SUBREGIONAL MOBILITY MATRIX
SAN FERNANDO VALLEY

Project No. PS-4010-3041-YY-01-01

Final Report – Final

Prepared for:

Ⓜ Metro

Prepared by:
STV Incorporated
1055 West Seventh Street
Suite 3150
Los Angeles, CA 90017

March 2015

Final Report – Final

Subregional Mobility Matrix
San Fernando Valley
PS-4010-3041-YY-01-01

Prepared for:

Metro

Los Angeles County
Metropolitan Transportation Authority

Prepared by:
STV Incorporated

In Association With:
Iteris, Inc
Katherine Padilla & Associates
Ryan Snyder Associates, LLC

Quality Review Tracking

Version #	Date	Reviewer Signature	Description/Comments
Draft	1/30/15	STV Reviewer: Tyler Bonstead	TRB
Final	3/11/15	STV Reviewer: Tyler Bonstead	TRB

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

Table of Contents

List of Tables

List of Figures

S U B R E G I O N A L   M O B I L I T Y   M A T R I X – S A N   F E R N A N D O   V A L L E Y

List of Terms and Acronyms

Acronyms	Definitions
AB	Assembly Bill
ADT	Average Daily Traffic
BRT	Bus Rapid Transit
CalEnvironScreen	California Environmental Health Hazard Screening Tool
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
COG	Council of Governments
CSTAN	Los Angeles Countywide Strategic Truck Arterial Network
ITS	Intelligent Transportation Systems
LADOT	Los Angeles Department of Transportation
LOS	Level-of-Service
LRT	Light Rail Transit
LRTP	Long Range Transportation Plan
LVMCOG	Las Virgenes/Malibu Council of Governments
MAP-21	Moving Ahead for Progress in the 21st Century Act
Metro	Los Angeles County Metropolitan Transportation Authority
MPO	Metropolitan Planning Organization
O&M	Operations and Maintenance

Acronyms	Definitions
OPR	Governor's Office of Planning and Research
NCTC	North County Transportation Coalition
PCH	Pacific Coast Highway
PDT	Project Development Team
PeMS	Caltrans Freeway Performance Monitoring System
SB	Senate Bill
SBCCOG	South Bay Cities Council of Governments
SCS	Sustainability Communities Strategy
SFV	San Fernando Valley
SFVCOG	San Fernando Valley Council of Governments
SGVCOG	San Gabriel Valley Council of Governments
SRTP	Short Range Transportation Plan
STAA	Surface Transportation Assistance Act
TDM	Transportation Demand Management
TIP	Transportation Improvement Program
TSM	Transportation Systems Management
VMT	Vehicle Miles Traveled
WCCOG	Westside Cities Council of Governments

1.0   INTRODUCTION

1.1   Mobility Matrix Overview

In February 2014, the Los Angeles County Metropolitan Transportation Authority (Metro) Board approved the holistic countywide approach for preparing Mobility Matrices for the San Gabriel Valley Council of Governments (SGVCOG), Central Los Angeles, Westside Cities Council of Governments (WCCOG), San Fernando Valley Council of Governments (SFVCOG), Las Virgenes/Malibu Council of Governments (LVMCOG), North County Transportation Coalition (NCTC), and South Bay Cities Council of Governments (SBCCOG) (see Figure 1-1). The Gateway Cities COG is developing its own Strategic Transportation Plan which will serve as their Mobility Matrix. The SFVCOG Mobility Matrix Subregion is presented in

Figure 1-2.

For the purposes of the Mobility Matrix work, cities with membership in two subregions selected one in which to participate. The cities of La Cañada Flintridge, Pasadena, and South Pasadena chose the SGVCOG, and Burbank and Glendale chose the SFVCOG. The City of Santa Clarita opted to be included in the SFVCOG instead of the NCTC.

In response to Metro Board direction in January 2015, the boundary between the WCCOG and the Central Los Angeles subregion was revised to roughly follow La Brea Avenue from north to south. The border between the WCCOG and the SBCCOG was revised to transfer a small portion of the City of Inglewood from the WCCOG subregion to the SBCCOG. The border between the Central Los Angeles subregion and the SBCCOG was revised to transfer an area of South Los Angeles from the SBCCOG to the Central Los Angeles Subregion.

Also in January 2015, the Metro Board created the Regional Facilities category. Regional Facilities include projects and programs related to Los Angeles County's four commercial airports (Los Angeles International Airport, Burbank Bob Hope Airport, Long Beach Airport, and Palmdale Regional Airport), the two seaports (Port of Los Angeles and Port of Long Beach), and Union Station. The projects/programs related to the Regional Facilities will be included in a separate report.

1.2   Project Purpose

The purpose of the San Fernando Valley Subregional Mobility Matrix is to establish subregional transportation goals and objectives, and to identify and evaluate projects and programs that meet these goals and objectives, and that will serve as a starting point for the update of the Metro Long Range Transportation Plan (LRTP) currently scheduled for adoption in 2017. This Mobility Matrix, along with concurrent efforts in other Metro subregions, includes the development of subregional goals and objectives to guide future transportation investments, an assessment of baseline transportation system conditions to identify critical needs and deficiencies, and an initial screening of project and programs based on their potential to address subregional objectives and

countywide performance themes. The Mobility Matrix includes a preliminary assessment of anticipated investment needs and project and program implementation over the short-term (2015-2024), mid-term (2025-2034) and long-term (2035-2045) time frames. The Mobility Matrix does not prioritize projects, but rather serves as a basis for a Strategic Transportation Plan for future transportation investments over the next 20 plus years.

Figure 1-1. Los Angeles County Mobility Matrix Subregions
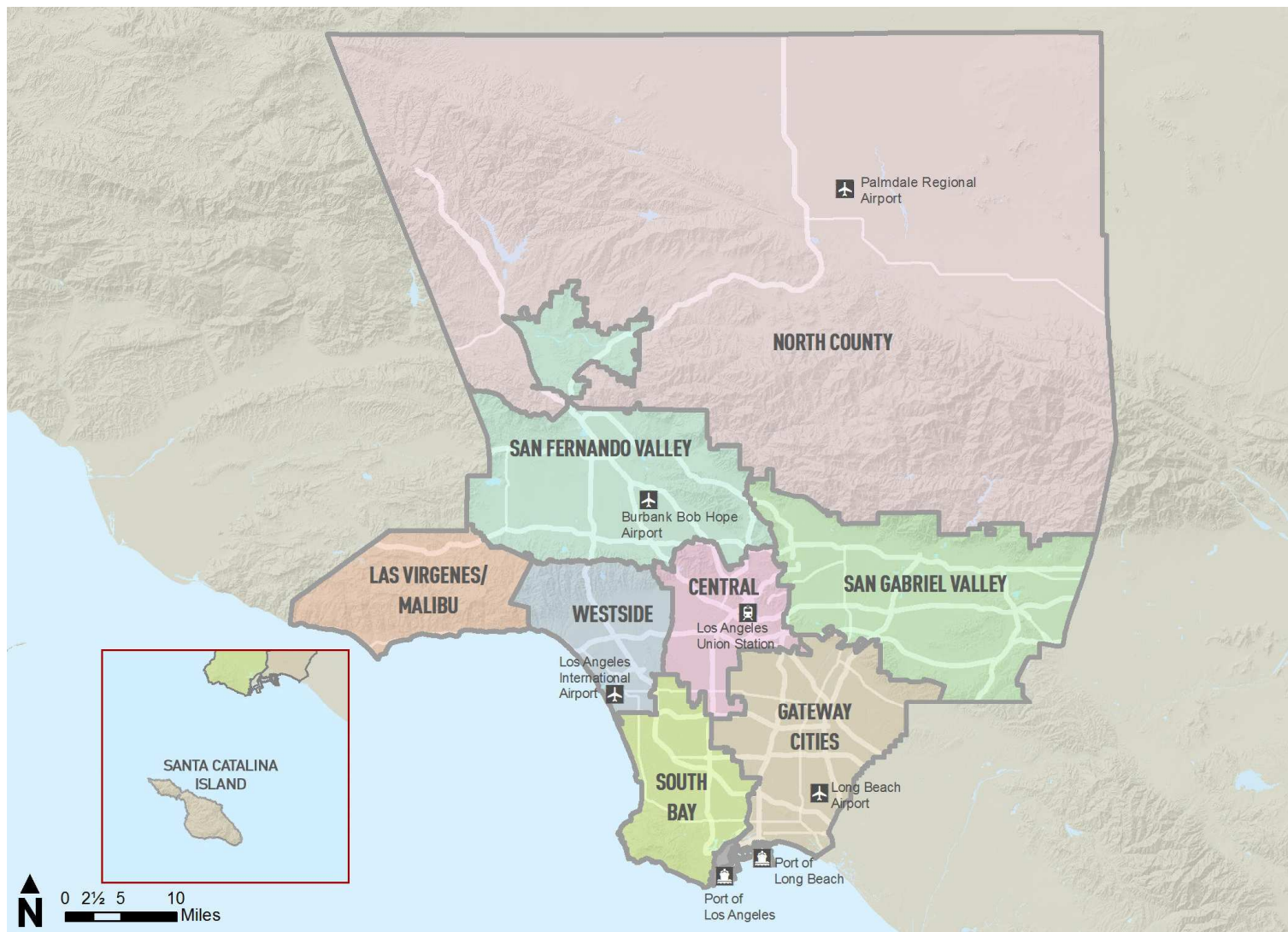
Source: STV, 2015

