeles	559	1,973	2,532	648	1,976	2,624
Gateway Cities	712	2,935	3,647	834	2,974	3,808
Las Virgenes/Malibu	85	299	384	104	338	442
North LA County	642	2,630	3,272	854	3,072	3,926
San Fernando Valley	722	2,350	3,072	819	2,358	3,177
San Gabriel Valley	1,008	2,739	3,747	1,262	2,722	4,014
Southbay Cities	454	2,448	2,702	461	2,270	2,731
Westside	182	934	1,116	227	965	1,192
Total	**4,546**	**16,562**	**21,108**	**5,397**	**17,159**	**22,556**

	2004			2040		
County	**Freeway**	**Arterial**	**Total**	**Freeway**	**Arterial**	**Total**
Los Angeles	4,546	16,562	21,108	5,397	17,159	22,556
Orange	830	4,639	5,469	930	4,710	5,640
Riverside	1,280	4,670	5,950	1,560	4,857	6,417
San Bernardino	1,840	6,499	8,339	2,094	6,767	8,861
Ventura	248	1,745	1,993	268	1,774	2,042
Imperial	371	968	1,339	386	998	1,384
Total	**9,115**	**35,083**	**44,196**	**10,635**	**36,265**	**46,900**

Model Outputs

The basic outputs from a travel demand simulation model include trip productions and attractions, trip tables between TAZs, trip tables by mode, and trip assignments. This section describes the outputs of the Model for the 2009 Plan.

Trip Generation

Trip generation is the process of estimating how many daily person trips are generated by households within each TAZ. SCAG's trip generation model generates trips for the following thirteen (13) purposes:

1. Home-Based Work Direct – Low-Income
2. Home-Based Work Direct – Middle-Income
3. Home-Based Work Direct – High-Income
4. Home-Based Work Strategic – Low-Income
5. Home-Based Work Strategic – Middle-Income
6. Home-Based Work Strategic – High-Income
7. Home-Based School
8. Home-Based University
9. Home-Based Shop
10. Home-Based Social/Recreation
11. Home-Based Other
12. Work-Based Other
13. Other-Based Other

Using the population and employment estimates for 2004 and 2040 as input, SCAG's trip production model and trip attraction model are applied to estimate the trips produced from and trips attracted to each TAZ.

TRIP PRODUCTIONS

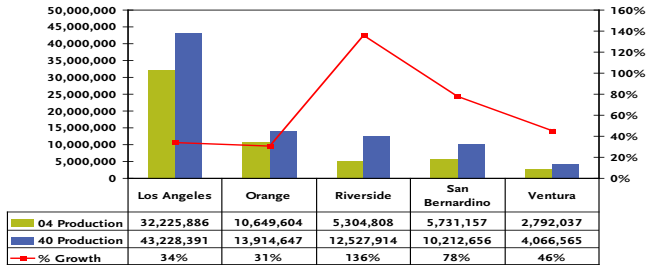
The results of trip production are summarized in Figure 5.11A. Figure 5.11A shows that productions in Los Angeles County are expected to grow by 34 percent, from 32.2 million in 2004 to 43.2 million in 2040. Riverside County is expected to experience the highest growth at 136 percent. Figure 5.11B illustrates the growth by subregions in Los Angeles County. North County is expected to experience the highest growth in trip productions at 135 percent while the San Gabriel Valley is expected to produce the largest number of trips, at 8 million.

TRIP ATTRACTIONS

The results of trip attraction are summarized in Figure 5.12A. Figure 5.12A shows that Los Angeles County is expected to be the largest trip attractor in the region in 2040, with 43.4 million trips, a growth of 32 percent over 2004. Riverside County is expected to experience the highest growth at 140 percent. Figure 5.12B illustrates the growth by subregions in Los Angeles County. North County is expected to experience the highest growth in trip attractions at 99 percent while the Gateway Cities subregion is expected to attract the largest number of trips, at 7.4 million.

FIGURE 5.11A

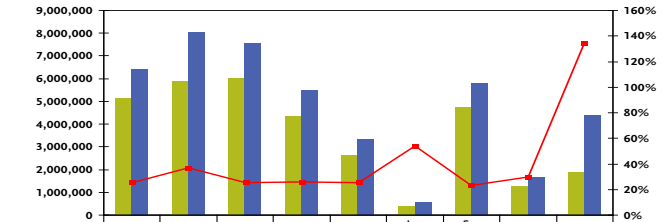
Total Daily Trip Production by County (2004-2040)



	Los Angeles	Orange	Riverside	San Bernardino	Ventura
04 Production	32,225,886	10,649,604	5,304,808	5,731,157	2,792,037
40 Production	43,228,391	13,914,647	12,527,914	10,212,656	4,066,565
% Growth	34%	31%	136%	78%	46%

FIGURE 5.11B

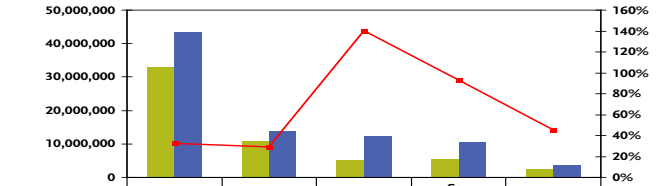
Total Daily Trip Production by Subregion (2004-2040)



	Central Los Angeles	San Gabriel Valley	Gateway Cities	Southbay Cities	Westside	Las Virgenes/ Malibu	San Fernando Valley	Arroyo Verdugo	North LA County
04 Production	5,122,846	5,880,489	6,022,847	4,344,235	2,648,524	367,887	4,703,149	1,262,884	1,873,025
40 Production	6,428,501	8,042,862	7,565,103	5,478,778	3,324,479	566,344	5,787,771	1,636,458	4,398,096
% Growth	25%	37%	26%	26%	26%	54%	23%	30%	135%

FIGURE 5.12A

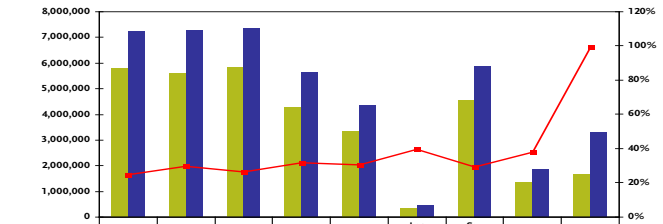
Total Daily Trip Attraction by County (2004-2040)



	Los Angeles	Orange	Riverside	San Bernardino	Ventura
04 Attraction	32,746,550	10,759,889	5,141,040	5,453,791	2,602,222
40 Attraction	43,383,972	13,914,902	12,347,639	10,518,924	3,784,736
% Growth	32%	29%	140%	93%	45%

FIGURE 5.12B

Total Daily Trip Attraction by Subregion (2004-2040)



	Central Los Angeles	San Gabriel Valley	Gateway Cities	Southbay Cities	Westside	Las Virgenes/M alibu	San Fernando Valley	Arroyo Verdugo	North LA County
04 Attraction	5,803,113	5,610,734	5,827,474	4,267,976	3,353,397	331,485	4,546,654	1,355,610	1,650,106
40 Attraction	7,234,967	7,278,356	7,364,220	5,629,986	4,378,581	462,264	5,876,320	1,869,920	3,289,357
% Growth	25%	30%	26%	32%	31%	39%	29%	38%	99%

Trip Distribution

Trip distribution is the process where person trip productions (for each TAZ) are linked to specific attraction TAZs, thereby creating a "trip table" of trip interchanges between TAZs. The SCAG trip distribution model created trip tables for 2001 and 2030. Those trip tables were interpolated to create the 2004 trip tables and extrapolated to create the 2040 trip tables.

HOME-BASED WORK TRAVEL PATTERNS IN YEARS 2004 & 2040

Figure 5.13A summarizes the trip production patterns for 2004 daily peak period home-based work trips in each subregion of Los Angeles County. The large pie in the lower left corner of the Figure shows the number of home-based work trips produced by each subregion. The Gateway Cities subregion produces the largest number of home-based work trips – 806,200. The San Gabriel Valley subregion produces the next highest number at 780,000.

Figure 5.13A also displays the home-based work trip production activity within each subregion, as represented by the smaller pies. The largest interaction within each subregion occurs intra-subregion; that is, the largest percentage of home-based work trips within each subregion stays internal to that subregion. For the Gateway Cities subregion, the second highest interaction occurs with trips destined outside Los Angeles County (at 17 percent), followed by trips with the South Bay Cities (at 14 percent).

Figure 5.13B summarizes the trip production patterns for 2040 daily peak period home-based work trips, produced in each subregion of Los Angeles County. The San Gabriel Valley is expected to produce the largest number of home-based work trips – 1,098,700. The Gateway Cities subregion is expected to produce the second largest number of home-based work trips – 1,027,900. The largest interaction within each subregion occurs intra-subregion. For the San Gabriel Valley, the second highest interaction occurs with trips destined outside Los Angeles County (18 percent), followed by trips destined to the Central Los Angeles subregion (12 percent).

Figure 5.14A summarizes the daily peak period home-based work trip attractions within each subregion in year 2004. The Central Los Angeles subregion attracts the largest number of home-based work trips in the County (844,900), followed by the Gateway Cities subregion at 780,700 and San Gabriel Valley subregion at 723,900. Within Central Los Angeles, 13 percent of trips originate in the San Gabriel Valley subregion and 12 percent from the Gateway Cities subregion.

Figure 5.14B summarizes the daily peak period home-based work trip attractions within each subregion in year 2040. The Central Los Angeles subregion is expected to attract the largest number of home-based work trips in the County (1,016,700), followed closely by the Gateway Cities subregion at 977,100 and the San Gabriel Valley at 926,800. For the Central Los Angeles subregion, the second highest interaction occurs with trips expected to originate in the San Gabriel Valley (13 percent), followed by trips attracted from the Gateway Cities subregion (12 percent).

All Purposes Travel Patterns in Years 2004 & 2040

Figure 5.15A illustrates the total daily trip productions within each subregion for year 2004. The Gateway Cities subregion produces the highest number of total daily trips at 6.0 million, followed by the San Gabriel Valley subregion at 5.9 million. The largest interaction in each sugregion occurs intra-subregion.

Within the Gateway Cities subregion, 11 percent of the trips are destined outside Los Angeles County, followed by ten percent destined to the South Bay Cities.

Figure 5.15B summarizes the trip production patterns for 2040 daily trips, in each subregion of Los Angeles County. The San Gabriel Valley is expected to produce the largest number of daily trips – 8,042,900.
The Gateway Cities subregion is expected to produce the second largest number of daily trips – 7,565,100.
For the San Gabriel Valley, the second highest interaction occurs with trips destined outside Los Angeles County (11 percent), followed by trips destined to the Central Los Angeles subregion (nine percent).

Figure 5.16A illustrates the total daily trip attractions within each subregion for year 2004. The Gateway Cities subregion attracts the highest number of total daily trips, at 5.8 million, followed closely by the Central Los Angeles subregion also at 5.8 million. Within the Gateway Cities subregion, the largest number of trips originates outside Los Angeles County (12 percent).

Figure 5.16B summarizes the daily trip attractions within each subregion in year 2040. The Gateway Cities subregion is expected to attract the largest number of home-based work trips in the County (7,364,200), followed closely by the San Gabriel Valley at 7,278,400 and the Central Los Angeles subregion at 7,235,000. For the Gateway Cities subregion, the second highest interaction occurs with trips expected to originate from outside Los Angeles County (12 percent), followed by trips attracted from the South Bay Cities subregion (eight percent).

Mode Choice

The mode choice process determines the share of person trips taking various modes of transportation. The modes in the Metro Travel Demand Model are automobile and transit. The submodes under automobile include single-occupancy and high-occupancy vehicles (two-person carpools and three persons or more carpools) while the submodes under transit are bus (including local bus, rapid bus, express bus, and transitway bus) and rail (including urban rail and commuter rail).

FIGURE 5.13A

Peak Period Home to Work Trip Productions by Subregion (2004)

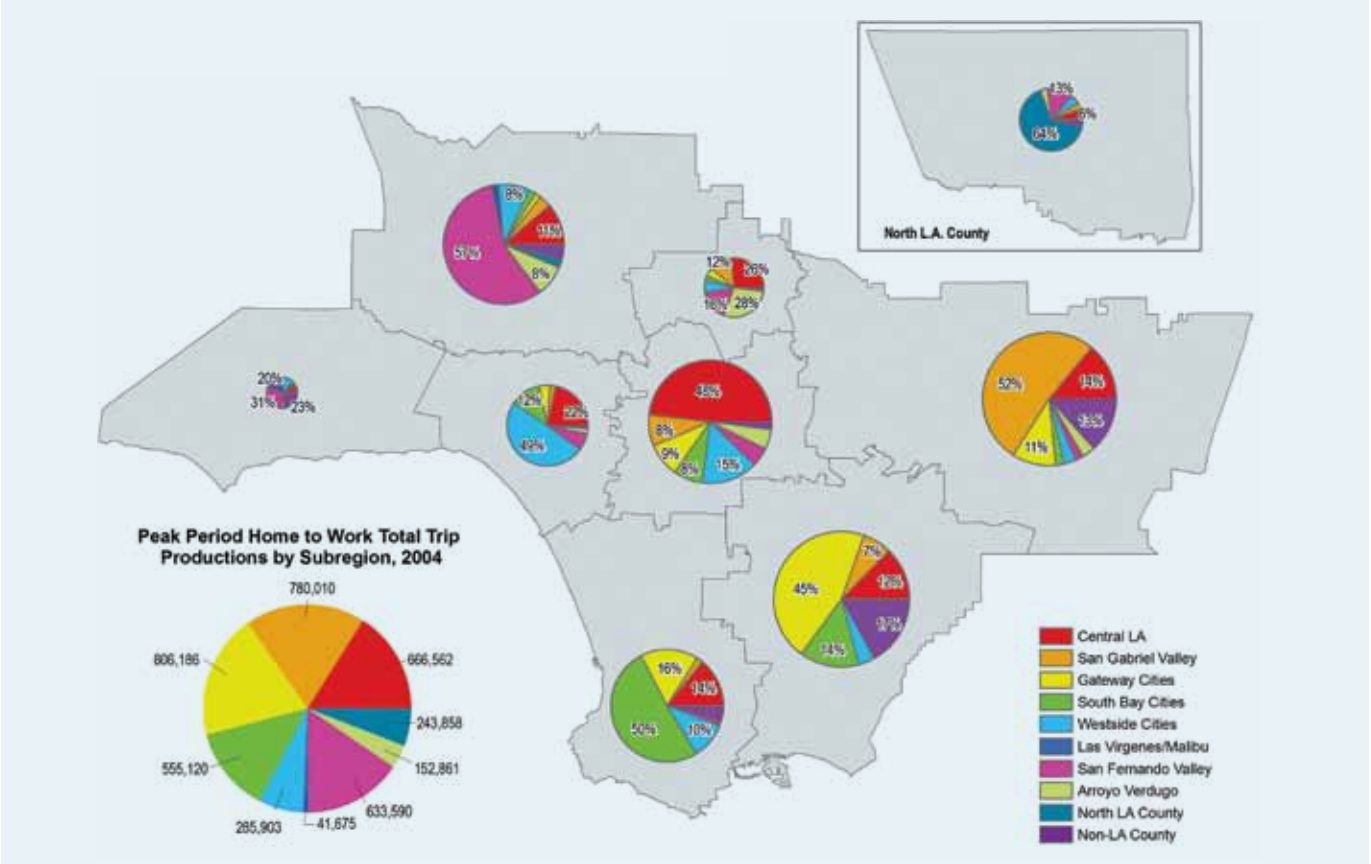


FIGURE 5.13B

Peak Period Home to Work Trip Productions by Subregion (2040)