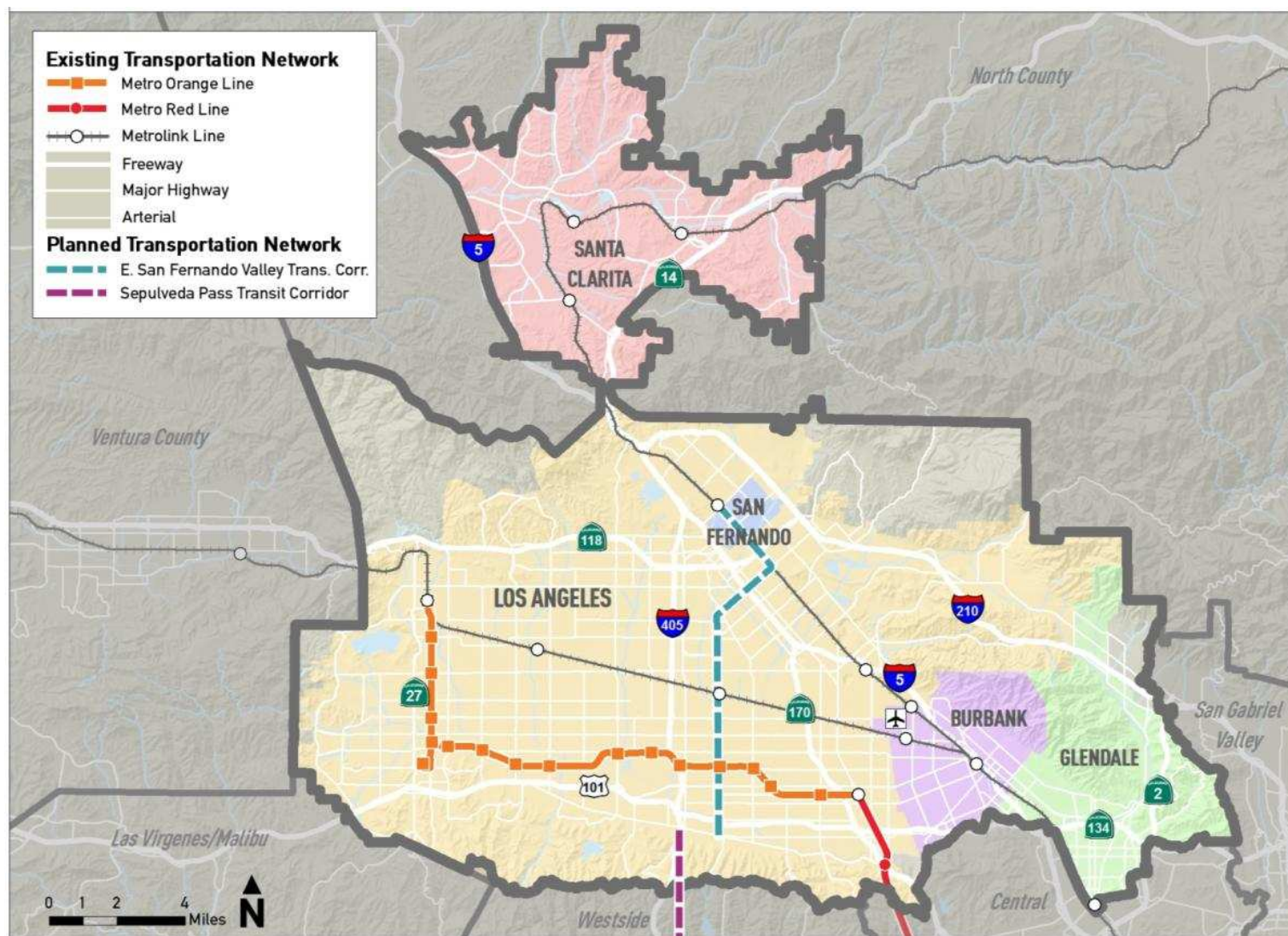**Figure 1-2. San Fernando Valley Mobility Matrix Study Area**

Source: STV, 2015

S U B R E G I O N A L M O B I L I T Y M A T R I X – S A N F E R N A N D O V A L L E Y

1.3 Developed by Subregional Jurisdictions and Stakeholders

To ensure proposed projects and programs reflect the needs and interests of the subregion, the Mobility Matrices followed a "bottoms-up" approach guided by a Project Development Team (PDT) selected by the subregion, consisting of city, stakeholder, and subregional representatives. The SFV PDT consisted of representatives from the following jurisdictions and stakeholder agencies:

- SFVCOG
- City of Burbank
- City of Glendale
- City of Los Angeles
- City of Santa Clarita
- City of San Fernando
- Los Angeles County Public Works
- California Department of Transportation
- Metrolink
- Southern California Association of Governments
- Burbank Bob Hope Airport

The SFV PDT met six times over the eight-month study period to guide the creation of strategic goals and objectives, determine a subregional priority package of projects and programs, oversee the project and program evaluation process, and review and approve all work products associated with the Subregional Mobility Matrix.

In addition, targeted outreach was conducted with city staff and other stakeholders on an as-needed basis to confirm project and program details. Coordination activities for this project are summarized in Appendix A.

1.4 What's in it for the Subregion?

The Mobility Matrix serves as a vehicle for communicating subregional needs into Metro's LRTP update, providing:

- **A process for developing consensus.** Through the PDT and targeted outreach, the Mobility Matrix stakeholders built consensus around goals and objectives for improving mobility within the subregion, in order to more consistently address their priority transportation issues and proposed improvements in the next LRTP and beyond.

- **An initial framework for LRTP performance analysis.** The consensus-building process included articulating a set of subregional goals and objectives; an initial screening of potential projects and programs to address those goals and objectives; and development of a set of proposed performance measures.

- **An approved list of projects and programs.** The Mobility Matrix provides a list projects and programs approved by the subregion which is intended to address transportation system deficiencies and needs.

- **Draft investment needs and implementation time frames.** Based on high-level estimates of project/program readiness and project costs, the Mobility Matrix presents the subregional investment

SUBREGIONAL MOBILITY MATRIX – SAN FERNANDO VALLEY

needs to be considered in the next LRTP over its 30-year time horizon.

1.5 Policy Context

The Subregional Mobility Matrix process was undertaken in the context of federal, state and local policies and is intended to complement local and regional planning efforts. A sampling of relevant policies considered during the development of subregional objectives and project and program evaluation includes:

1.5.1 Federal

- The Moving Ahead for Progress in the 21st Century Act (MAP-21), the 2012 Federal Transportation Authorization Bill, places a greater emphasis on performance-based planning for metropolitan planning organizations (MPOs), LRTPs, and the Transportation Improvement Program (TIP).

1.5.2 State

- Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, set greenhouse gas (GHG) mitigation targets for California with a goal of reducing GHG emissions to 1990 levels by the year 2020 across all sectors.

- Senate Bill (SB) 375, the Sustainable Communities and Climate Protection Act of 2006, authorized the Air Resources Board (ARB) to set regional targets for GHG emissions reductions from passenger vehicles, and directed California MPOs to prepare a Sustainable Communities Strategy (SCS), incorporating land use, housing, and transportation

strategies intended to help regions meet GHG emissions reduction targets.

- SB 743 (2013), the Jobs and Economic Improvement Through Environmental Leadership Act, directed the Governor's Office of Planning and Research (OPR) to develop a new approach for analyzing transportation impacts under the California Environmental Quality Act (CEQA). The law provides exemptions to CEQA requirements for certain types of development located in transit-priority areas that are consistent with adopted SCS or alternative planning strategies. An outcome of this Bill is the use of vehicle miles traveled (VMT) rather than level-of-service (LOS) metrics in CEQA transportation analysis. Whereas LOS evaluation prioritizes capacity expansion projects that reduce delay or congestion, VMT reduction can be attributed to projects that encourage ridesharing, transit use, transit-oriented development, and active transportation projects that contribute to the reduction of vehicle travel. In short, SB 743 allows for the use of VMT, rather than delay or congestion, to prioritize transportation investments. OPR has yet to establish comprehensive guidelines for the implementation of SB 743.

1.5.3 Local

- Metro's LRTP, a 30-year transportation planning document required for obtaining federal funding, was last updated in 2009. The Mobility Matrix will serve as an initial step in the 2017 LRTP update.

- Local Option Sales Tax Measures. Los Angeles County voters have approved three half-cent sales tax ballot measures over the past three decades: Proposition A,

Proposition C, and Measure R. Unlike the first two tax measures, which do not expire and did not designate funding for specific projects, Measure R expires in 30 years and contains a specific expenditure plan. Metro is considering placing a new sales tax on the 2016 Ballot. Through the Mobility Matrix process, subregional stakeholders began the project/program vetting process by identifying goals and priorities specific to their subregion. These goals and unmet needs will help focus potential additional funding on key subregional projects and programs.

1.6   Document Overview

The Subregional Mobility Matrix contains the following chapters:

- Chapter 2.0 – Subregional Overview. An overview of the SFVCOG Mobility Matrix Subregion, including key trends and issues impacting the subregional transportation system and highlighting critical needs.

- Chapter 3.0 – Subregional Goals and Objectives. A summary of SFVCOG Mobility Matrix Subregion objectives that guide subregional transportation investments.

- Chapter 4.0 – Subregional Mobility Matrix. An initial evaluation of subregional priority projects and programs for consideration in the LRTP.

- Chapter 5.0 – Implementation Timeframes and Cost Estimates. A proposed categorization of project and program implementation, including short-, mid- and long-term investment needs, as well as what the subregion foresees as its next steps.

- Appendices – Includes a log of the PDT and outreach process; baseline conditions report; methodology memorandum; a full project list with evaluation and categorization.

2.0 SUBREGIONAL OVERVIEW

This chapter presents an overview of the 2014 baseline transportation conditions within the SFVCOG Mobility Matrix Subregion. It provides key information, at the subregional level, that can be used to understand the major transportation conditions and issues in the area, and is used to assist in the subregional needs assessment as well as project/program level assessment.

A Baseline Conditions Report was prepared for the SFVCOG Mobility Matrix Subregion. The following information was assessed as part of this baseline conditions analysis effort:

- Existing projects and studies;

- Demographics: Land uses, population and employment change projected from 2014 to 2024, and environmental justice measures (transit- dependent communities and disadvantaged/at-risk communities, such as pollution burden, poverty, asthma, education rates, etc.);

- Travel markets: an assessment of trip origins and destinations to, from, and within the subregion, as well as subregional commute travel mode choice;

- Freeways: average daily traffic flow and peak hour speeds

- Arterial roadways: daily traffic flow and peak hour speeds

- Goods movement: designated truck routes per the cities' Mobility Plans, Surface Transportation

Assistance Act (STAA), and the Draft Countywide Strategic Truck Arterial Network (CSTAN) within the area

- Active transportation: existing and proposed bicycle routes, and bicycle/pedestrian-involved collisions

- Transit: bus routes, passenger rail routes, Metrolink routes, and average weekday boardings

The following sections summarize the results of the Mobility Matrix baseline conditions analysis. The full Baseline Conditions Report can be found in Appendix B.

2.1 Land Use and Demographics

About 40% of the study area is zoned residential, and one-third zoned as open and vacant land. The City of Los Angeles -SFV and the City of San Fernando have half of their land area zoned as single family housing, while Burbank and Glendale have slightly higher concentrations of multi-family housing. Commercial properties make up 9% of the study area, with major shopping centers in Glendale, Santa Clarita, and near Warner Center. The City of San Fernando has a high percentage of commercial land uses, 17%, due to the City's commercial corridor specific plans. Industrial land uses are concentrated along the Metrolink corridors, and represent 5% of the study area.

2.1.1 Population and Employment

According to the Southern California Association of Governments (SCAG) population and employment estimates and forecasts developed for the Metro 2014 Short Range Transportation Plan (SRTP), both population

and jobs are expected to grow by about 7%. . Burbank, however, stands out with employment projected to grow twice as much as population, while San Fernando has the inverse trend. From 2014 to 2024, residential and employment growth will mostly be concentrated in Santa Clarita. Employment growth will mostly concentrate around existing job centers, including Universal City and Warner Center. Figure 2-1 shows the forecasted change in population and employment.

2.1.2 Environmental Justice

Concentrations of minority and low-income communities were identified using U.S. Census Bureau American Community Survey (ACS) 2012 data and also the California Environmental Health Hazard Screening Tool (CalEnviroScreen). CalEnviroScreen aggregates variables that indicate certain types of socioeconomic vulnerability or physical exposure, such as low income, low education attainment, linguistic isolation, pollution exposure, hazardous waste exposure, or traffic exposure. The resulting indexed score shows the communities most disproportionately burdened by multiple types of exposure and risk, with a high score indicating higher levels of exposure and risk. The CalEnviroScreen scores are shown in Figure 2-2.

According to the CalEnviroScreen scores, Santa Clarita has the lowest risk in the SFVCOG Mobility Matrix Subregion, as their pollution burdens are fairly low, and there are relatively few low-income and minority populations. Burbank and Glendale's scores are mixed; they have high environmental pollution scores near the

freeways, but their demographic scores are average compared to the rest of the Subregion.

The City of San Fernando and the eastern portion of the San Fernando Valley in Los Angeles face the highest risks. The proximity to freeways and the socioeconomic characteristics of those communities contribute to higher pollution burdens. Additionally, many of these communities with the highest percentiles for pollution risk also overlap with communities with transit-dependent populations.

Figure 2-1. Projected Changes in Employment and Residents, 2014-2024
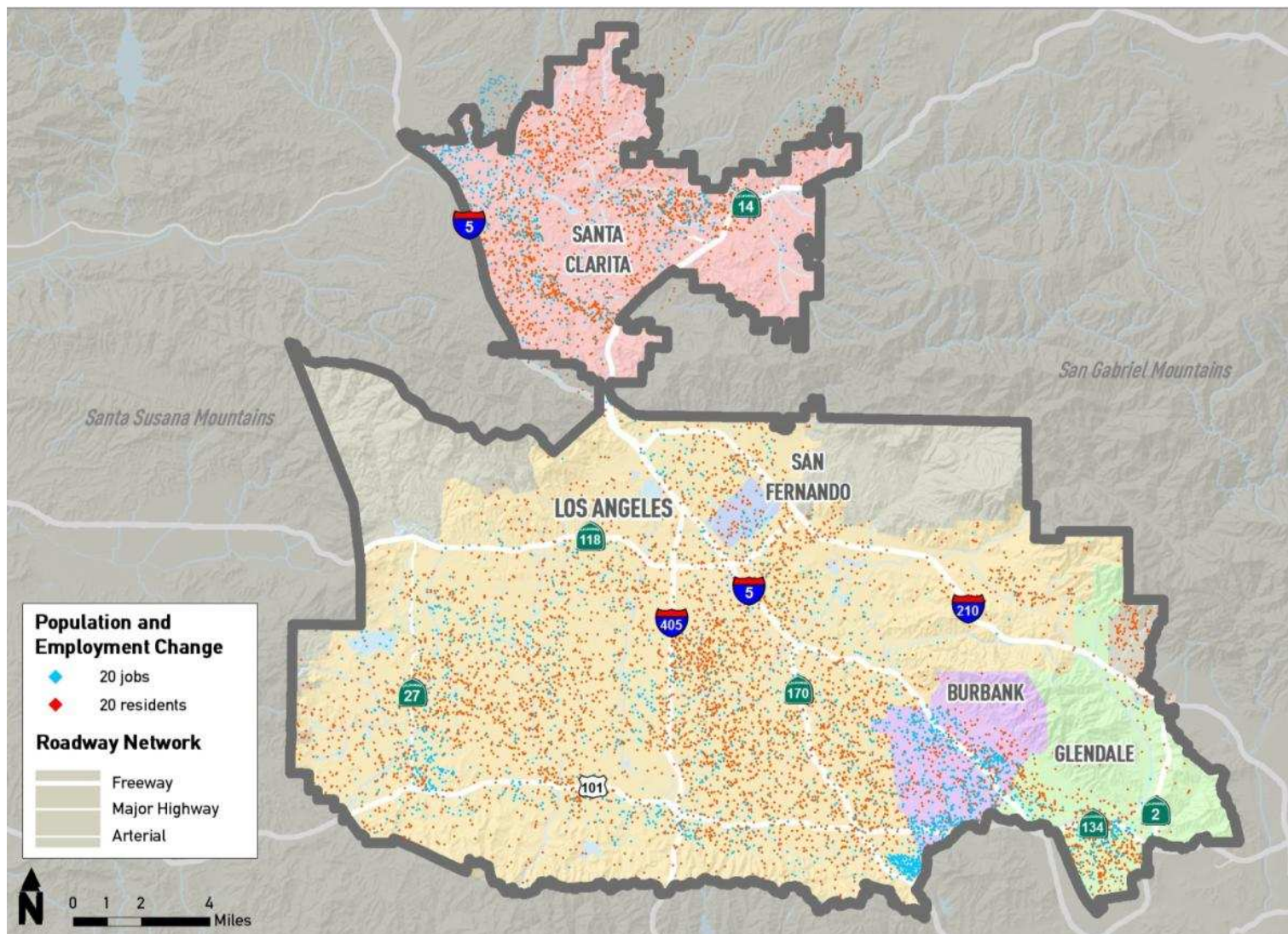
Source: STV, 2015; Metro 2014 SRTP

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

Figure 2-2. Pollution Burdens and Vulnerable Populations, Relative to Los Angeles County
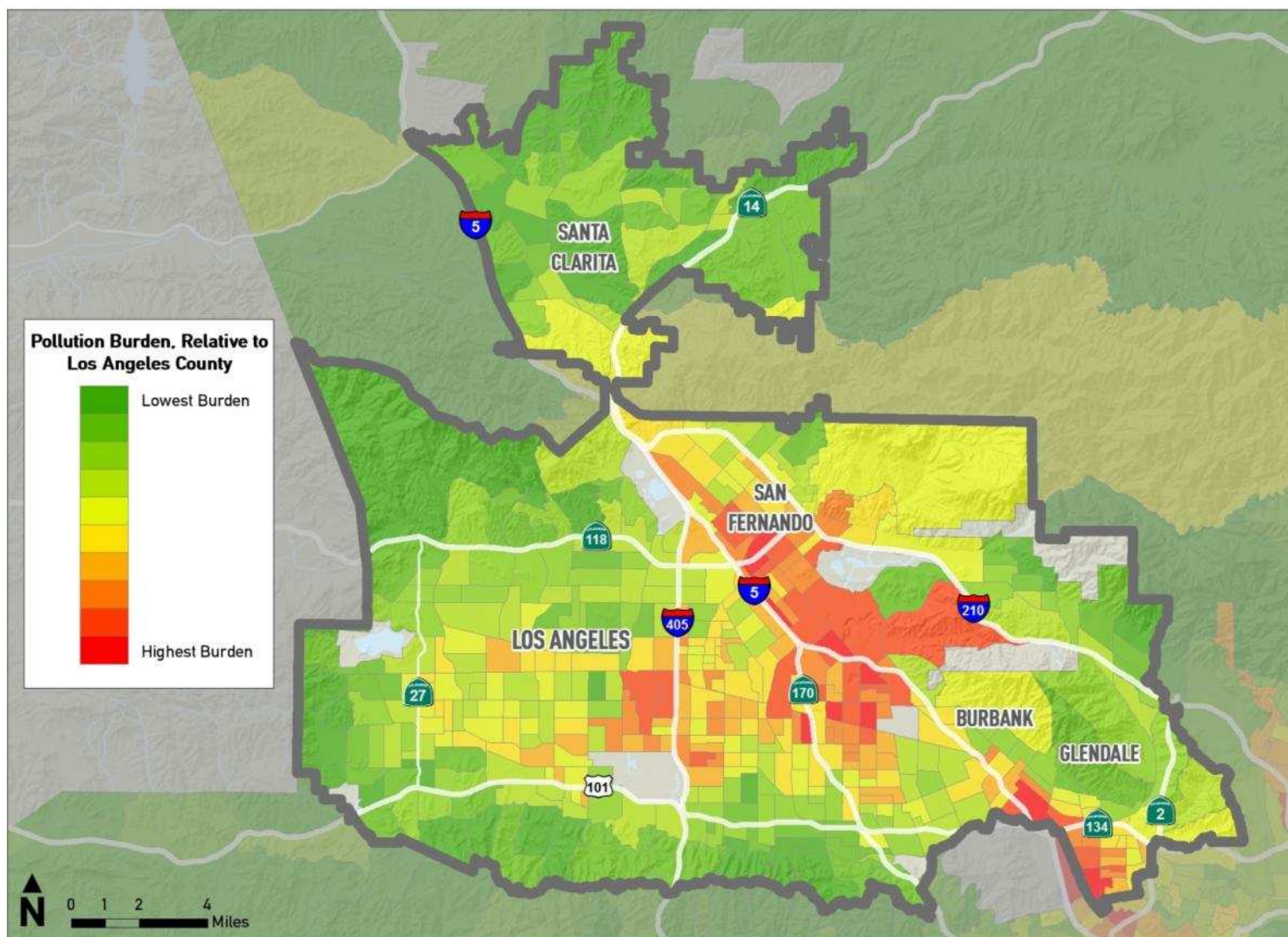
Source: STV, 2015; CalEPA, 2014