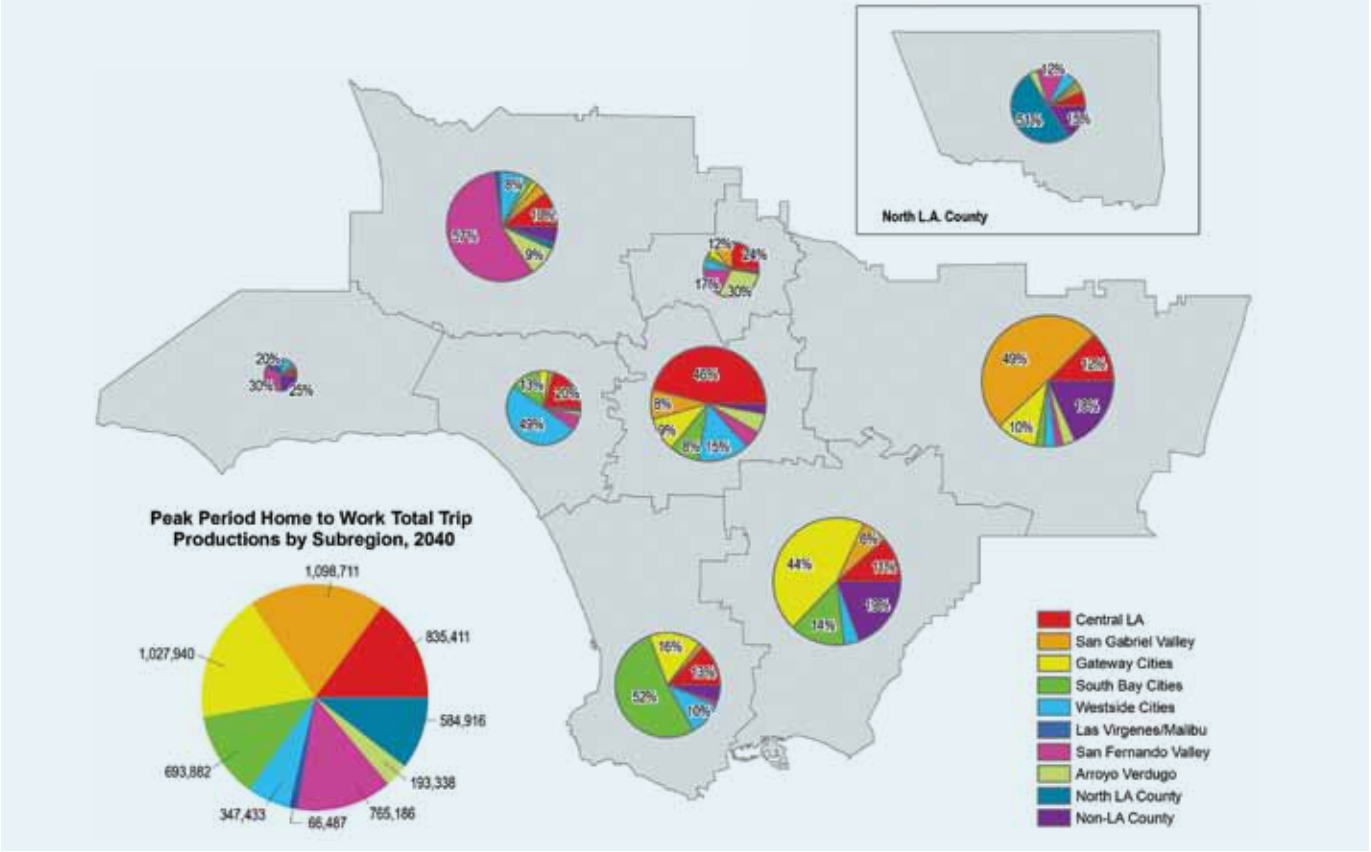


FIGURE 5.14A

Peak Period Home to Work Trip Attractions by Subregion (2004)

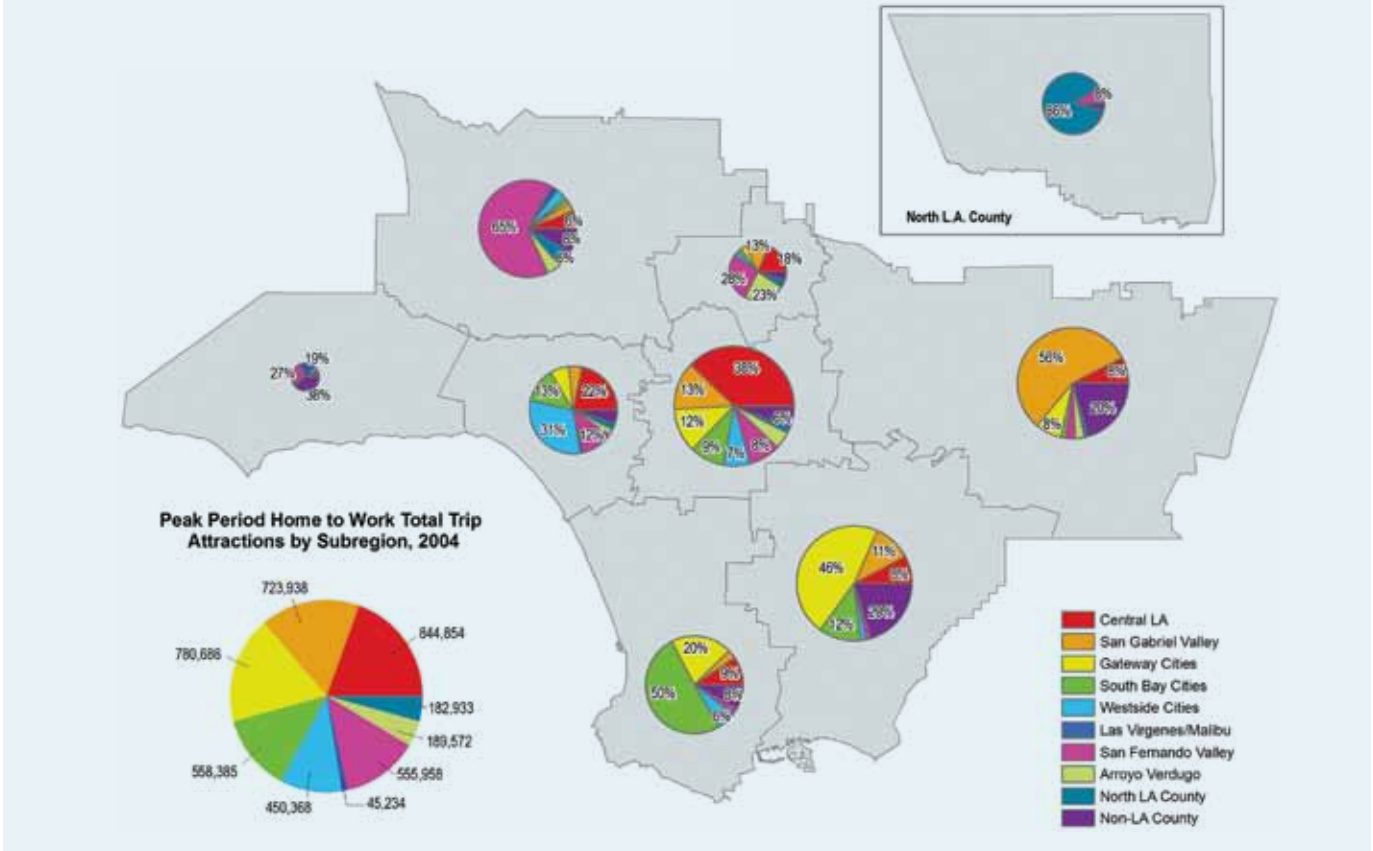


FIGURE 5.14B

Peak Period Home to Work Trip Attractions by Subregion (2040)

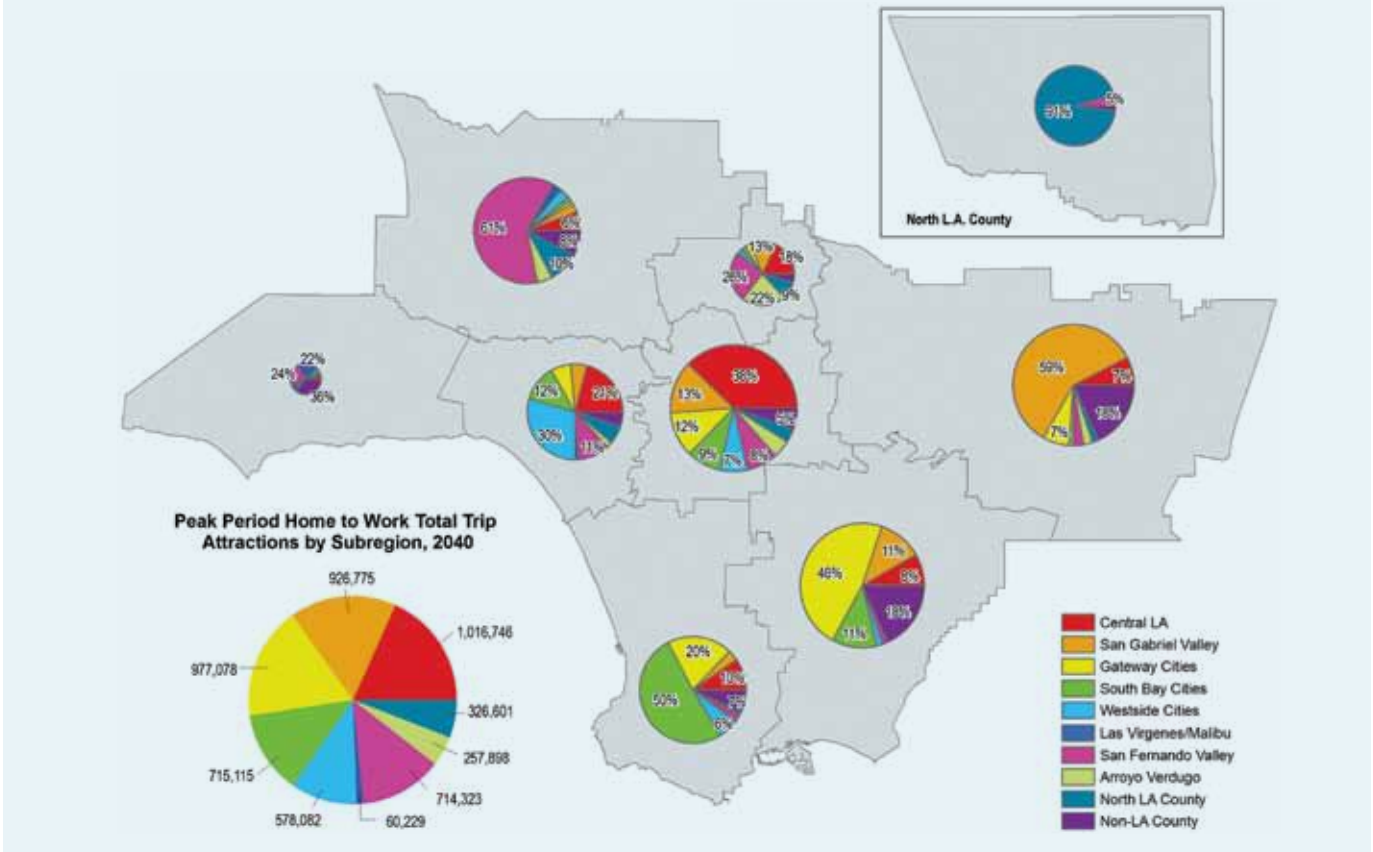


FIGURE 5.15A

Daily Trip Productions by Subregion (2004)

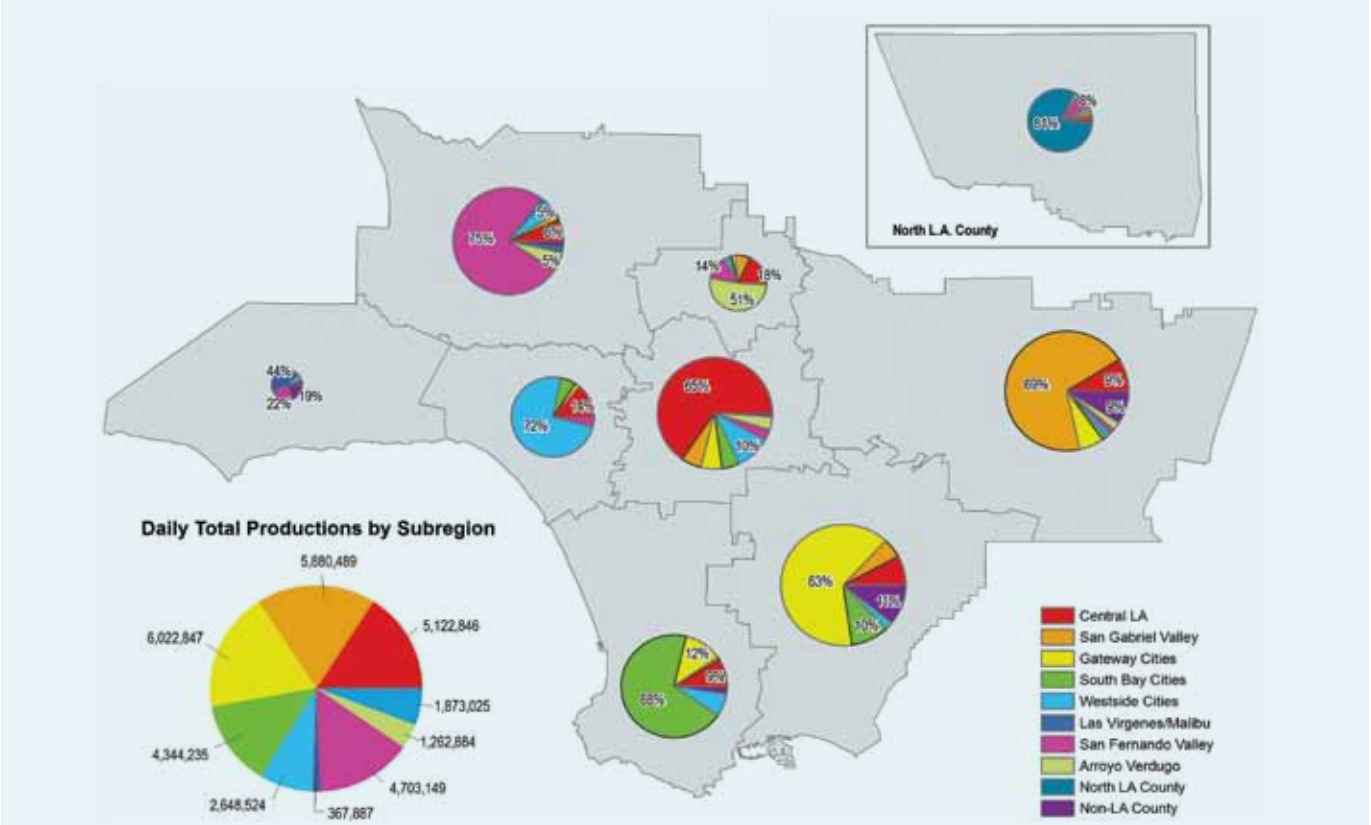


FIGURE 5.15B

Daily Trip Productions by Subregion (2040)

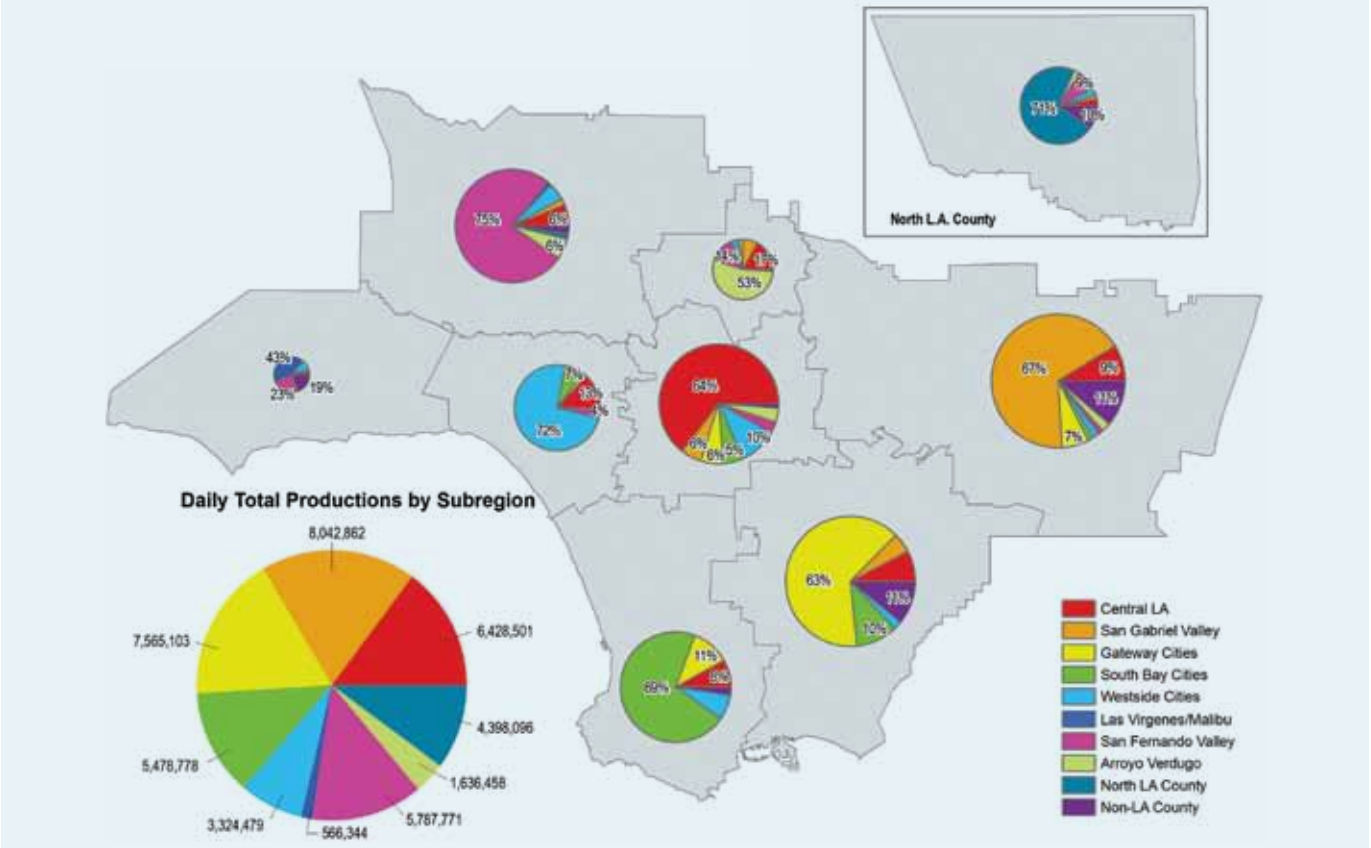


FIGURE 5.16A

Daily Trip Attractions by Subregion (2004)

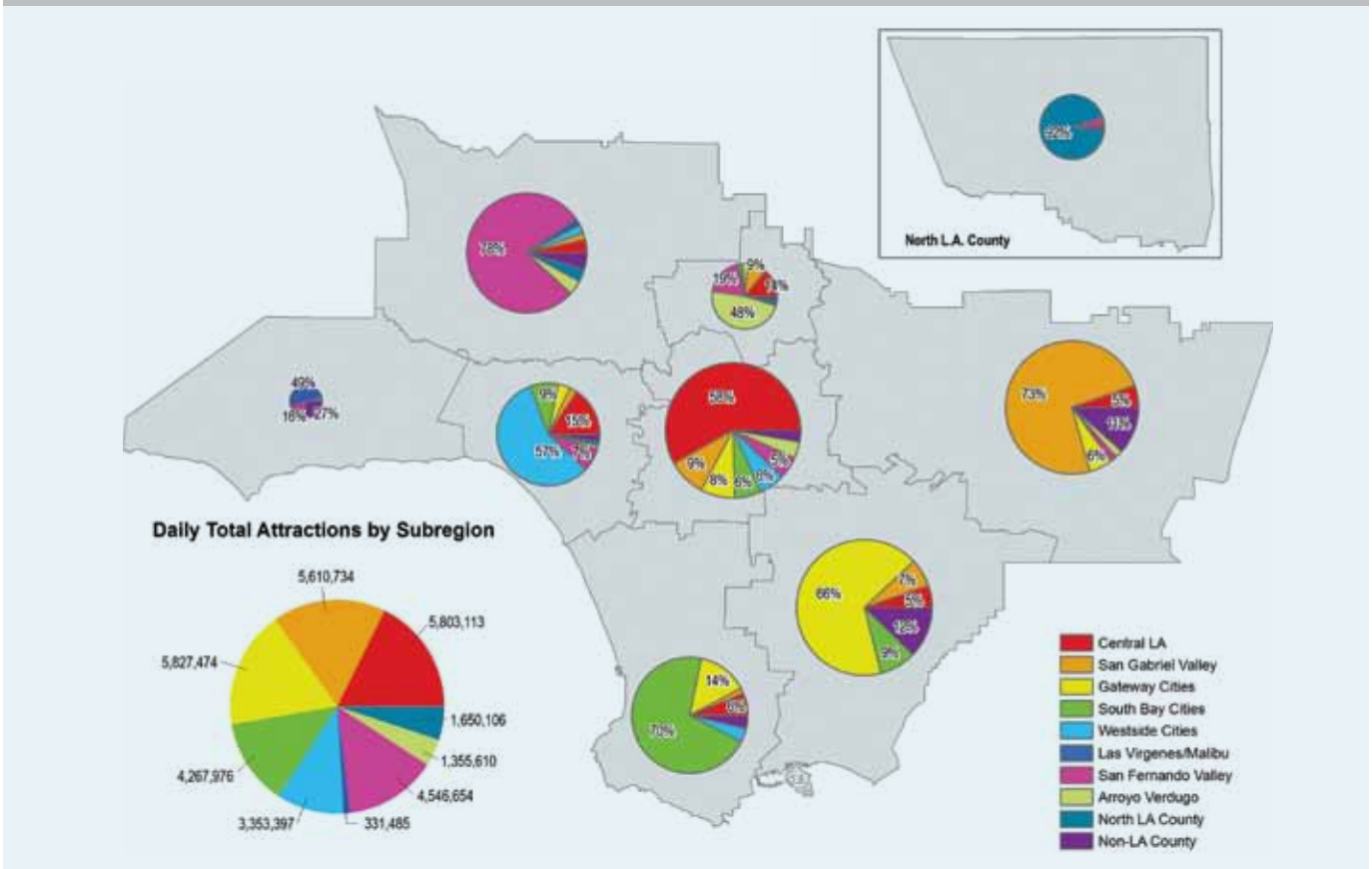
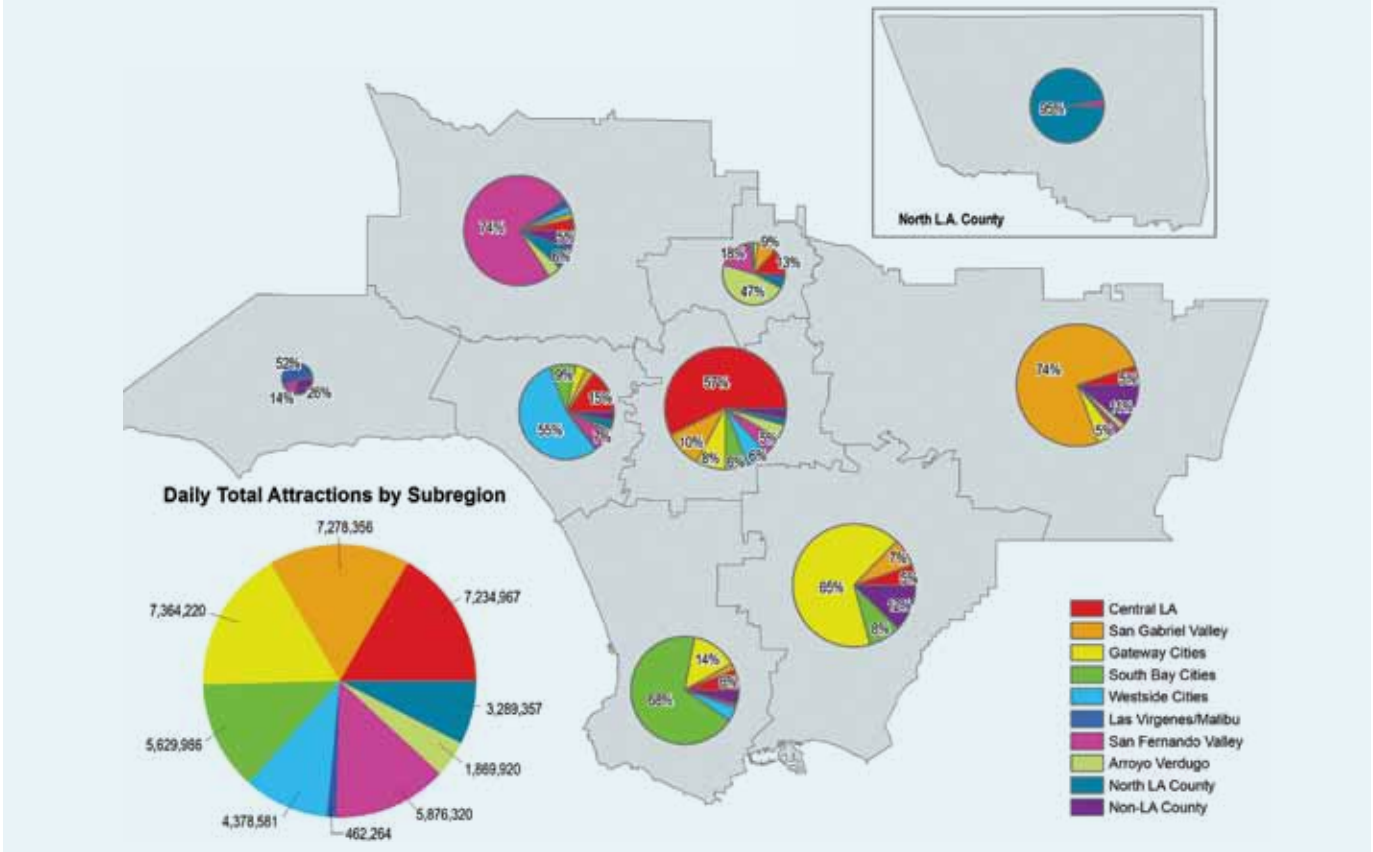


FIGURE 5.16B

Daily Trip Attractions by Subregion (2040)



Traffic Assignment

Traffic assignment is the process of loading vehicle trips onto a highway network and transit trips onto a transit network. This process produces traffic volumes and resulting congested speeds on each road segment represented in the highway network as well as passenger volumes on the transit network.

Metro uses a four time-period equilibrium highway assignment process. Separate vehicle trip tables are generated for the AM peak period, midday period, PM peak period, and night period. These trip tables are assigned to the appropriate highway network, using equilibrium assignment procedures. The assignment results were reviewed for reasonableness and minor adjustments were made when required. For fixed-guideway extensions (such as the Gold Line Eastside extension to Whittier), boardings were adjusted to include trips on the fixed-guideway facility that continue on the extended facility.