2.2 Travel Patterns

Subregional trip patterns were developed for the study area using the Metro 2014 SRTP model. The model data were summarized for two conditions: Total Daily Person Trips and AM Peak Hour Home-Based Work Person Trips. The model was used to determine the number of trips to and from the Mobility Matrix Subregion, as well as trips within the Subregion. This provides a general understanding of the major patterns of trip movements associated with people who live and work in the SFVCOG Mobility Matrix Subregion.

Table 2-1 provides an estimate of average weekday vehicle travel both to and from the SFVCOG study area and neighboring Mobility Matrix subregions in 2014. Figure 2-3 illustrates the daily person trips, which include all trips made for any reason throughout the day.

Table 2-1. Daily Trip Productions and Attractions (2014)

To/from Subregion	Trips Produced	% of Trips Produced	Trips Attracted	% Trips Attracted
San Fernando Valley	5,423,329	76%	5,423,329	78%
Central Los Angeles	402,330	6%	354,161	5%
San Gabriel Valley	220,114	3%	217,582	3%
Westside	327,866	5%	173,019	2%
Ventura Co	126,223	2%	144,677	2%
Gateway Cities	130,503	2%	123,663	2%
North County	134,642	2%	193,705	3%
Other	325,702	5%	312,461	5%
Total	7,090,709	100%	6,942,597	100%

Source: Iteris, 2014; Metro 2014 SRTP

Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 SRTP formatted by Los Angeles County subregional boundaries, as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro LRTP subregional boundaries.

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

Figure 2-3. 2014 Average Daily Trips To/From SFVCOG Mobility Matrix Subregion

Total Person Trips
- Productions
- Attractions

Roadway Network
- Freeway
- Major Highway
- Arterial

North County 193,705 / 134,642

Santa Clarita

Ventura County 126,223 / 144,677

San Fernando Valley

Las Virgenes/Malibu 82,868 / 73,004

Westside 327,866 / 173,019

Central 402,330 / 354,161

San Gabriel Valley 217,582 / 220,114

South Bay 87,938 / 118,883

Gateway Cities 130,503 / 123,663

Orange County 78,694 / 122,352

0 1 2 4 Miles

Source: STV, 2015; Iteris, 2014; Metro 2014 SRTP. Note: See Page 2-1 regarding subregional boundaries.

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

The model shows approximately 7 million total daily trips are produced and 7 million attracted each day for the SFVCOG study area. Over three-quarters of those trips stay within the SFVCOG Mobility Matrix Subregion. This indicates a higher job/housing balance in the Subregion, as many of the trips each day do not leave the Subregion. The highest trip producer and attractor areas are the Central and Westside Mobility Matrix Subregions, with approximately 5% and 4% of daily trips to and from the San Fernando Valley, respectively.

Home-based work trips are trips from home to work and back. For AM peak hour home-based-work trips, almost 60% of all the morning commute trips stay within the study area, indicating that a substantial portion of the residents in the SFVCOG Mobility Matrix Subregion live and work in the Subregion. The Central and the Westside Mobility Matrix Subregions are the two biggest producers and attracters of AM trips. Of all the outbound work trips, 12% go to the Westside, and 11% go to the Central area. About 7% of the incoming trips come from the Central area. The work trip interaction with the remaining Mobility Matrix subregions and the San Fernando Valley is relatively balanced, with most of the other areas each accounting for less than 5% of the trip interactions per Mobility Matrix subregion.

## 2.3   Vehicle Travel

2.3.1   Freeways

The Caltrans Freeway Performance Monitoring System (PeMS) was used to assess freeway volumes and speeds. Within the study area, Caltrans PeMS monitoring

locations were available through the freeway system at various locations. October 2013 speed data were reviewed, with only typical weekdays (non-holiday Tuesdays, Wednesdays and Thursdays) as a basis for the average speed data extraction. Speeds were extracted over the 24 hours of every weekday, with the peak hours chosen based on the slowest observed speeds during the peak commute period.

The highest freeway volumes in the SFV area occur on US-101 east of I-405, where the daily traffic flow is just over 350,000 vehicles. Other freeway segments that carry over 300,000 vehicles per day include I-405 between SR-118 and US-101: US-101 west of I-405; and I-5 just south of SR-118. Most of the remaining freeway segments experience a daily flow of less than 200,000 vehicles per day. The SR-210 and routes in the Santa Clarita Valley carry fewer daily travelers, compared to the rest of the study area. Freeway volumes in the SFV Mobility Matrix subregion are shown in Figure 2-4.

During the AM peak hour, speeds under 30 mph are experienced along I-405 southbound, SR-101 in both directions throughout much of the study area, on I-5 southbound, along SR-14 southbound, and along a portion of SR-210 eastbound just north of SR-2. These slow patterns reflect inbound work commute trips from the SFVCOG Mobility Matrix Subregion to employment opportunities to the south. During the PM peak hour, the opposite patterns are seen, with significant slowing along I-405 northbound, SR-14 northbound, and I-210 northbound. Much of US-101 is congested during the evening, in addition to portions of SR-118 eastbound and I-5 southbound.

Figure 2-4. Average Daily Traffic Volumes on SFVCOG Mobility Matrix Subregion Freeways
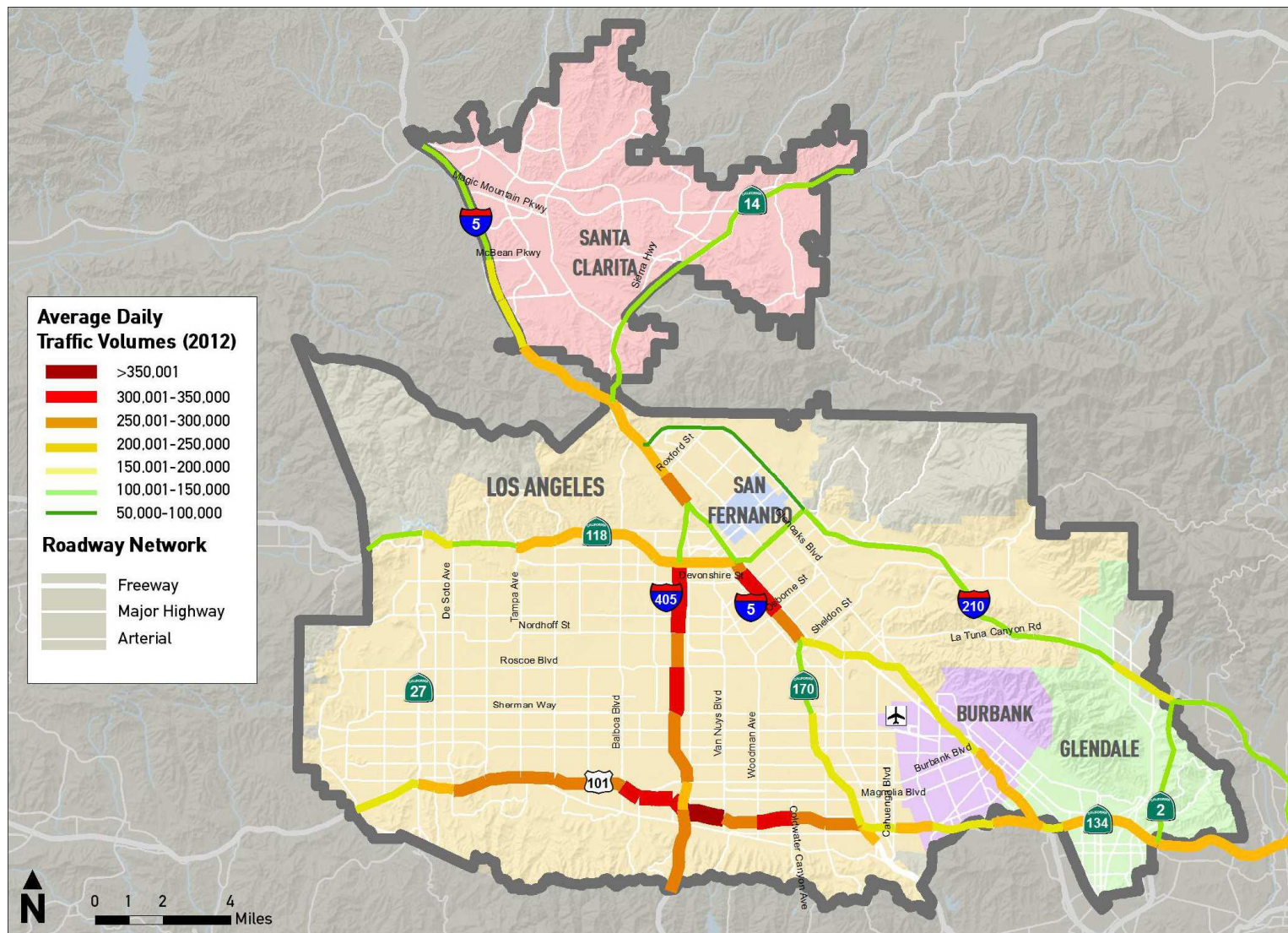
Source: STV, 2015; Iteris, 2014; Caltrans, 2014

SUBREGIONAL MOBILITY MATRIX – SAN FERNANDO VALLEY

2.3.2 Arterial Roadways

Unlike the freeway PeMS system, there is no single comprehensive source of daily traffic flow information on arterial roadways. Due to the lack of available count-based arterial volume data, the Metro 2014 SRTP model was used to identify daily volumes on selected key arterial corridors. Peak hour traffic speeds on the arterial roadways were analyzed through the use of iPeMS system. The iPeMS gathers vehicle probe data along arterials and then delivers real-time and predictive traffic analytics. For this analysis, vehicle probe data were assessed for the months of January through April 2013, and for the hours of 7:30-8:30 AM and 4:30 to 5:30 PM.

Some of the highest arterial volumes (over 40,000 ADT) are seen on east/west oriented routes in the SFV area, including Nordhoff Street, Roscoe Boulevard, Sherman Way, Victory Boulevard, and portions of Ventura Boulevard. North/south streets carrying high volumes include Canoga Avenue, De Soto Avenue, Winnetka Avenue, and Tampa Avenue. In the Santa Clarita Valley, higher volumes are seen on portions of Sierra Highway, Soledad Canyon Road, Bouquet Canyon Road, and McBean Parkway.

Peak hour slowing occurs on many of the major arterial roadways during one or both peak hours, and especially at intersections with other major arterials. The roadways with the largest segments with slow speeds include: Ventura Boulevard, Van Nuys Boulevard, Lankershim Boulevard, Hollywood Way, Glenoaks Boulevard, Beverly Glen Boulevard, and Reseda Boulevard. While these roadways experience significant slowing in many areas

within the SFVCOG Mobility Matrix Subregion, other arterials also experience slowing in more isolated segments.

2.3.3 Goods Movement

The study area contains several municipal routes which have been designated for use by trucks. Most of the municipal truck routes are in the City of Los Angeles, and include major corridors such as De Soto Avenue, Sepulveda Boulevard, San Fernando Boulevard, and Glenoaks Boulevard. STAA routes are relatively few in the SFVCOG Mobility Matrix Subregion, and mainly follow state routes such as portions of SR-27. The Draft CSTAN routes overlap with many of the municipal-designated truck routes, with greater coverage in Santa Clarita and Burbank.

2.4 Active Transportation

Each of the cities in the subregion has some designated bike routes, although network coverage varies widely. Santa Clarita has a significant network of Class I bike paths, while the other cities mostly have Class II or III lanes and routes. All the cities have a bicycle master plan, which when fully implemented, will approximately double the total mileage of bikeways. A large percentage of the new bikeways are attributable to the City of Los Angeles' bicycle-friendly streets, although half of the planned routes in the Subregion are lanes or paths.

2.5 Transit

Metro operates a grid of local and Rapid buses, which carry between 1,000 and 15,000 passengers per day. The Metro Orange Line runs through the San Fernando Valley from Chatsworth/Warner Center to the North Hollywood Metro Red Line station, connecting to Downtown Los Angeles. It serves over 26,000 passengers per day.

There are many express and commuter buses operating throughout the SFVCOG Mobility Matrix Subregion. Santa Clarita Transit operates several commuter bus lines, from the Santa Clarita Valley to major employment destinations such as Warner Center, and North Hollywood. Ridership ranges from about 300 to 700 daily passengers. The Los Angeles Department of Transportation (LADOT) also has several commuter lines through the SFVCOG Mobility Matrix Subregion, with destinations including Downtown Los Angeles, Thousand Oaks, Warner Center, Simi Valley, and Pasadena; daily ridership ranges from 350 to 1,000 passengers.

As for local bus service, Glendale, Burbank, and Santa Clarita each run their own municipal transit services, with most lines carrying fewer than 1,000 passengers per day. Three LADOT DASH shuttles circulate around Northridge, Panorama City, and Studio City, with fairly high ridership. The City of San Fernando operates a trolley service. Additionally, Santa Clarita, Glendale, and Los Angeles offer dial-a-ride services.
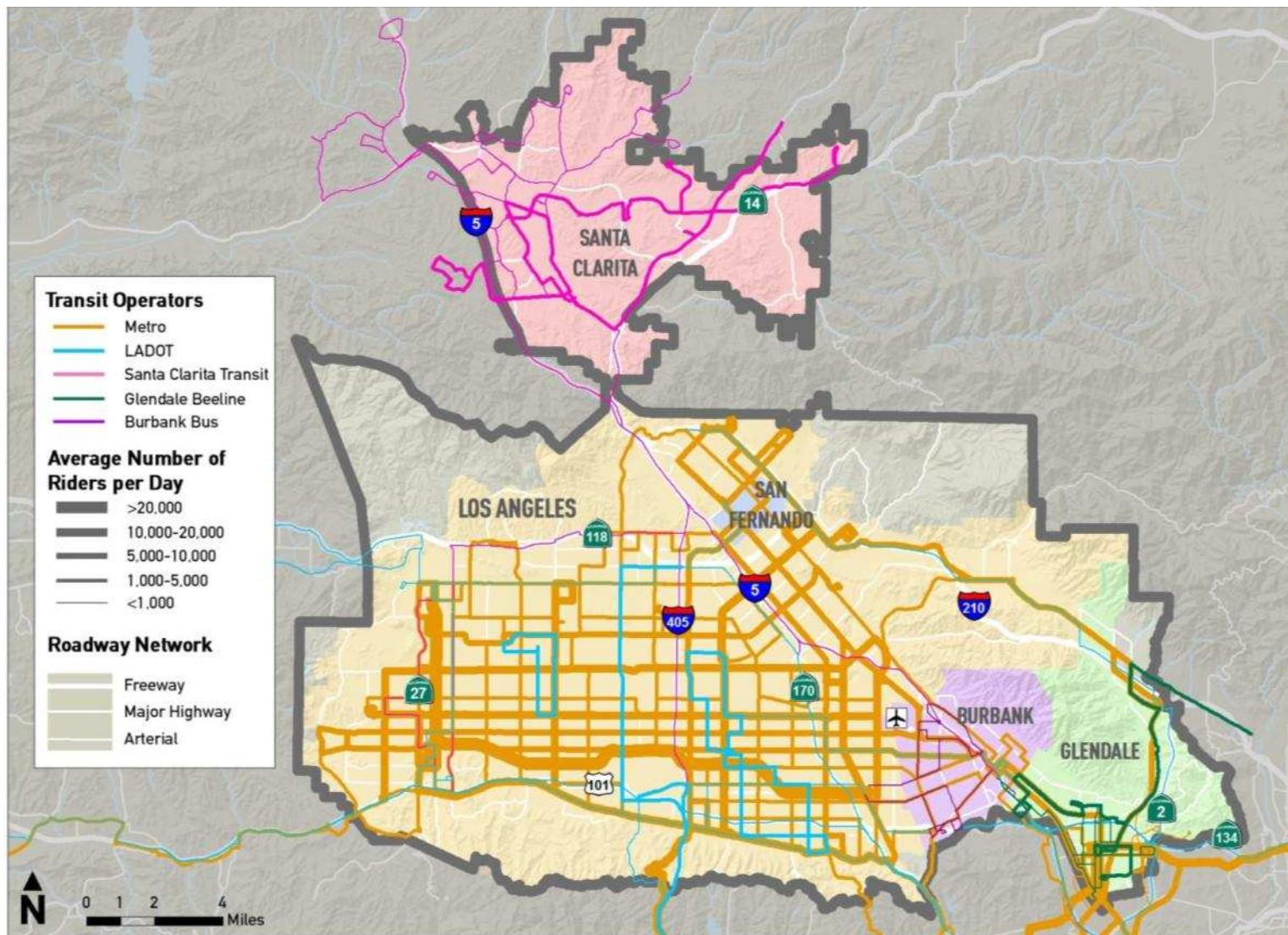
The follow agencies operate in the SFVCOG Mobility Matrix Subregion:

- Los Angeles Metro – Metro currently operates 39 bus routes within the subregion (27 local routes, six Rapid/BRT routes, five local Central Business District (CBD) routes, and the Orange Line BRT).

- Glendale Beeline – Glendale operates seven local routes and two express routes in the city.

- Burbank Bus – Burbank operates four local routes in the city.

- LADOT – LADOT operates four commuter express routes and two DASH routes in the subregion.

- Santa Clarita Transit – Santa Clarita Transit operates six express routes and 12 local routes in the subregion.

- San Fernando – San Fernando operates one trolley in the city.

While there are many transit options in the Subregion, several areas have infrequent service and coverage. The transit lines are shown in Figure 2-5.

Commuter rail service in the SFVCOG Mobility Matrix Subregion area is provided by the Metrolink Antelope Valley and Ventura County Lines, shown in Figure 2-6. The Antelope Valley Line carries about 5,800 passengers a day on weekdays, and the Ventura County Line carries about 3,835 passengers.