Performance Measures

Performance measures evaluate the highway and transit systems for the base year and a series of future year alternatives. This analysis is intended to determine the effectiveness of alternative transportation strategies and assist in the development of program and project recommendations.

The System measures assess the performance of the Plan as a whole and how the transportation system benefits from implementation of the Plan, as compared with the existing and No Build scenarios.

System-Level Performance

The system measures include:

> **Speed** – a measure of mobility and how the Plan improvements impact the average speed of the highway system.
> **Mobility Index** – a measure of system throughput that adjusts speed by factoring in the vehicle occupancy of automobiles and transit. The higher the index number, the more effective the transportation system in moving people.
> **Economic Efficiency** – a measure of economic returns that are expected to result from the investment package identified in this Long Range Transportation Plan program of projects.
> **Title VI Analysis** – a series of measures required by federal Title VI that assesses the Plan's impact on mobility benefits for minority and transit-dependent communities.

AM PEAK PERIOD SPEEDS

Figure 5.17A compares the peak freeway and arterial speeds between the base year (2004) and two scenarios for the forecast year of 2040 (No Build and 2009 Plan). The AM peak period speeds on the freeways are expected to deteriorate from 34.4 MPH in 2004 to 18.5 MPH in the No Build Scenario and improve to 22.3 MPH with the 2009 Plan. Arterial speeds are expected to deteriorate from 26.6 MPH in 2004 to 16.1 MPH in the No Build scenario and improve to 18.6 MPH in the 2009 Plan.

MOBILITY INDEX

The mobility index is a performance measure of the throughput of a multimodal transportation system. It takes into consideration the volume of people moved and their travel speed. It is a function of both speed and vehicle occupancy and focuses on the movement of people rather than vehicles. The higher the index, the faster the speeds and the higher the vehicle occupancies.

The formula is specified as:
Throughput = (PMT/PHT) X (PMT/VMT)
where
PMT = Person-Miles Traveled for automobile and transit modes
PHT = Person-Hours Traveled for automobile and transit modes and
VMT = Vehicle-Miles Traveled for automobile and transit modes.

Mathematically, the first half of this formula, PMT/PHT, can be expanded to represent the difference between the average personal flow speed and a weighted variance of the speed between all link pairs. PMT/PHT is equal to the average personal flow speed when the weighted variance is zero and all links have the same speed (meaning there is no variation in the speed). Since speed does not stay constant across the highway and transit networks, PMT/PHT is always lower than the average personal flow speed.

Likewise, the second half of the formula, PMT/VMT, can be expanded to represent the difference between the average vehicle occupancy and a weighted variance of the vehicle occupancy of all link pairs. Since the occupancy does not vary much from one link to the next, the weighted occupancy variance is not a large number. Thus, PMT/VMT is similar to the average vehicle occupancy.

Figure 5.17B illustrates the mobility index in Los Angeles County. The mobility index in 2004 is 48.63, dropping to 32.65 in the No Build, and increasing to 37.21 for the 2009 Plan.

ECONOMIC EFFICIENCY

Economic efficiency is a means to identify, quantify, and value the economic benefits and costs of transportation projects and programs over a multiyear timeframe.

The Benefit-Cost Ratio (BCR) evaluates transportation improvement projects and programs. The BCR considers the ratio of changes in direct user benefit (i.e., congestion relief quantified in dollars) to the changes in annually discounted capital and operating costs caused by a potential improvement to the transportation system. The higher the ratio, the greater the benefits for the given cost.

The BCR for the 2009 Plan for Los Angeles County is $3.70. For every dollar invested through the 2009 Plan, Los Angeles County should realize $3.70 in travel time savings.

TITLE VI ANALYSIS

The Title VI analysis was performed to assess the transportation impacts on distinct socioeconomic groups in Los Angeles County. The transportation impacts analyzed include:

> Job accessibility within 60 minutes via transit; and
> Mode choice by income quintile.

The distinct socioeconomic groups include:

> Transit dependent;
> African American;
> Hispanic; and
> Asian/Pacific Islander.

Using information from the 2000 Census, a transportation analysis zone (TAZ) was designated as transit-dependent if it met one or more of the following criteria:

> Zero-car ownership – 13.5 percent or more of the households do not own a car;
> Low-income – 17.6 percent or more of the households have income of $15,000 or less (in 1999 dollars); or
> Senior citizen without high car ownership – 21.7 percent or more of the households include individuals aged 65 or older, and less than 34.1 percent of households have two cars and less than 17.1 percent of households have three or more cars.

TAZs were also designated with a specific socioeconomic group, if its population exceeded the socioeconomic group's average for Los Angeles County (e.g., a TAZ with ten percent of households comprised of African Americans would be deemed an African American TAZ since that exceeded the 9.5 percent of African Americans for Los Angeles County). Figure 5.18 summarizes the ethnic population of Los Angeles County, based on the 2000 Census. Hispanics, at 44.6 percent of the population, comprise the largest minority group in the County.

FIGURE 5.17A

AM Peak Period Speeds (in MPH)

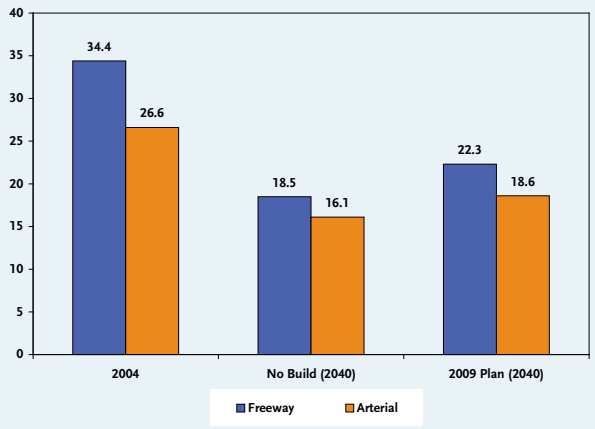


FIGURE 5.17B

Daily Mobility Index

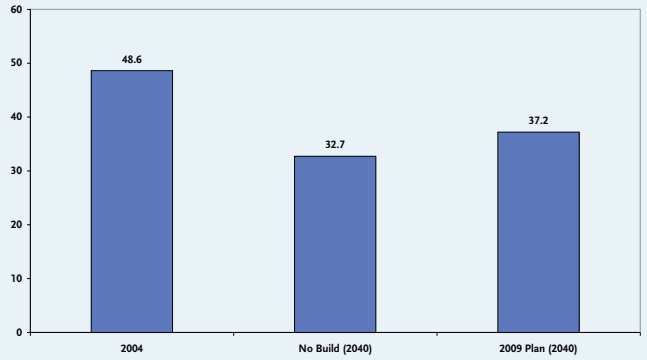


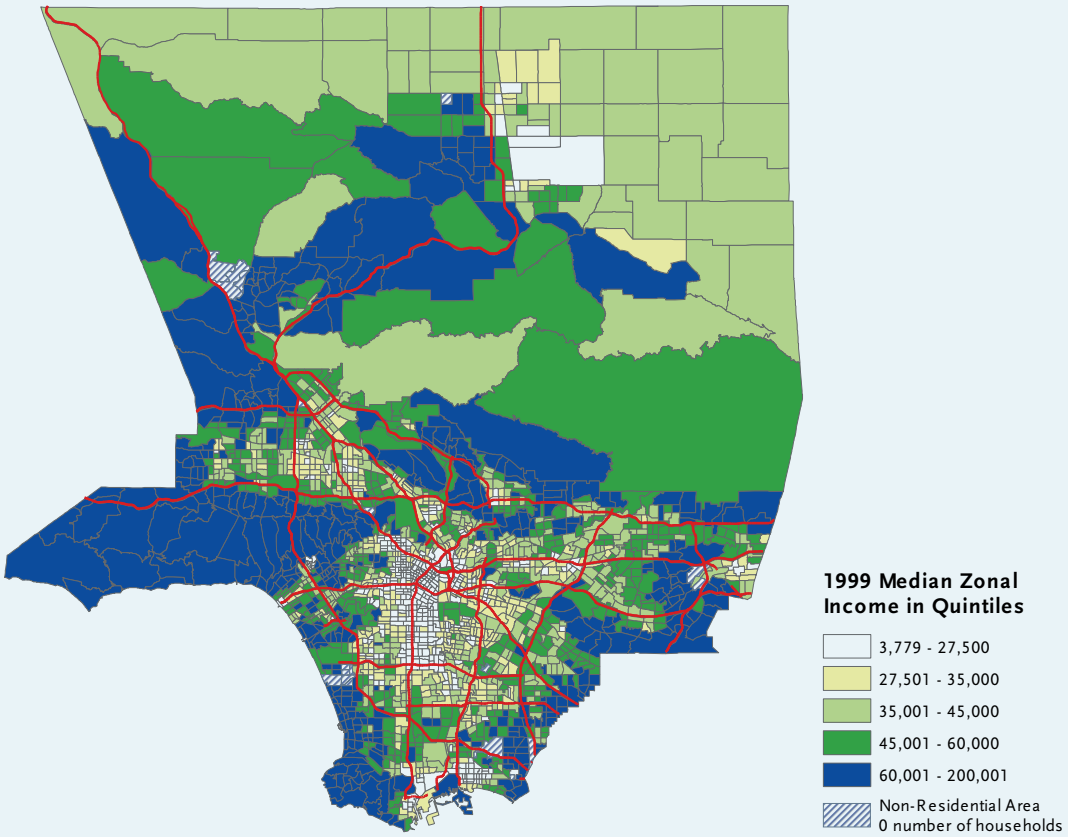
FIGURE 5.18

Ethnic Population Based on 2000 Census

	Population	Percent
African American	901,472	9.5%
Hispanic	4,242,213	44.6%
Asian/Pacific Islander	1,147,834	12.1%
Non-Minority	2,959,614	31.1%
Other Race Alone	45,544	0.5%
Two or More Races	222,661	2.3%
Total	9,519,338	100%

FIGURE 5.19

1999 Median Zonal Income in Quintiles



In addition to transit-dependency and socioeconomic group, TAZs were also classified by household income quintiles. The quintiles represent:

> Low income – less than $27,500
> Moderate income –$27,501 to $35,000
> Medium income –$35,001 to $45,000
> Above average income –$45,001 to $60,000
> High income – greater than $60,000

TAZs by income quintiles are illustrated in Figure 5.19.

Median household income, as defined in the 2000 Census, is $42,189 (in 1999 dollars). A TAZ is designated with a specific income quintile, if its median household income falls into the range for that quintile (e.g., a TAZ with a median household income of $25,000 would be designated as a low-income TAZ).

Geographic Distribution of Socioeconomic Groups

Figures 5.20A, 5.20B, 5.21A, and 5.21B illustrate the distribution of transit dependent, African American, Hispanic, and Asian/Pacific Islander populations throughout Los Angeles County.

Job Accessibility

Figure 5.22A displays, by income quintile, the percentage of jobs that can be reached via transit in a sixty-minute period. Low-income TAZs are expected to benefit the most from transit accessibility as 56 percent of jobs can be reached via transit in the No Build scenario and 67 percent in the 2009 Plan scenario. All income quintiles are expected to see an improvement in transit accessibility with implementation of the 2009 Plan.

Figure 5.22B illustrates the job accessibility by population subgroup. The transit-dependent population is expected to benefit the most from the 2009 Plan with accessibility improving from 47 percent of the population to 59 percent. All other population subgroups are expected to see an improvement in transit accessibility as well.

Mode Choice

Figure 5.23A displays, by income quintile, the mode split of home-to-work trips. Transit usage is expected to be the heaviest for low-income households in the No Build scenario (24 percent), increasing to 25 percent in the 2009 Plan scenario. All other income quintiles are also expected to experience an increase in transit usage.

Figure 5.23B illustrates the mode choice by population subgroup. The transit-dependent population is expected to increase transit usage the most, increasing from 16 percent in the No Build scenario to 18 percent in the 2009 Plan. All other population subgroups are expected to see a modest improvement in transit usage.

FIGURE 5.20A

Transit Dependent Population

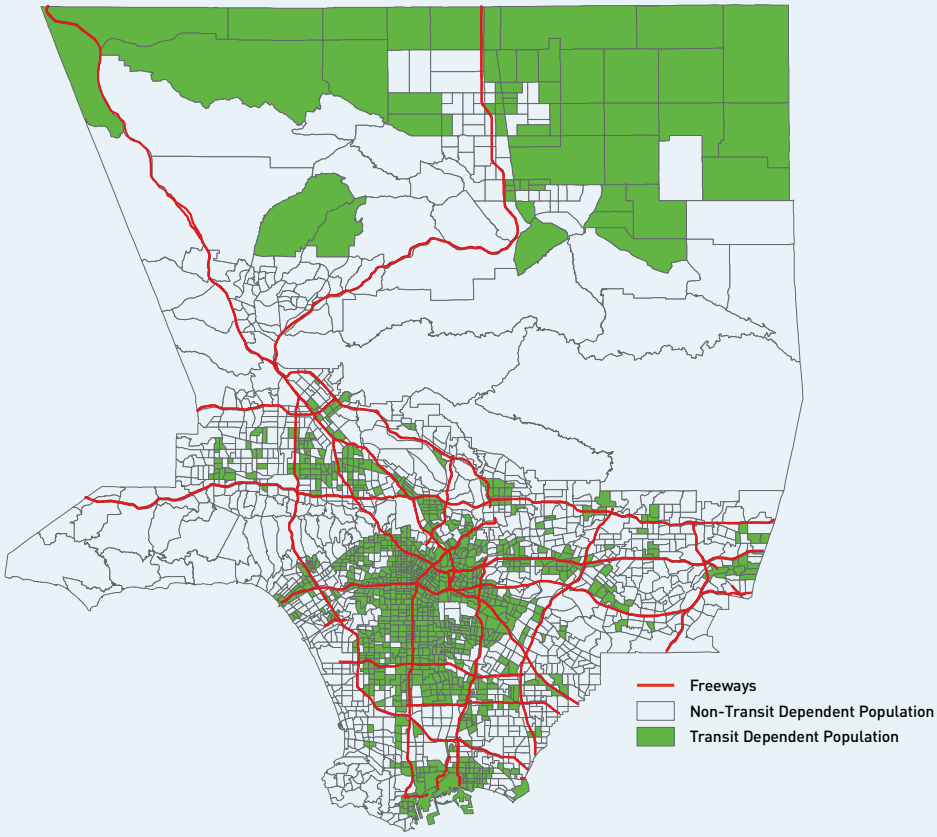


FIGURE 5.20B

African American Population

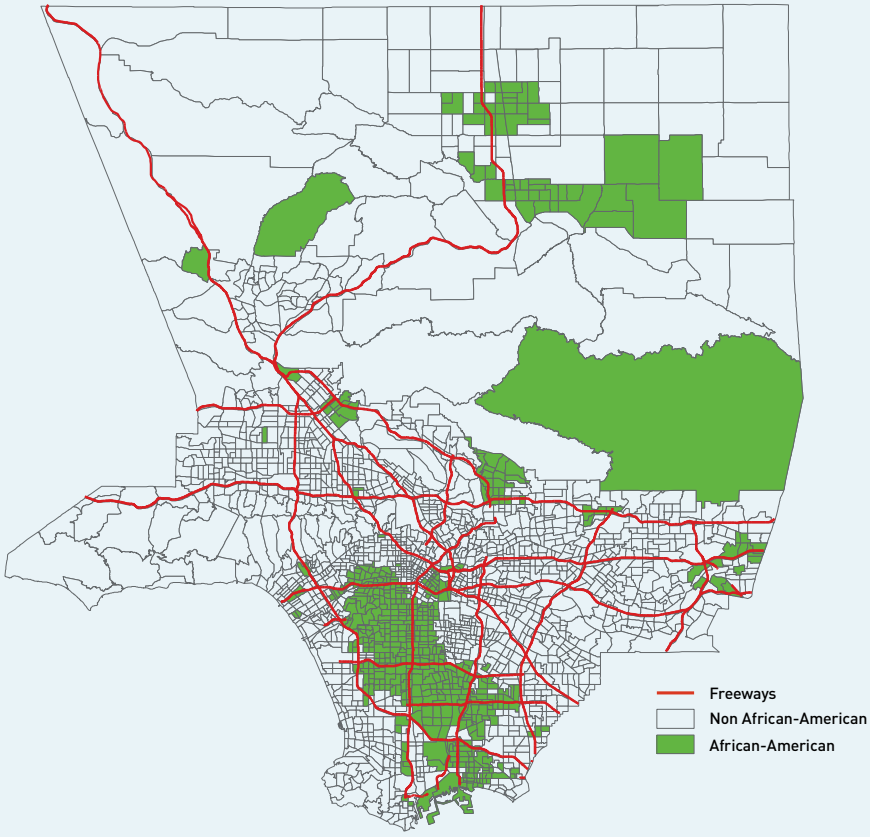


FIGURE 5.21A

Hispanic Population

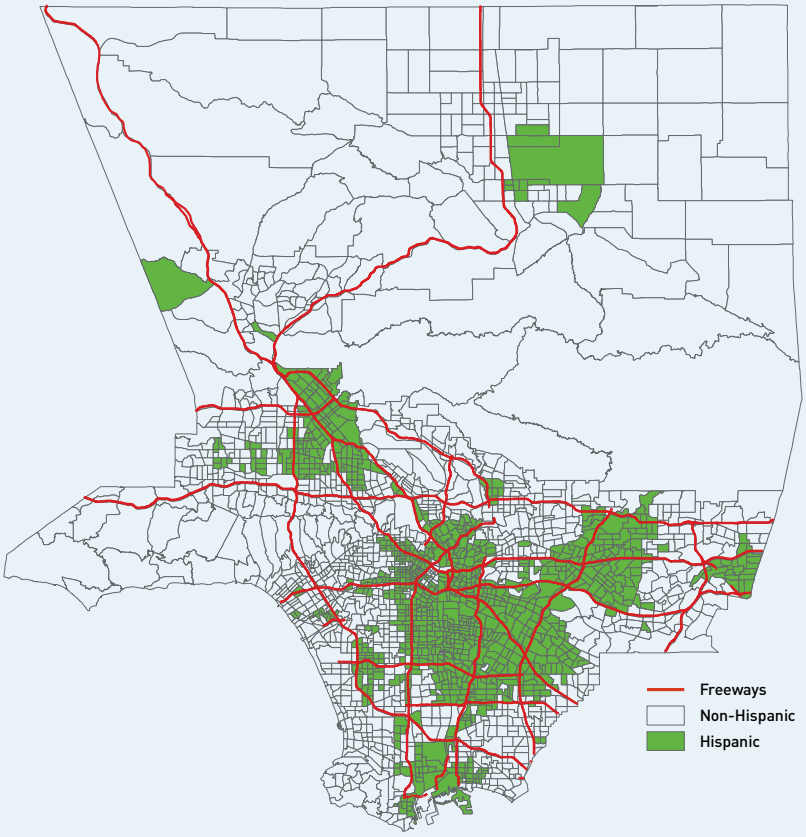


FIGURE 5.21B

Asian/Pacific Islander Population

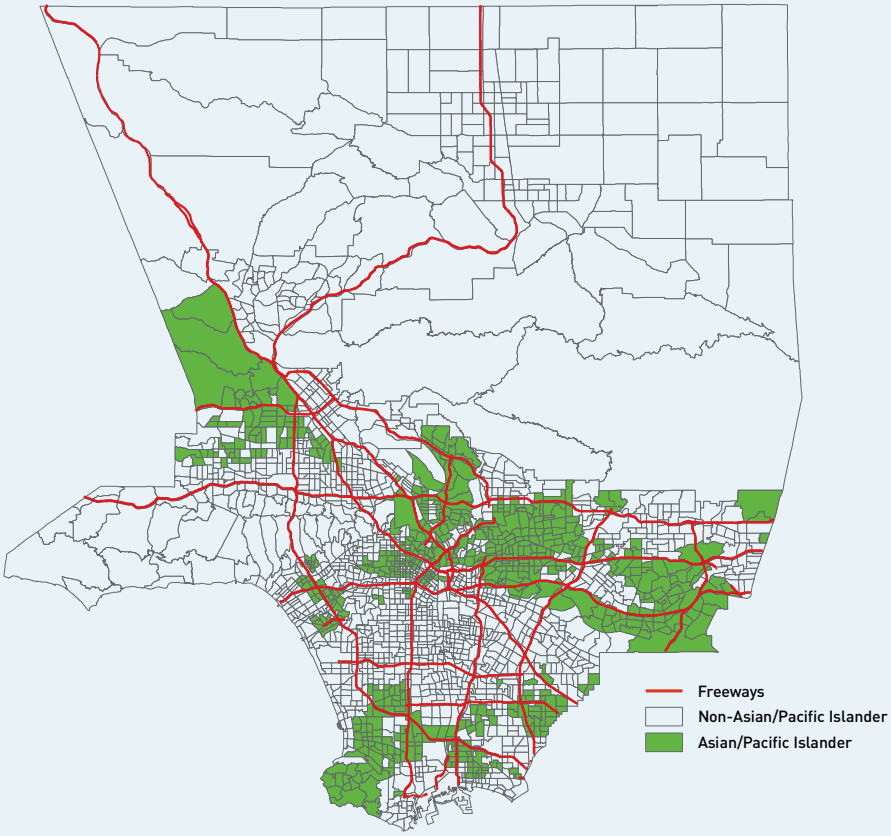


FIGURE 5.22A

Job Accessibility by Income Quintile

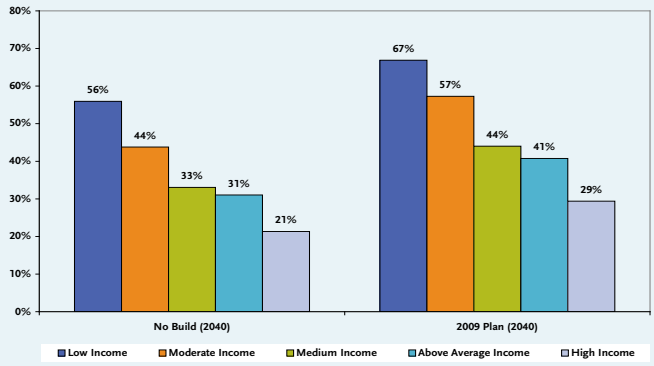


FIGURE 5.23A

Mode Choice by Income Quintile

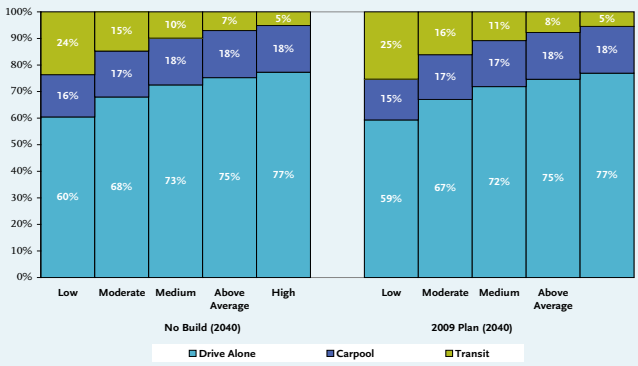


FIGURE 5.22B

Job Accessibility by Population Subgroup

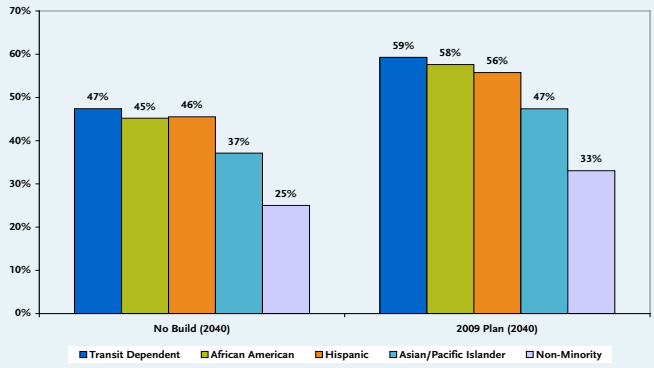
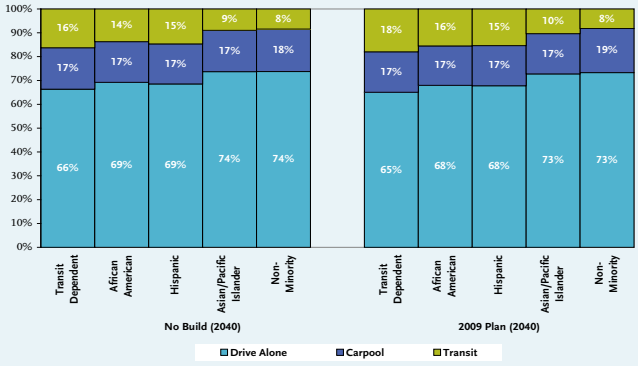


FIGURE 5.23B

Mode Choice by Population Subgroup



Appendix A

> Metro Board Resolution adopting 2009 Long Range Transportation Plan

Resolution
Board of Directors
Los Angeles County Metropolitan Transportation Authority
Adopting 2009 Long Range Transportation Plan for Los Angeles County

Whereas, the Los Angeles County Metropolitan Transportation Authority (LACMTA) is the agency responsible for long range transportation planning and development of future transportation needs throughout Los Angeles County; and

Whereas, the LACMTA developed a Draft 2008 Long Range Transportation Plan and Technical Document for Los Angeles County extending through the year 2030 herein referred to as "the Draft Plan", and

Whereas, the Draft Plan has been presented at seven open community workshops scheduled at locations throughout Los Angeles County and at numerous other meetings including meetings of sub-regional councils of government, chambers of commerce, environmental groups, business groups and community groups, and

Whereas, the Draft Plan includes technical analysis necessary to meet Federal Title VI and Environmental Justice responsibilities; a public outreach process was conducted that maximized opportunities for all communities to meaningfully participate in the Draft Plan development process, including the transit dependent and minority communities, and

Whereas, the Board of Directors has held open meetings on the policies, programs, selected projects and financial costs of the Draft Plan, and

Whereas, the Draft Plan has been publicly available for review and comment including two documents commonly referred to as the Draft 2008 Long Range Transportation Plan and Draft 2008 Technical Document attached hereto and included herein in their entirety by this reference, and

Whereas, the Draft Plan was revised in consideration of the public comments received and updated technical and financial information; the 2009 Long Range Transportation Plan and Technical Document extending through 2040 as revised is referred to as the "Final Plan," and

Whereas, the Draft Plan was revised to incorporate the thirty-year time period, expected revenues, and Expenditure Plan projects from Ordinance #08-01, Traffic Relief and Rail Expansion Ordinance which adds a half-cent sales tax in Los Angeles

County for thirty years beginning July 1, 2009 and which was approved by 67.93% of the voters as Measure R on the November 4, 2008 ballot, and

Whereas, the Board of Directors desires to coordinate with the Southern California Association of Governments (SCAG) to ensure that the Final Plan is coordinated and integrated with the 2008 Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP), and

Whereas, upon adoption, the Final Plan supercedes the Long Range Transportation Plan adopted on April 26, 2001, and

Whereas, the Board of Directors wishes to adopt the Final Plan as policy guidance and as a strategic planning tool for the LACMTA, and

Whereas, the Board of Directors considers the Final Plan to be the primary transportation planning tool to guide the development of future transportation needs throughout Los Angeles County through the year 2040, **and**

Whereas, the Board of Directors acknowledges that the Measure R Expenditure Plan included non-Measure R funds which could be reasonably assumed but not guaranteed, and

Whereas, this Plan assigns the full risk of obtaining a high amount of federal New Starts funds in early years to only two projects (Westside Extension to Fairfax and Regional Connector), and

Whereas, other projects have state funds with risks.

NOW THEREFORE BE IT RESOLVED that:

1. **The Board of Directors hereby adopts** the 2009 Long Range Transportation Plan and Technical Document as amended:

    A. Extension to Fiscal Year 2040 and revisions to the Draft 2008 LRTP and Technical Document, including revenues, costs, projects, and available revenues as identified in Attachments A, B, and C including Measure R expected revenues and the Measure R Expenditure Plan and

    B. Revisions to the 2008 Draft LRTP and Technical Document to ensure consistency with the financial changes identified above and in Attachments A, B and C.

BE IT FURTHER RESOLVED, that the Board of Directors finds the Final Plan to be in conformance with the Regional Transportation Plan by the performance criteria, project selection and modeling results that indicate compliance;

The Board of Directors hereby authorizes the Chief Executive Officer and the Chief Planning Officer and their staff to:

A. Publish and circulate the Final Plan as amended herein and henceforth remove the draft notation, and

B. To further represent the Final Plan as the officially adopted Long Range Transportation Plan policy and strategic planning tool of the LACMTA.