Figure 2-5. Existing Bus Service and Average Weekday Boardings

Source: STV, 2015

SUBREGIONAL MOBILITY MATRIX – SAN FERNANDO VALLEY

Figure 2-6. Existing Fixed Guideway Lines
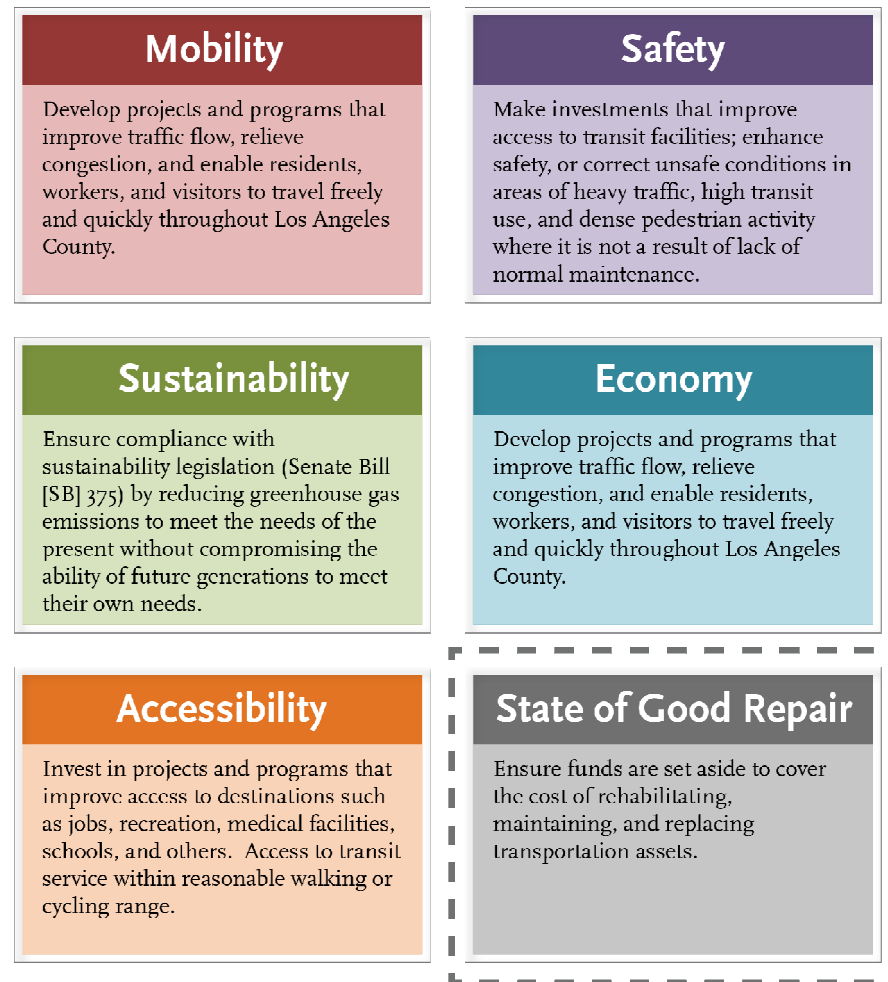

Source: STV, 2015

3.0 GOALS AND OBJECTIVES

This section describes the goals and objectives of the SFVCOG Mobility Matrix Subregion. The goals are consistent with the county's overall goals framework, which consists of six broad themes common among all the subregions. The goals also reflect the Subregion's priorities, and are based on recent studies, cities' general plans, and discussions with the cities and SFVCOG.

3.1 Mobility Matrix Themes

Six themes guide the development of the Mobility Matrix. The themes are defined in Figure 3-1. These were developed in consultation with Metro and the Mobility Matrix consultant teams to highlight the importance of recent federal and state legislation and to reflect the shared concerns of all Los Angeles County jurisdictions. Each program considered in the Mobility Matrices receives one evaluation score for each of the six themes.

Figure 3-1. Common Countywide Themes for All Mobility Matrices

Mobility

Develop projects and programs that improve traffic flow, relieve congestion, and enable residents, workers, and visitors to travel freely and quickly throughout Los Angeles County.

Safety

Make investments that improve access to transit facilities; enhance safety, or correct unsafe conditions in areas of heavy traffic, high transit use, and dense pedestrian activity where it is not a result of lack of normal maintenance.

Sustainability

Ensure compliance with sustainability legislation (Senate Bill [SB] 375) by reducing greenhouse gas emissions to meet the needs of the present without compromising the ability of future generations to meet their own needs.

Economy

Develop projects and programs that improve traffic flow, relieve congestion, and enable residents, workers, and visitors to travel freely and quickly throughout Los Angeles County.

Accessibility

Invest in projects and programs that improve access to destinations such as jobs, recreation, medical facilities, schools, and others. Access to transit service within reasonable walking or cycling range.

State of Good Repair

Ensure funds are set aside to cover the cost of rehabilitating, maintaining, and replacing transportation assets.

Although the new projects or programs proposed by the subregion do not necessarily require repair or maintenance, State of Good Repair is included as a Mobility Matrix theme because it is a priority for Metro and local jurisdictions.

MAP-21 calls for a renewed focus on ensuring transportation infrastructure is maintained in good conditions. The federal bill includes national performance measures for interstate highway conditions, and a requirement that state and metropolitan plans indicate how project selection helps achieve these targets. There are similar requirements for federally-funded transit projects, where agencies must develop transit asset management plans and system condition reporting.

The State of Good Repair theme is included in the Mobility Matrix to ensure its compliance with this renewed federal attention to system preservation, and it also highlights projects and programs that help Los Angeles County achieve its countywide goal of maintaining a state of good repair on transportation infrastructure.

3.2 Subregional Priorities

The PDT was asked to consider the six Mobility Matrix themes and develop goals and objectives for each theme which reflected subregional priorities. Overall, there is a strong commitment to increasing multimodal travel options, which would help shift people from cars to more fuel-efficient and environmentally beneficial modes of travel. Physical roadway improvements are not seen as a solution to congestion, but rather, the cities are more

interested in implementing transportation demand management (TDM) strategies, developing better active transportation facilities, and using technology to improve operations and reduce vehicle trips. Additionally, there is strong interest in supporting the development of transit hubs.

The subregion also proposed improvements to key freeway interchanges and on major corridors, which have huge impacts on regional travel. Many of the proposed projects focus on operational upgrades, rather than on increasing overall capacity. Most cities expressed a need for freeway ramp improvements and for better maintenance of existing roads. Grade separations and crossings emerged as an important topic during discussions of goods movement and commuter rail, with an emphasis on safety improvements.

Table 3-1 lists the goals and performance measure for each goal.

Table 3-1. Goals and Performance Measures for the SFVCOG Mobility Matrix Subregion

Theme	Goal	Performance Measure
Mobility	**Reduce travel times** – The cities are interested in alleviating congestion through TDM measures.	**Travel Time** – Reduce an individual's time spent traveling
	Increase reliability – While faster travel times are important, travel time reliability is also a priority for the subregion for major roadways as well as for transit.	**Reliability** – Improve the consistency, predictability, and on-time performance of travel
	Connect and coordinate transit systems and other modes serving the area – There are multiple public transportation providers, including Metro, Metrolink, and municipal transit operators. There is a need for greater coordination between the many agencies.	**System Connectivity** – Improve intermodal connections and reduce transit system gaps
Safety	**Ensure safety for all existing and future users of the transportation system** – There is a desire to provide safe interactions between all modes of travel.	**Safety** – Improve safety for all modes of travel
	Reduce conflicts between modes e.g. grade separations – The safest grade crossings do not exist – convert at-grade crossings to grade separations.	**Mode Conflicts** – Reduce mode conflicts, through separating different modes of travel
	Improve security within existing systems – The cities wish to improve safety within public transportation systems, which can also help make transit a more attractive option.	**Transit Safety/Security** – Improve safety/security of riders and decrease in incidents
Sustainability	**Reduce GHG emissions** – The subregion is interested in pursuing clean vehicle technologies to help meet SB 375 targets.	**GHG Emissions** – Reduce GHG emissions due to shift to more efficient modes, reduced trips, shorter trips, etc
	Maintain community character by protecting quality of life and the environment – Cities wish to preserve the existing community character.	**Quality of Life** – Preserve quality of life in community
	Encourage mode transfer from automobiles to more efficient modes – Encouraging drivers to use other modes, such as bicycling or transit, can help the environment, while improving the efficiency of the roadway system.	**Mode Share** – Increase percentage of trips by modes other than auto

Theme	Goal	Performance Measure
Economy	**Provide adequate means to safely move goods** – The subregion sees considerable goods movement on its freeway corridors and rail lines; there is a need to both maintain and improve the infrastructure.	**Goods Movement Impact** – Accommodate trucks and other goods movement vehicles away from neighborhoods, etc
	Improve the jobs-housing balance to reduce the number and length of vehicle trips – Improving the jobs-housing balance can reduce the number and length of vehicle trips.	**Total Trips** – Reduce number and length of vehicle trips
	Make investments that promote economic vitality, including accommodating visitors – Transportation investments should not only focus on short-term job creation, but should also spur sustained economic growth.	**Economic Output** – Improve productivity for businesses and households and increase regional economic benefits from construction spending
Accessibility	**Integrate transit, bicycle/pedestrian facilities, jobs, and residents at key hubs** – There is a strong interest in supporting the development of transit hubs and mixed use projects as part of TDM strategies.	**Transit Hub** – Support the development of transit hubs and key activity centers
	Accommodate persons with disabilities/seniors/comply with the American Disabilities Act – Improvements are needed for pedestrian and transit infrastructure to increase safety and connectivity and to provide a comfortable environment.	**Dependent Populations Served** – Increase access to transportation services for those with high levels of transit dependence
	Improve first/last mile connections to transit – Better connections to transit are needed in order to reduce the reliance on automobiles.	**First/Last Mile Connections** – Serve as many houses, jobs, and activity centers as possible
State of Good Repair*	**Preserve transportation assets and infrastructure** – There is a need to focus on maintaining existing infrastructure, and less on building new roads.	**Life of Facility or Equipment** – Increase the number of viable years before assets need to be replaced or updated
	Minimize impact of goods movement on local streets and arterials – There is a need to designate arterials for heavy trucks to keep them off of local streets and neighborhoods.	**Goods Movement Impact** – Improve designated goods movement corridors to reduce impact on local streets
	Prioritize maintenance so assets are kept in a state of good repair – It is necessary to address delayed maintenance, by devoting more funds towards operations and maintenance, rather than focusing on rehabilitation after infrastructure has broken down.	**Maintenance Funding** – Devote funds towards operations and maintenance

* - State of Good Repair is treated differently than the other five themes as discussed on Page 3-2

4.0   SUBREGIONAL MOBILITY MATRIX

An initial SFVCOG Mobility Matrix Subregion project and program list was prepared consisting of Metro's December 2013 subregional project lists, which included: unfunded LRTP projects; unfunded Measure R scope elements; and subregional needs submitted in response to a request by Directors Antonovich and Dubois. The project and program list was then updated through the outreach process and incorporates input from the PDT members and other subregion stakeholders. The list reflects not only the subregional transportation needs within the cities, but also includes many projects with wider subregional and regional impacts.

This chapter summarizes the needs of the SFVCOG Mobility Matrix Subregion, as demonstrated by the project list, and describes the high-level evaluation of project performance.

4.1   Project List

A total of 162 projects and programs were identified for the SFVCOG Mobility Matrix Subregion. The projects are divided into six broad categories: Arterial, Goods Movement, Highways, Active Transportation, Transit, and Regional Facilities. Within each category, the projects are grouped by similarity into subcategories.

While the Subregion as a whole did not identify increasing roadway capacity as a key goal, the project/program list contains many road widening and road extensions, most of which are located in Santa Clarita and in Los Angeles-SFV. Freeway interchange

improvements and upgrading highway transportation systems management (TSM) are also important to the study area. Rail safety emerged as one of the priorities, with several grade separation and crossing safety improvements proposed throughout the Subregion.

Active transportation and transit projects make up about one-third of the project list. The cities are very interested in building out their bicycle networks, as well as improving pedestrian and bicycle bridges and other existing facilities. The cities were also interested in improving their local bus service and transit infrastructure. The list also contains several high-profile transit projects, such as converting the Metro Orange Line to light rail transit (LRT) and extending the Metro Red Line to the Burbank airport.

The PDT members submitted many projects and programs within their own jurisdictions, but there was also a consensus on a several programs that would benefit the entire subregion. The project list includes several general programs such as State of Good Repair, Intelligent Transportation Systems (ITS), TDM strategies, and first-mile/last-mile programs.

Finally, the list contains a "Regional Facilities" category, which is comprised of several projects related to accessing Burbank Bob Hope Airport, a major regional travel destination located in the San Fernando Valley.

Figure 4-1 shows the projects and programs in the study area. A full list of the projects and programs can be found

in Appendix D. Additionally, an interactive website allowing users to view Mobility Matrix project locations and information is under development and will be available upon completion of this effort.

Figure 4-1. Projects and Programs Overview
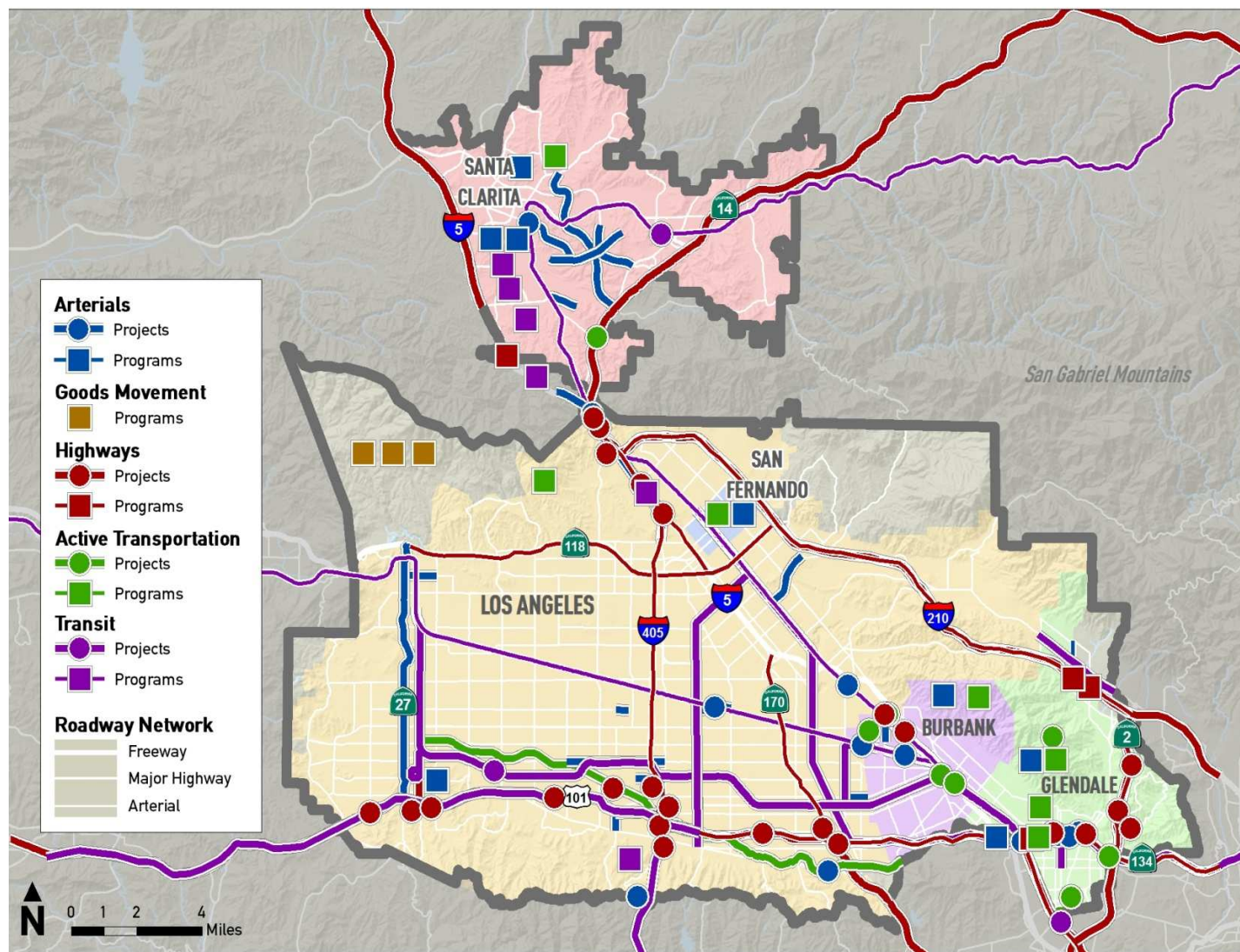
Source: STV Inc, 2015

4.2 Evaluation

The evaluation is meant to identify at a high level of analysis the subregional projects and programs that have the potential to address subregional and countywide transportation goals for later quantitative analysis in the LRTP update. The Mobility Matrix does not prioritize the projects, but rather is to be used as a screening tool and a starting point for the LRTP update process. The evaluation is qualitative in nature, due to a limited time frame for completion and largely incomplete and inconsistent project/program details and data. The evaluation methodology shown in Table 4-1 represents a collaborative effort spanning many months, and incorporates input from subregional representatives across Los Angeles County.

A full description of the evaluation methodology can be found in Appendix C.

4.2.1 Evaluation Matrix

Due to the subregional scale of the study, many of the smaller projects were combined or grouped together into larger subcategories or programs for ease of analysis. The evaluation assigns ratings at the subcategory level for each of the six Mobility Matrix themes. As discussed in Chapter 3, each Mobility Matrix theme has three corresponding goals; projects were rated based on their potential to contribute to one or more of the subregional goals. The ratings are shown in Table 4-2.

Table 4-1. Evaluation Methodology

To achieve the following score in a single theme:	Project must meet the corresponding criterion:
HIGH BENEFIT ●	■ Significantly benefits one or more theme goals or metrics on a <u>subregional</u> scale
MEDIUM BENEFIT ◐	■ Significantly benefits one or more theme goals or metrics on a <u>corridor or activity center</u> scale
LOW BENEFIT ◔	■ Addresses one or more theme goals or metrics on a <u>limited/localized</u> scale (e.g., at a single intersection)
NEUTRAL BENEFIT ○	■ Has no cumulative positive or negative impact on theme goals or metrics
NEGATIVE IMPACT ▬	■ Results in cumulative negative impact on one or more theme goals or metrics

Table 4-2. Performance Evaluation – Summary by Subprogram

ID	# of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		•Reduce Travel Times •Increase Reliability •Improve System Connectivity	•Improve Safety •Reduce Mode Conflicts •Improve Transit Safety/Security	•Reduce GHG Emissions •Improve Quality of Life •Encourage Efficient Mode Share	•Accommodate Goods Movement •Reduce Number and Length of Trips •Enhance Economic Output	•Integrate Transit Hubs •Serve Transit Dependent Populations •Improve First/Last Mile Connections	•Preserve Life of Facility or Equipment •Reduce Goods Movement Impact •Balance Maintenance & Rehabilitation
Arterials							
Tunnel Projects	2	◐	○	○	○	○	○
Grade Separation Projects	5	●	●	◐	◐	○	◔
Extension or New Road Projects	12	●	○	○	◔	○	○
Widening Programs/Projects	17	◐	○	—	○	○	◔
State of Good Repair/Safety Programs	1	◐	◐	◔	◔	○	●
TSM	8	◐	○	◔	○	○	○
Goods Movement							
Grade Crossing Safety Improvement Programs	1	○	●	○	●	◔	◐
Arterial Programs	1	○	◐	○	●	○	◐
Rail Programs	1	●	◔	◔	●	○	◔