C. To pursue federal and state funds, and if those or other funds are less than assumed, to immediately return to the Board of Directors with a review of all projects for some combination of cost reduction and/or revenue or schedule adjustments to equitably apportion available resources.

CERTIFICATION

The undersigned, duly qualified and serving as Secretary of the Los Angeles County Metropolitan Transportation Authority, certifies that the foregoing is a true and correct representation of a Resolution adopted at a legally convened meeting of the Board of Directors of the Los Angeles County Metropolitan Transportation Authority held on October 22, 2009.

Michele Jackson
Metro Board Secretary

DATED: February 25, 2010

Appendix B

> Glossary

511 – The National Traveler Information phone number that will provide local freeway, transit, rideshare, airport, general emergency, and other traveler related services. 511 is targeted for deployment in Los Angeles County in 2010 and will ensure that our region complies with this requirement of the federal SAFETEA-LU authorization program.

ADA AMERICANS WITH DISABILITIES ACT – Federal civil rights legislation for disabled persons passed in 1990. It mandates that public transit systems make their services more fully accessible to the disabled. If persons with disabilities are not capable of accessing general public transit service, the law requires agencies to fund and provide for delivery of paratransit services which are capable of accommodating these individuals.

ADT AVERAGE DAILY TRAFFIC – The average number of vehicles passing a specified point during a 24-hour period.

AIR QUALITY INDEX – A measure of the total weight of mobile source pollutant emissions (carbon monoxide, oxides of nitrogen, and reactive organic gases) from transportation modes. Both the emission factors and the formula that enables the composite index to be calculated are provided by the California Air Resources Board (CARB). The emission factors are sensitive to the number, length and speed of vehicle trips and take into account projected emission reductions due to such improvements as alternative fuels and electric vehicles.

AMTRAK NATIONAL RAILROAD PASSENGER CORPORATION – National long-distance passenger rail service. Services operated out of Los Angeles include the Coast Starlight (Seattle), Southwest Chief (Chicago) and the Sunset Limited (Houston/Orlando), plus the shorter distance Pacific Surfliner intercity service.

AQMD AIR QUALITY MANAGEMENT DISTRICT – Governmental agency established to monitor air quality within a region and to implement state and federal air quality standards through the development of regional air quality plans and regulations.

AQMP AIR QUALITY MANAGEMENT PLAN – A plan for attaining state air quality as required by the California Clean Air Act of 1988. The plans are adopted by air quality districts and subject to approval by the California Air Resources Board.

ARRA AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 – Federal economic stimulus legislation designed to preserve and create jobs, spur economic activity and invest in long-term growth, and foster accountability and transparency in government spending. The United States Department of Transportation is responsible for distributing $48 billion of funding to transportation infrastructure projects.

ARTERIAL STREET – A major thoroughfare, used primarily for through traffic rather than for access to abutting land, that is characterized by high-vehicular capacity and continuity of movement. The street is either divided or undivided and its main function is to carry non-local traffic at medium speeds.

ARTICULATED BUS – A bus with an increased passenger capacity due to its significantly longer length. The increased length is accommodated by the fitting of an extra axle and joint into the design of the bus, allowing it to efficiently navigate turn movements in city traffic.

ASSEMBLY BILL 32 – The California Global Warming Solutions Act of 2006. California's landmark bill that establishes a first-in-the-world comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, cost-effective reductions of greenhouse gases.

ATSAC AUTOMATED TRAFFIC SURVEILLANCE AND CONTROL SYSTEM – ATSAC is a computer-based traffic signal control system operated by the City of Los Angeles that monitors traffic conditions and system performance on the existing arterial street system, selects appropriate signal timing (control) strategies, and performs equipment diagnostics and alert functions. Sensors in the street detect the passage of vehicles, vehicle speed, and the level of congestion. This information is received on a second-by-second (real-time) basis and is analyzed on a minute-by-minute basis at the ATSAC Operations Center, to determine if better traffic flow can be achieved by changing the signal timing. To supplement the information from electronic detectors, closed-circuit television (CCTV) surveillance equipment is installed at critical locations.

AVO AVERAGE VEHICLE OCCUPANCY – The average number of persons occupying a passenger vehicle along a roadway segment, intersection, or area and monitored during a specified time period. For purposes of the California Clean Air Act, passenger vehicles include autos, light-duty trucks, passenger vans, buses, passenger rail vehicles and motorcycles.

AVR AVERAGE VEHICLE RIDERSHIP – The number of employees who report to a worksite divided by the number of vehicles driven by those employees, typically averaged over an established time period. This calculation includes crediting vehicle trip reductions from telecommuting, compressed workweeks and non-motorized transportation.

BIKE-TRANSIT HUB – Locations served by numerous transit or rail lines that have been designated by Metro as prime candidates for bicycle access improvements with the goal of allocating bikeway resources to areas that will improve both bicycle and transit ridership in the form of linked trips.

BLD LINK BUILD LINK – A series of programs that create walk access links for the transit network building process.

BRT BUS RAPID TRANSIT – BRT combines the quality of rail transit with the flexibility of buses. It can operate on exclusive transitways, HOV lanes, expressways, or ordinary streets. A BRT system combines Intelligent Transportation Systems (ITS) technology, priority for transit, lower emissions, quieter vehicles, rapid and convenient fare collection, and integration with land use policy.

BUS SPEED IMPROVEMENTS – Evaluation of means of improving bus speeds in Los Angeles County through use of ITS and identification of locations where speeds could be improved through the establishment of bus-only lanes.

BUSWAY – A street lane which is reserved for the exclusive use of buses, either in a separated right-of-way or on a city street.

BTA BICYCLE TRANSPORTATION ACCOUNT – The Caltrans BTA provides state funds for city and county projects that improve safety and convenience for bicycle commuters.

BTSP BICYCLE TRANSPORTATION STRATEGIC PLAN – Plan to enhance bicycling as a viable transportation mode for Los Angeles County.

CAA CLEAN AIR ACT – Federal legislation that requires each state with areas that have not met Federal air quality standards to prepare a State Implementation Plan (SIP). The sweeping 1990 amendments to the CAA established new air quality requirements for the development of metropolitan transportation plans and programs. The California Clean Air Act (CCAA) sets even tougher state goals.

CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006 – Legislation passed by the California Assembly and signed by the Governor (AB 32) that requires major industrial producers of carbon dioxide to reduce emissions 25 percent by 2020.

CALTRANS CALIFORNIA DEPARTMENT OF TRANSPORTATION – Caltrans is the State's Transportation Department responsible for the design, construction, maintenance and operation of California Highway System, including the Interstate Highway System within the state's boundaries.

CARB CALIFORNIA AIR RESOURCES BOARD – CARB was established by the California Legislature in 1967 to attain and maintain healthy air quality, conduct research into the causes of, and solutions to, air pollution, and systematically attack the serious problem caused by motor vehicles, which are the major causes of air pollution in the State. Since its formation, the CARB has worked with the public, the business sector, and local governments to protect

public health, the economy, and state ecological resources through cost-effective reduction of air pollution.

CARBON FOOTPRINT – A measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide. It is meant to be useful for individuals and organizations to conceptualize their personal (or organizational) impact in contributing to global warming.

CARPOOL – Arrangement in which two or more people share the use, cost or both of traveling in privately owned automobiles between fixed points on a regular basis.

CARPOOL LANE – A highway or street lane reserved for carpools and other high occupancy vehicles.

CARPOOL LANE CONNECTORS – Dedicated freeway lanes that permit direct transfer of high occupancy vehicles from one HOV lane to another, thereby minimizing weaving conflicts and enabling ridesharing vehicles to maintain their speed advantage through freeway interchanges. These lanes make it possible for carpoolers using more than one freeway to travel without leaving the HOV lane to change freeways.

CARPOOL LANE MILES – Total number of freeway lane miles dedicated to high occupancy vehicle (HOV) use.

CCAR CALIFORNIA CLIMATE ACTION REGISTRY – Non-profit organization that provides leadership on climate change by developing and promoting credible, accurate, and consistent greenhouse gas reporting standards and tools for organizations to voluntarily measure, monitor, and reduce their greenhouse gas emissions.

CEQA CALIFORNIA ENVIRONMENTAL QUALITY ACT – A statute that requires all jurisdictions in the State of California to evaluate the extent of environmental impact due to a proposed development or project.

CFP CALL FOR PROJECTS – Metro's primary process for the selection of transportation improvement projects for funding with discretionary federal, state and local revenues.

CHP CALIFORNIA HIGHWAY PATROL – The major statewide law enforcement agency responsible for the management and regulation of traffic on Caltrans-designated freeways and highways to achieve safe, lawful and efficient use of the highway system.

CIP CAPITAL IMPROVEMENT PROGRAM – The CIP is a comprehensive agency-wide five-year program that adds and replaces capital assets such as buildings, buses, rail cars, equipment and furniture. A CIP provides detailed justifications, cost estimates, funding type and priority listing of new and replaced equipment based on life cycle, safety, need and related criteria.

CLIMATE CHANGE – A shift in global weather patterns resulting in an increase in the variability of temperature, precipitation, and wind in a region over a period of time. Recent studies suggest that emissions from gasoline-powered internal combustion engines have contributed to global climate warming.

CMAQ CONGESTION MITIGATION AND AIR QUALITY IMPROVEMENT PROGRAM – Federal funds available for either transit or highway projects that contribute significantly to reducing automobile emissions which cause air pollution. Established by the Intermodal Surface Transportation Efficiency Act.

CMP CONGESTION MANAGEMENT PROGRAM – As the Congestion Management Agency for Los Angeles County, Metro is responsible for implementing the CMP for Los Angeles County. State statute requires that a congestion management program be developed, adopted, and updated for every county that includes an urbanized area, and shall include every city and the county government within that county. Statutory elements of the CMP include Highway and Roadway System monitoring, multi-modal system performance analysis, the Transportation Demand Management program, the Land Use Analysis program, and deficiency plans for all the county's jurisdictions.

CNG COMPRESSED NATURAL GAS – The type of fuel used by the majority of Metro's bus fleet. CNG is considered to be an environmentally clean alternative to diesel fuel. Metro's CNG powered vehicles reduce our region's production of greenhouse gases with an average reduction in ozone-forming emissions of 80 percent compared to gasoline engines.

CNG-POWERED BUSES – Vehicles that run on compressed natural gas. CNG is becoming an alternative to the diesel fuel commonly used in transit buses. The attraction of CNG is due to its ability to meet the low emission regulations being imposed upon the transit industry and the abundant supply of the fuel in the United States. CNG is pressurized to 3,600 pounds per square inch (psi) and stored in carbon fiber containment vessels aboard the vehicles.

CO CARBON MONOXIDE – A colorless, odorless, poisonous gas produced mostly by the incomplete combustion of fuels used for transportation, heating, and electric power generation, and as a by-product of some industrial processes.

CO_2E CARBON DIOXIDE EQUIVALENT – A measuring technique for determining the global warming potential of a greenhouse gas as compared to the amount of carbon dioxide that would be required to cause the same impact.

COG COUNCIL OF GOVERNMENTS – Within Los Angeles County, COGs are subregional cooperative and advocacy associations of city governments.

COMMITTED PROJECTS – Committed projects include any project for which funding has been approved by the Metro Board.

COMMUTER RAIL – Fixed-rail public transit system, generally utilizing heavy rail and track and providing service within a region. Metrolink is the commuter rail service in Los Angeles County.

COMPLETE STREET – Street design methodology that enables safe street access for all users. Pedestrians, bicyclists, motorists, and bus riders of all ages and abilities are able to safely move along and across a complete street.

CONGESTION MITIGATION FEE – A proposed one-time impact fee, currently under study by Metro, applied to all types of new development to fund transportation improvements related to the impact of new development.

CONGESTION PRICING – Congestion pricing is the concept of charging for the use of a transportation facility, such as a roadway, based on the level of congestion. The greater the level of congestion, usually occurring during morning and evening rush hours, the higher the cost to use the facility.

CONSTRAINED PLAN – The element of Metro's Long Range Transportation Plan that is funded with available resources.

CONTAINER – A single rigid receptacle without wheels usually measuring approximately 20 feet to 53 feet long by 8 ½ feet wide and 8 feet tall that is used for the transport of goods hauled on a truck, rail car, and ship (or a type of carrier equipment into which freight is loaded).

CONTAINER FEES – Fees that could be imposed on freight containers to finance infrastructure and environmental clean-up projects.

CRASH ENERGY MANAGEMENT PROGRAM – A program that will work to minimize the impact of collisions on the passenger compartments of commuter rail (Metrolink) trains.

CROSSOVER – Railroad switchover tracks allowing trains to cross from one track to another, improving the efficiency of train operations.

CSAN COUNTYWIDE SIGNIFICANT ARTERIAL NETWORK – A regional arterial network developed by Metro and Cities to assist in determining the performance of the system, guiding future transportation planning and helping target arterial improvements through the Call for Projects.

CTC CALIFORNIA TRANSPORTATION COMMISSION – A state-level commission consisting of eleven members (nine appointed by the Governor and two appointed by the Legislature) that establishes priorities and allocates state and federal funds for highway, passenger rail and transit investments throughout California.

DEADHEAD – The movement of a transit vehicle to or from its designated and scheduled route. It is not in passenger service, but rather is traveling between routes, or to/from the transit yard or to/from its route.

DEDICATED FREIGHT GUIDEWAYS – Roadways or railways used exclusively by vehicles carrying freight.

DESIGN-BUILD – A construction project delivery system in which the design and construction aspects of a project are contracted for with a single entity known as the design-builder or design-build contractor. This system is used to minimize project risk for an owner and to reduce the delivery schedule by overlapping the design phase and the construction phase of a project.

DYNAMIC PRICING– A toll collection strategy where tolls are continuously adjusted throughout the day according to traffic conditions to maintain a minimum designated speed.

EIR ENVIRONMENTAL IMPACT REPORT – A detailed report required under the California Environmental Quality Act (CEQA) describing and analyzing the significant environmental effects of a proposed project, identifying alternatives and discussing ways to reduce or avoid the possible environmental impacts.

EIS ENVIRONMENTAL IMPACT STATEMENT – A full disclosure document required under the National Environmental Policy Act that details the process through which a transportation project was developed, includes consideration of a range of reasonable alternatives, analyzes the potential environmental impacts resulting from the alternatives, and demonstrates compliance with other applicable environmental laws and executive orders.

EMS ENVIRONMENTAL MANAGEMENT SYSTEM – A set of environmental planning processes and practices that enables an organization to reduce its environmental impacts and increase its operating efficiency through pollution mitigation and resource conservation.

ENVIRONMENTAL JUSTICE – The term stems from a 1994 presidential executive order to promote equity for disadvantaged communities and promote the inclusion of racial and ethnic populations and low-income communities in decision-making. Local and regional transportation agencies must ensure that services and benefits, as well as burdens, are fairly distributed to avoid discrimination.

EZ TRANSIT PASS – The regional monthly pass offered to customers that provides seamless riding among Los Angeles County's sixteen Municipal transit operators and Metro bus and rail services.

FAP FORMULA ALLOCATION PROCEDURE – Formula used to allocate federal and state bus transit funds among the various transit agencies in Los Angeles County.

FARE BOX RECOVERY – The amount of revenue generated through fares by paying customers as a fraction of the total Metro operating expenses.

FFGA FULL FUNDING GRANT AGREEMENT – Funding pact approved by the Federal Transit Administration (FTA) that guarantees federal funding for a specified transportation project.

FHWA FEDERAL HIGHWAY ADMINISTRATION – A branch of the Federal Department of Transportation that administers and funds the nation's highway system.

FIXED GUIDEWAY – System of vehicles that can operate only on its own guideway constructed for that purpose (e.g. commuter rail, light rail).

FREEWAY RAMP METERING – A freeway to which access is controlled by entrance ramp signals that use fixed-time signal settings or is regulated by a computerized surveillance system. This procedure is used to prevent freeway congestion.

FSP FREEWAY SERVICE PATROL – Towing services funded by Metro to remove stalled vehicles from freeway lanes, especially during peak periods. The FSP also assists stranded motorists who may have run out of gas or need to change a tire.

FTA FEDERAL TRANSPORTATION ADMINISTRATION – A branch of the Federal Department of Transportation which provides funding for transit programs across the nation.

FUEL CELL – An energy conversion device that produces electricity in hybrid electric and hydrogen-powered vehicles.

FY FISCAL YEAR – The annual period for which a business entity establishes a budget for spending. In California government, the fiscal year is from July 1st until June 30th each year; the same fiscal year that Metro uses. The federal government's fiscal year (FFY) is from October 1st until September 30th of each year.

GHGe GREENHOUSE GAS EMISSIONS – Greenhouse gas emissions are gases that trap heat in the atmosphere. Some greenhouse gases such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes. Other greenhouse gases (e.g. fluorinated gases) are created and emitted solely through human activities.

GLOBAL WARMING – Term used to describe the increase in the average temperature of the Earth's surface air and oceans in recent decades and its projected continuation. Studies have shown that much of this warming is attributable to greenhouse gases emitted into the atmosphere by industrial and mechanical exhaust.

GREENHOUSE EFFECT – The process by which the emission of ozone into the atmosphere warms Earth's surface.

GUIDEWAY – Facility housing a transit system, either a subway tunnel, at-grade trackway or busway, or aerial structure. Also see Fixed guideway.

HBNW HOME-BASED NON-WORK – A trip with one end at home and the other end at a non-work location.

HBW HOME-BASED WORK – A trip with one end at work and the other end at home.

HC HYDROCARBON – Organic compound that contains hydrogen and carbon. Hydrocarbons produce energy when burnt and are currently the world's primary source of electrical energy and heating. The emissions produced by the combustion of petroleum in gasoline engines is understood to be a major source of greenhouse gas, and is contributory to global climate warming.

HIGHWAY – A freeway or expressway which provides limited access for inter-regional or interstate travel or a major arterial which has been designated as part of the state highway system.

HOT LANE HIGH-OCCUPANCY/TOLL LANE – A designated carpool lane that motorists driving alone can use if they pay a toll, allowing them to avoid traffic delays in the adjacent regular lanes. Toll-paying drivers and toll-free carpools/vanpools share the lane, increasing the number of total vehicles using the HOV/HOT lane and generating revenues that can be used for transportation improvements.

HOV HIGH-OCCUPANCY VEHICLE – Any transportation vehicle carrying more than one person for travel purposes. This may include an automobile, bus, or train.

HOV LANE HIGH-OCCUPANCY VEHICLE LANE – A freeway lane reserved for use by vehicles carrying a specified minimum number of passengers, including buses, vanpools, and carpools. Motorcycles and certain alternatively-fueled vehicles are also permitted to use the lanes.

HSR HIGH-SPEED RAIL – Type of inter-regional passenger rail transport which operates significantly faster than the normal speed of inter-regional passenger rail traffic.

HYBRID ELECTRIC – A vehicle that combines a conventional internal combustion gasoline engine with a rechargeable electric energy storage system to achieve better fuel economy.

IEN LOS ANGELES COUNTY INFORMATION EXCHANGE NETWORK – Allows the collection and distribution of arterial street-level operational and planning data to facilitate signal coordination between and through jurisdictions.

INTERMODAL – The term "mode" represents one method of transportation, such as automobile, transit, ship, bicycle or walking. Intermodal refers specifically to transportation trips using multiple modes.

ISTEA INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT – Landmark federal legislation signed into law in 1991 that initiated broad changes in the way transportation decisions are made. ISTEA emphasized diversity and balance of modes, as well as the preservation of existing systems before construction of new facilities. ISTEA expired in 1997, and much of its program structure was carried forward in successor federal legislation (see TEA-21 and SAFETEA-LU).

ITS INTELLIGENT TRANSPORTATION SYSTEMS – Technical innovations that apply communications and information processing to improve the efficiency and safety of ground transportation systems.

ITS INITIATIVES – Can include closed-circuit video monitoring of freeway traffic conditions and the use of automatic vehicle location technology to provide real-time transit and traffic information to the 511 telephone and Web-based information service. ITS initiatives are also used to coordinate traffic signals and speed emergency vehicle response times.

JPA JOINT POWERS AUTHORITY – A voluntary association of government entities formed into a special purpose agency to deal with a common problem or problems, carry out a specific project, or provide a specific service.

LACDPW LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS – The transportation department for the County of Los Angeles.

LADOT – Los Angeles Department of Transportation. The transportation department for the City of Los Angeles.

LEED LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN – The green building standards rating system. LEED is administered by the U.S. Green Building Council, a Washington DC based, nonprofit coalition of building industry leaders and is designed to promote design and construction practices that increase profitability while reducing the negative environmental impacts of buildings and improving occupant health and well-being.

LOSSAN LOS ANGELES TO SAN DIEGO TO SAN LUIS OBISPO – The nation's second busiest intercity passenger-rail corridor. The LOSSAN corridor stretches 351 miles from San Diego to Los Angeles and to San Luis Obispo. The LOSSAN corridor is owned, in combination, by four government agencies and two freight operators. Passenger rail services include the Pacific Surfliner, operated by Amtrak, Metrolink commuter rail, and Coaster commuter rail, plus freight services operated by the Burlington Northern Santa Fe (BNSF) and the Union Pacific (UP) railroads.

LRT LIGHT RAIL TRANSIT – Passenger rail cars operating on fixed rails in right-of-way that is not separated from other traffic for much of the way. Light rail vehicles are driven electronically with power drawn from an overhead electric line (catenary).

LRTP LONG RANGE TRANSPORTATION PLAN – Metro's plan to assess future population increases projected for the county and what such increases will mean for future mobility needs. The plan recommends what can be done within anticipated revenues, as well as what could be done if additional revenues became available. The 2009 LRTP is an date to the 2001 Long Range Transportation Plan for future transportation investments in Los Angeles County through 2040.

MAGLEV – A magnetically levitated transportation system that is suspended, guided, and propelled by electromagnetic force.

MCGMAP MULTI-COUNTY GOODS MOVEMENT ACTION PLAN – A consensus strategy and implementation plan for Southern California goods movement system developed by Metro, Orange County Transportation Authority, Riverside County Transportation Commission, San Bernardino Associated Governments, Ventura County Transportation Commission, Caltrans Districts 7, 8, 11 and 12, San Diego Association of Governments, and Southern California Association of Governments.

MEASURE R – A sales tax initiative approved by Los Angeles County voters in 2008. Measure R established a one-half cent sales tax to be used for public transportation purposes, ending in 2039.

METRO RAIL – Metro's electrified light rail and subway transit system.

METRO RAPID – Metro's Bus service on key transit corridors with several attributes to provide faster bus service including a distinctive look, traffic signal priority and fewer stops.

METROLINK – Southern California's regional commuter rail system connecting Los Angeles, Orange, Riverside, San Bernardino, San Diego, and Ventura counties. Service began in October 1992.

MICROMETER – A unit of measure equal to one millionth of a meter (one thousandth of a millimeter). Airborne particulate matter is measured in micrometers to help determine its level of threat to human respiratory health.

MICRON – Same as micrometer.

MOBILITY INDEX – Measures the ability of a region's transportation systems (all modes) to move people. Higher indices are reached by transportation projects and systems that move people in either fewer vehicles or faster, or both. This index therefore is calculated by the product of aggregate average vehicle occupancy and aggregate speed of the entire region's transportation trips.

MODE SHARE – Indicates the share of a transportation mode utilized by people for their transportation trips as compared to other modes and all of a region's transportation trips as a whole.

MOSIP MUNICIPAL OPERATOR SERVICE IMPROVEMENT PROGRAM – Municipal Operators Service Improvement Program (MOSIP) was adopted by the Metro Board in April 2001. The program provides bus service improvements to the transit dependent in Los Angeles County by reducing overcrowding and expanding services. All municipal operators participate in the program, and funds are allocated according to Formula Allocation Procedure (FAP) calculation methodology. MOSIP is funded from Proposition C 40% Discretionary funds.

MPH MILES PER HOUR – Speed described as the distance traveled in one hour.

MPO METROPOLITAN PLANNING ORGANIZATION – The organization designated by the Governor and local elected officials as responsible for transportation planning in an urbanized area. It serves as the forum for cooperative decision making by collectively representing local governments. The Governor designates a MPO in every urbanized area with a population of over 50,000 people. In the Southern California region, the Southern California Association of Governments (SCAG) is the designated MPO.

MULTIMODAL – A transportation system which employs a combination of modes, such as highway, bus, rail, high occupancy vehicles, bikeway, and pedestrian and demand management systems.

NEPA NATIONAL ENVIRONMENTAL POLICY ACT – Federal law which establishes national policy for environmental protection and provides for the establishment of a Council of Environmental Quality. Requires studies of impacts on the environment before specified projects are undertaken.

NHB NON-HOME BASED – A trip which neither begins nor ends at a trip-maker's residence.

NHS NATIONAL HIGHWAY SYSTEM – This approximately 160,000-mile network consists of the 42,500 miles of the Interstate system, plus other key roads and arterials throughout the United States. Designated by Congress in 1995 pursuant to a requirement of ISTEA, the NHS is designed to provide an interconnected system of principal routes to serve major travel destinations and population centers.

NO-BUILD SCENARIO – Planning projection of how the future transportation system would operate without any new transportation investments added beyond what is currently under construction.

NOX NITROGEN OXIDE – The generic term given for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. These ozone-producing gases are environmental pollutants that form when fuel is burned at high temperatures, as in the combustion process. Sources include automobile emissions, trucks, power plants, and other major industrial sources.

O&D ORIGIN AND DESTINATION – The location or zone where a trip begins and the location or zone where a trip ends.

O&M OPERATIONS AND MAINTENANCE – These are the costs associated with the regular running of a new transportation facility or service, including labor, vehicle maintenance, operations and overall facility maintenance.

OMB – The Federal Office of Management and Budget.

OPERATING REVENUES – Monies used to fund general, day-to-day costs of running transportation systems. For transit the costs may include fuel, salaries and replacement parts; for roads, operating costs involve

maintaining pavement, filling potholes, and paying workers' salaries.

PARATRANSIT – Flexible forms of transportation services that are not confined to a fixed route. Paratransit is generally used to provide service for people with disabilities in compliance with the Americans with Disabilities Act of 1990 (ADA).

PEAK PERIOD – The period during which the maximum amount of travel occurs. It may be specified as the morning (AM) or afternoon or evening (PM) peak.

PEDESTRIAN PRIORITY IMPROVEMENT PROGRAM – Metro's Program of projects designed to enhance the pedestrian environment throughout Los Angeles County by developing safe, connected walking environments to promote non-motorized transport options.

PFP PRIVATE FINANCIAL PARTICIPATION – A contractual agreement between a public agency and private entity where the private entity invests private capital toward the delivery of transportation projects.

PHT PASSENGER HOURS TRAVELED – The aggregate number of hours traveled by all passengers for all trips on a transportation mode such as transit.

PM PARTICULATE MATTER – Mixture of extremely small particles and liquid droplets made up of a number of components, including acids, organic chemicals, metals, and soil or dust particles. The size of the particles is directly linked to their potential for causing health problems. Of particular concern are those particles that are ten micrometers in diameter or smaller that can be inhaled into the lungs and potentially cause serious health effects.

PMT PASSENGER MILES TRAVELED – The aggregate number of miles traveled by all passengers for all trips on a transportation mode such as transit.

PPP PUBLIC-PRIVATE PARTNERSHIPS – Public-private partnerships refer to contractual agreements formed between a public agency and private sector entity that allow for greater private sector participation in the delivery of transportation projects. Traditionally, private sector participation has been limited to separate planning, design or construction contracts on a fee for service basis based on the public agency's specifications. Expanding the private sector role is intended to allow the public agencies to tap private sector technical, management and financial resources in new ways to achieve certain public agency objectives such as greater cost and schedule certainty, supplementing in-house staff, innovative technology applications, specialized expertise or access to private capital.

PPV PERSONS PER VEHICLE – The number of persons per vehicle.

PROP A – Proposition A is a sales tax initiative approved by the Los Angeles County voters in 1980. The proposition established a one-half cent sales tax to be used for public transportation purposes.

PROP C – Proposition C is a sales tax initiative approved by the Los Angeles County voters in 1990 that established a one half-cent sales tax to be used for public transportation purposes.

PROP 42 – A statewide initiative approved in 2002 that requires gasoline sales tax revenues to be dedicated to transportation purposes.

PROP 1A – A statewide initative approved in November 2006 which provides greater assurance that gasoline sales tax revenues will go to transportation. Proposition 1A allows the funds to be loaned to the General Fund only twice in a 10-year period and requires that funds be repaid within three years prior to making a second loan.

PROP 1B – A statewide initiative approved in November 2006 to fund existing and new transportation infrastructure capital programs and projects over ten years. Proposition 1B is also known as the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bonds Act of 2006.

PTA PUBLIC TRANSPORTATION ACCOUNT – The State of California transportation trust fund that derives its revenue from sales and use taxes on diesel fuel and gasoline. These funds are distributed to the counties based on a formula.

PTC POSITIVE TRAIN CONTROL – Collision avoidance technology designed to prevent train collisions. Installation is mandated by the Rail Safety Improvement Act of 2008 by December, 2015.

REGIONAL IMPROVEMENT PROGRAM – One of the state funding programs, it is also known as "Regional Choice". Project selection is done by Metro and submitted to the California Transportation Commission for approval. The Regional Improvement Program allocates 75 percent of State transportation improvement funds. These funds may be used for capital projects including highways, arterials, guideways, rail projects, bikeways, transportation enhancements, and TSM and TDM activities.

RIDESHARE – The term generally refers to carpooling and vanpooling.

RIDESHARING – Two or more persons traveling by any mode, including but not limited to, automobile, vanpool, bus, taxi, jitney, and public transit.

RIITS NETWORK REGIONAL INTEGRATION OF INTELLIGENT TRANSPORTATION SYSTEMS – Metro sponsors the network. Caltrans, LADOT, California Highway Patrol and Metro all contribute information collected through their own Intelligent Transportation Systems. The network supports information exchange in real-time between freeway, traffic, transit and emergency service agencies to improve management of the Los Angeles County transportation system and better serve the traveling public.

ROG REACTIVE ORGANIC GASES – Carbon-based chemical pollutants that react with nitrogen and oxygen in the air in the presence of sunlight to form ozone. It has been shown that excessive ozone concentrations in the lower atmosphere are a cause of respiratory health problems, as well as a contributing factor to global warming.

ROLLING STOCK – Refers to any powered or unpowered vehicle that travels on a railway. This category includes passenger rail cars and locomotives.

RSTI REGIONAL SURFACE TRANSPORTATION IMPROVEMENTS – A category of improvements in Metro's Call for Projects that includes major capital investments such as street widenings, realignments, grade separations and freeway ramp modifications.

RTP REGIONAL TRANSPORTATION PLAN – A comprehensive 20-year plan for the region, updated every four years by the Southern California Association of Governments. The RTP includes goals, objectives and policies; and recommends specific transportation improvements.

RTPA REGIONAL TRANSPORTATION PLANNING AGENCY – A state-designated agency responsible for preparing the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP), administering state funds, and other regional transportation planning tasks.

SAFE SERVICE AUTHORITY FOR FREEWAY EMERGENCIES – One dollar from each vehicle registration within Los Angeles County is used to provide expanded and improved emergency call box service along the highways. SAFE is a separate legal entity from Metro.

SAFETEA-LU SAFE, ACCOUNTABLE, FLEXIBLE, EFFICIENT TRANSPORTATION EQUITY ACT – A LEGACY FOR USERS A multi-year federal transportation act, signed into law by President George W. Bush on August 10, 2005. The act authorizes $286 billion in funding for federal surface transportation programs over five years. SAFETEA-LU maintains the program structure of its predecessor, TEA-21.

SB 375 SENATE BILL 375 – Also known as California's Sustainable Communities Strategy and Climate Protection Act, SB 375 calls for the integration of transportation, land-use and housing planning, and also establishes the reduction of greenhouse gas (GHG) emissions as one of the main goals for regional planning.

SCAB SOUTH COAST AIR BASIN – The air basin defined geographically by the San Jacinto Mountains to the east, the San Bernardino Mountains to the north, and the Pacific Ocean to the west and south. The entire SCAB is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD).

SCAG SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS – SCAG is the federally-designated Metropolitan Planning Organization (MPO) for six counties (Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial). It is the regional agency responsible for developing a regional transportation plan for the six-county region.

SCAQMD SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT – A regional agency which adopts and enforces regulations to achieve and maintain state and federal air quality standards. It is responsible for preparing the Air Quality Management Plan (AQMP) for the South Coast Air Basin. Also known as the AQMD.

SCRRA SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY – The five county regional joint powers authority responsible for the operation of the Metrolink commuter train service.

SEALED CORRIDOR – Railroad grade crossing safety improvement plan designed to enhance safety at grade crossings. Metrolink's sealed corridor program will identify rail corridors with several at-grade crossings and work to restrict vehicular access to the right-of-way along the entire stretch.

SELF-HELP APPROACHES – Financing measures initiated at the local level as a means of generating revenue to fund transportation improvements. Typically done when state and federal funds are scarce, these measures are intended to provide a reliable revenue stream.

SHOPP STATE HIGHWAY OPERATIONS AND PROTECTION PROGRAM – The state funding category used by Caltrans to maintain and operate state highways.

SHORT RANGE TRANSPORTATION PLAN – The 2003 Short Range Transportation Plan focuses on the phasing of transportation improvements through 2009 and relies on performance-based modeling to identify the best solution for each mobility challenge.

SIDING – A railroad passing track constructed to allow trains traveling on the same track in opposite directions to pass without interruption.

SIGNAL SYNCHRONIZATION – Traffic signal synchronization refers to the functioning relationship between active signals along a corridor. A common cycle length is established. All intersections in the coordinated system have the same cycle length. By maintaining a constant relationship between the signals at all times, there is a greater likelihood that mobility will be improved. This does not mean that the signals will provide a green light at the same time for the entire length of a corridor; rather, that each signal will quite literally be synchronized with the entire system, allowing for more efficient mobility.

SIP STATE IMPLEMENTATION PLAN – The state's plan for complying with the federal Clean Air Act, which is administered by the United States Environmental Protection Agency. The SIP consists of narrative, rules, technical documentation, and agreements that an individual state will use to clean up polluted areas. Metropolitan areas prepare regional air plans showing steps they plan to take to meet federal air quality standards and these are incorporated into the SIP.

SMART CARD – A device that is often the same size as a thin plastic credit card with an embedded microprocessor and is "smart" enough to hold its own data and applications and do its own processing. Smart cards can be used to store personal information, hold digital cash or prove identity.

SMART GROWTH – A set of policies and programs designed to protect, preserve and economically stimulate established communities while protecting valuable natural and cultural resources and limiting sprawl.

SOUNDWALL – Noise control walls and barriers built between highways and nearby homes that can reduce noise levels by 10-15 decibels.

SOV SINGLE-OCCUPANT VEHICLE – A vehicle with only one occupant. Also known as a "drive alone."

STA STATE TRANSIT ASSISTANCE – STA funds are derived from half of the State Public Transportation Account which is funded from statewide sales tax on gasoline and diesel fuels. This funding source is distributed based on two factors – population and an agency's bus/rail operator revenue as a ratio to the rest of the state transit operators.

STIP STATE TRANSPORTATION IMPROVEMENT PROGRAM – A program of projects that covers a five- to seven-year span, is updated every two years and determines the transportation projects that will be funded by the state.

STP SURFACE TRANSPORTATION PROGRAM – One of the key highway funding programs in SAFETEA-LU. STP monies may be spent on mass transit, pedestrian and bicycle facilities as well as on roads and highways. It is intended for use by the states and cities for congestion relief in urban areas. Congress annually appropriates funding for this program.

STRATEGIC UNFUNDED PLAN – An element of Metro's Long Range Transportation Plan which includes unfunded projects and programs which could be funded and implemented if new revenue sources became available.

SUBREGIONS – The nine geographic subregions of Los Angeles County include Arroyo Verdugo, Central Los Angeles, Gateway Cities, Las Virgenes/Malibu, North Los Angeles County, San Fernando Valley, San Gabriel Valley, South Bay Cities and Westside Cities.

SUSTAINABILITY – A manner to meet the needs of the present generation without compromising the ability of future generations to meet their own needs.

TAP TRANSIT ACCESS PASS – A plastic card the size of a credit card with an embedded microprocessor commonly referred to as a "smart card." Used as fare media in stored-value collection systems for multi-modal transit operations.

TCM TRANSPORTATION CONTROL MEASURE – A measure that is identified in a State Implementation Plan (SIP) which is intended to reduce emissions from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Examples of TCMs include programs encouraging ridesharing or public transit usage, city or county trip reduction ordinances, and the use of alternative fuels in motor vehicles. TCMs are included in the regional air plans as part of the overall control strategy to demonstrate the region's ability to reach attainment with the National Ambient Air Quality Standards.

TCRP TRAFFIC CONGESTION RELIEF PROGRAM – A five-year state transportation investment plan passed by the California Legislature and signed into law in 2000.

TDA TRANSPORTATION DEVELOPMENT ACT – Created by state law in 1972, the TDA authorized the use of ¼ of 1 percent of the state sales tax for transportation purposes.

TDM TRANSPORTATION DEMAND MANAGEMENT – Low-cost ways to reduce demand by automobiles on the transportation system, such as programs to promote telecommuting, flextime and ridesharing.

TEA-21 TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY – Passed by Congress in 1998, TEA-21 retained and expanded many of the programs created in 1991 under the Intermodal Surface Transportation Equity Act (ISTEA). The law reauthorized federal surface transportation programs for six years (1998-2003), and significantly increased overall funding for transportation. Its successor is SAFETEA-LU.

TEA TRANSPORTATION ENHANCEMENT ACTIVITIES – A SAFETEA-LU funding category where ten percent of STP monies must be set aside for projects that enhance the compatibility of transportation facilities with their surroundings. Examples of TEA projects include bicycle and pedestrian paths, restoration of rail stations or other historic transportation facilities, acquisition of scenic or open space lands next to travel corridors, and murals or other public art projects.

TEU – 20-foot equivalent unit is a measure of containerized cargo equal to one standard 20-foot by 8-foot by 8 ½-foot container.

TIP TRANSPORTATION IMPROVEMENT PROGRAM – The Transportation Improvement Program (TIP) is a federal and state mandated six-year programming document that contains financial and other information about local highway, state highway, and transit projects and services. This listing includes all capacity- and non-capacity enhancing transportation projects programmed with federal, state or local funds. The TIP also includes all capital and non-capital/operational elements for both highway and transit projects. Lastly, any regionally significant project, as defined by the Southern California Association of Governments (SCAG), must be included in the TIP even if it is not federally funded. The TIP is a planning process mandated by federal and state requirements. A transportation project is not eligible for federal/state funding, federal/state permits and environmental review (EIR, EIS), unless it is listed in the TIP. Before federal funds can be approved to listed project sponsors, the TIP must meet air quality conformity standards and be financially constrained. The Los Angeles County TIP becomes part of the Southern California Association of Governments' (SCAG) Regional Transportation Improvement Program (RTIP).

Once approved, it becomes part of the Federal Statewide Transportation Improvement Program (FSTIP) approved by the U.S. Department of Transportation (USDOT). Finally, it becomes part of the Federal Transportation Improvement Program (FTIP) approved by the Federal Highway Administration (FHWA) and the Fedral Transit Administration (FTA).

TITLE VI REQUIREMENTS – Title VI is a section of the federal Civil Rights Act, which requires recipients of federal funding to ensure that programs do not have the effect of subjecting persons to discrimination because of their race, color or national origin. The U.S. Department of Transportation establishes guidance regarding the analysis required to assess the benefits and burdens of transportation programs on various socio-economic groups.

TNET TRANSIT NETWORK – A mathematical representation of an area's transit facilities used in transportation modeling, composed of transit lines and non-transit links.

TOD TRANSIT ORIENTED DEVELOPMENT – A type of development that links land use and transit facilities to support the transit system and help reduce sprawl, traffic congestion and air pollution. It calls for locating housing, along with complementary public uses (jobs, retail and services) at strategic points along a transit line.

TOS TRAFFIC OPERATIONS SYSTEM – In Los Angeles County, Caltrans and the CHP monitor traffic flows using detectors embedded in pavement and closed-circuit television cameras. This data enables efficient dispatching of CHP and FSP services. This data also is used for the Freeway changeable message boards and ramp metering.

TRANSITWAY – A transportation corridor dedicated for exclusive or preferential use by public transit vehicles, including rail vehicles, buses, carpools and vanpools.

TRANSPORTATION INFRASTRUCTURE – Transportation infrastructure generally refers to the built transportation system including highways, bridges, railways, ports, and transit facilities. Infrastructure for "transit" systems includes the fixed components of the transit system, such as rights-of-way, buses and rail vehicles, tracks, signal equipment, stations, park-and-ride lots, bus stops and maintenance facilities.

TSM TRANSPORTATION SYSTEM MANAGEMENT – That part of the urban transportation planning process undertaken to improve the efficiency of the existing transportation system by better managing the system. The intent is to make better use of the existing transportation system by using short-term, low-capital transportation improvements that generally cost less and can be implemented more quickly than major capital projects.

TTI TEXAS TRANSPORTATION INSTITUTE – A transportation research group affiliated with Texas A&M University that publishes the annual Urban Mobility Report.

UNLINKED PASSENGER TRIP – A technical measure for a passenger boarding on a transit service which counts every travel segment as a separate trip. For example, a passenger using two different bus routes for the same journey would board two different buses and be counted as two unlinked passenger trips.

URBAN MOBILITY REPORT – Annual report released by the Texas Transportation Institute that ranks urban areas by various transportation and mobility indicators including congestion, average hours of highway delay, and regional public transportation investment.

U.S. DOT UNITED STATES DEPARTMENT OF TRANSPORTATION – The federal cabinet-level agency with responsibility for highways, mass transit, aviation and ports headed by the secretary of transportation. The DOT includes the Federal Highway Administration and the Federal Transit Administration.

VEHICLE OCCUPANCY – The number of people aboard a vehicle at a given time; also known as auto or automobile occupancy when the reference is to automobile travel only.

VEHICLE TRIP – A one-way movement of a vehicle between two points.

VMT VEHICLE-MILES TRAVELED – The number of miles that vehicles are driven over a certain time period (usually a day or a year). VMT are key data for highway planning and management, and a common measure of roadway use. This data allows analysts to estimate on-road vehicle fuel consumption, congestion, air quality, and potential gas-tax revenues.

VSH VEHICLE SERVICE HOURS – The total hours of revenue service operated by transit service vehicles. This does not include deadhead hours.

VSM VEHICLE SERVICE MILES – The total miles traveled by transit service vehicles while in revenue service. This does not include deadhead mileage.

ZERO EMISSIONS – Refers to a type of engine or energy source that emits no waste products that pollute the environment and does not contribute to climate change.

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