ID	# of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		•Reduce Travel Times •Increase Reliability •Improve System Connectivity	•Improve Safety •Reduce Mode Conflicts •Improve Transit Safety/Security	•Reduce GHG Emissions •Improve Quality of Life •Encourage Efficient Mode Share	•Accommodate Goods Movement •Reduce Number and Length of Trips •Enhance Economic Output	•Integrate Transit Hubs •Serve Transit Dependent Populations •Improve First/Last Mile Connections	•Preserve Life of Facility or Equipment •Reduce Goods Movement Impact •Balance Maintenance & Rehabilitation
Highways							
Arterial Interchange Programs/Projects	21	●	○	○	○	○	◔
Freeway Interchange Projects	6	●	◔	○	○	○	◔
Freeway Corridor Projects	13	●	○	—	○	○	○
Soundwall Projects	2	○	○	◐	○	○	○
State of Good Repair/Safety Programs	2	◐	◐	◔	◐	○	●
TSM	3	◐	◔	○	○	○	○
Active Transportation							
Bicycle/Pedestrian Programs/Projects	11	◐	◐	●	○	●	○
ADA Access	1	○	●	○	○	◐	○
Pedestrian Bridges	3	○	●	○	○	◐	○
Complete Streets Program	4	○	●	◐	●	●	○
Sustainability Programs	3	○	○	●	○	○	○
Park and Ride Projects/Programs	4	◔	○	◐	◐	◐	◔
TDM Program	1	◐	○	●	●	◐	○
Mobility Hubs/First-Last Mile Programs	2	●	○	●	○	●	○

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

ID	# of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		•Reduce Travel Times •Increase Reliability •Improve System Connectivity	•Improve Safety •Reduce Mode Conflicts •Improve Transit Safety/Security	•Reduce GHG Emissions •Improve Quality of Life •Encourage Efficient Mode Share	•Accommodate Goods Movement •Reduce Number and Length of Trips •Enhance Economic Output	•Integrate Transit Hubs •Serve Transit Dependent Populations •Improve First/Last Mile Connections	•Preserve Life of Facility or Equipment •Reduce Goods Movement Impact •Balance Maintenance & Rehabilitation
Transit							
Bus Programs/Projects	15	●	○	◑	○	●	○
Commuter Rail Programs	2	●	◑	●	●	◔	◑
Real-Time Travel Information	1	◑	◔	◔	○	◑	○
State of Good Repair/Safety Programs	1	◑	●	◑	○	○	●
Transit Center	2	◔	◔	◑	◑	◑	○
BRT Projects	3						
Burbank to Hollywood BRT: Downtown Burbank to Hollywood		◑	○	◑	●	●	○
Pasadena to North Hollywood BRT: Via SR-134 through Glendale & Burbank		●	○	●	●	●	○
Metro Orange Line: Bus operational improvements (shorter headways, grade separations, crossing gates, etc)		●	◑	●	●	◑	○
Rail Projects	3						
Metro Red Line Extension: North Hollywood to Sylmar		●	○	●	●	●	○
Glendale Downtown Streetcar		●	○	●	●	●	○
Metro Orange Line conversion to LRT		●	○	●	●	◑	○
Rail or Bus Projects	2						
Sepulveda Pass Transit Corridor		●	◑	●	◑	●	○
East San Fernando Valley Transit Corridor		◑	◑	◑	◑	●	○

S U B R E G I O N A L   M O B I L I T Y   M A T R I X – S A N   F E R N A N D O   V A L L E Y

ID	# of Projects	Mobility ·Reduce Travel Times ·Increase Reliability ·Improve System Connectivity	Safety ·Improve Safety ·Reduce Mode Conflicts ·Improve Transit Safety/Security	Sustainability ·Reduce GHG Emissions ·Improve Quality of Life ·Encourage Efficient Mode Share	Economy ·Accommodate Goods Movement ·Reduce Number and Length of Trips ·Enhance Economic Output	Accessibility ·Integrate Transit Hubs ·Serve Transit Dependent Populations ·Improve First/Last Mile Connections	State of Good Repair ·Preserve Life of Facility or Equipment ·Reduce Goods Movement Impact ·Balance Maintenance & Rehabilitation
Regional							
Clybourn Ave: Grade separation at railroad tracks / Vanowen St / Empire Ave		●	●	◐	◐	○	◔
Hollywood Way: Widen to 6 lanes from Thornton Ave to Glenoaks Blvd		◐	○	○	○	○	◔
I-5/Buena Vista Ave: Reconfigure ramps and connect with Winona Ave		●	○	○	○	○	◔
Hollywood Way/San Fernando Rd Metrolink station pedestrian bridge		○	●	○	○	◐	○
Burbank Airport: CNG Refueling Station		○	○	●	○	○	○
Metro Orange Line Extension: North Hollywood to Bob Hope Airport		●	○	●	●	●	○
Burbank/Glendale LRT: From LA Union Station to Burbank Airport		●	◐	●	◐	●	○
Pasadena to Burbank Airport LRT: Via SR-134 / I-5 through Glendale & Burbank		◐	◔	◔	◔	◔	○
Metro Red Line Extension: North Hollywood to Burbank Airport		◔	◔	◔	◔	◔	○

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

4.3   Findings

Overall, most projects perform very well under one or two Mobility Matrix themes, while also providing some secondary benefits in other themes. Only a few arterial and freeway projects receive negative scores \under the Sustainability theme, but the negative impacts should be weighed against the positive mobility effects these projects might bring. Some projects have many Neutral/No Benefit scores, but that does not mean they do not provide benefits; rather, those projects tend to be tightly focused on one theme.

Arterial and Highway projects perform well under the Mobility theme, as they primarily focus on improving system connectivity and travel time reliability. Their Safety ratings tend to be mixed; some projects, such as grade separations, have clear safety benefits, but other projects, such as road widenings, may actually decrease safety for pedestrians. It was also difficult assigning a Sustainability rating for many of the roadway improvement projects, due to a lack of traffic and GHG emissions modeling. While there are a few road widening projects that address known hot spots and congested corridors, many of the arterial and highway widening projects received a Negative Impact rating, due to anticipated induced demand and increased emissions. The roadway and highway projects typically had no impact on Accessibility, so they were rated as Neutral/No Benefit for that theme.

The Active Transportation projects score highly under the Safety, Sustainability, and Accessibility themes. The projects involving bicycle and pedestrian improvements accomplish several goals in multiple themes; this seems

to reinforce the PDT's commitment to improving active transportation facilities. Park-and-ride projects also score moderately well in almost all of the themes.

Many of the Transit projects are related to improving existing bus service, and they score highly for Mobility, Sustainability, and Accessibility. The Transit category also contains several high-profile projects, such as Metro Orange and Red Line extensions, new LRT lines, the Sepulveda Pass Transit Corridor, and the East San Fernando Valley Transit Corridor. Most of these high profile projects score positively under nearly every theme, as they accomplish many of the PDT members' goals.

Finally, the project/program list contains a few programs which address state of good repair specifically, while some of the roadway projects would entail resurfacing. However, most of the projects score Neutral/No Benefit under the theme of State of Good Repair, since the majority of projects involve new infrastructure or have no need for or impact on maintenance or rehabilitation.

When looking at the scores for all six Mobility Matrix themes, the Active Transportation and Transit projects appear to achieve more subregional goals. This is not surprising since the subregional goals emphasize safety, encouraging travel by fuel-efficient modes, and improving first-mile/last-mile connections. However, the Arterial, Goods Movement, and Highway projects are also important in increasing the reliability of the roadway network and have State of Good Repair benefits.

The full list of the project ratings can be found in Appendix D.

5.0 IMPLEMENTATION TIMEFRAMES AND COST ESTIMATES

5.1 Implementation Timeframes

The projects and programs described in Chapter 4 were categorized into the three different timeframes based on a number of factors, including their readiness, need, funding availability or potential, and phasing. A 20-plus year timeframe was used as the basis for categorizing projects, with breakpoints at the ten and twenty year timeframes. The timeframes correspond to when the projects are completed and in operation. Some projects span multiple timeframes, particularly those involving on-going operations or maintenance and programs.

Metro, Mobility Matrix consultants, PDT members, cities and other stakeholders worked collaboratively to determine project implementation timeframes. A full description of the categorization methodology can be found in Appendix C. Table 5-1 provides a summary of the categorizations.

Most of the projects in the SFVCOG Mobility Matrix Subregion fall into the short- and mid-term timeframes, and the long-term projects typically are those which are phased across the 20-plus time period. The emphasis on the shorter term is partially a result of the bottoms-up approach, whereby cities submitted projects intended to address their immediate needs.

Only a few of the Arterial projects are classified as short-term, and they are located in Santa Clarita, which is experiencing significant growth. Most of the other Arterial projects are expected to be fully implemented or completed in 10 or more years, which reflects the SFVCOG Subregion's lower priority of expanding roadway capacity. A few projects will be phased throughout the short- to long-term; they include the General Plan improvements in Burbank and Santa Clarita, and also the improvements in the Warner Center Specific Plan.

The Highway projects are skewed towards the longer term, as many of the projects propose significant changes such as adding lanes or modifying complex freeway interchanges. Examples include widening the US-101 or rebuilding the I-5/SR-14/I-210 interchange. However, several TSM and arterial interchange improvements that could be implemented in the short- or mid-term.

The majority of the Active Transportation projects fall into shorter timeframes, although bikeway improvement projects are phased, in accordance to the cities' bicycle master plans. All of the PDT members cited safety as an immediate priority, which explains the shorter timeframes for the Active Transportation category.

The timeframes for Transit projects vary greatly. Several projects are expected to be ongoing throughout the 20-plus timeframe, such as increasing municipal-level transit, improving Metro bus routes, and improving Metrolink service along the two lines in the Subregion. Projects that focus on municipal service are expected to be implemented in fewer than 10 years, while more complex Metro projects involving new LRT or BRT lines are categorized into the mid- and long-term timeframes.

Table 5-1. SFVCOG Mobility Matrix Projects and Programs Categorization Summary

Programs	# of Projects	Timeframe Categories		
		Short-Term (0-10 years)	Mid-Term (11-20 years)	Long-Term (20+ years)
Arterials				
Tunnel Program	2		✓	✓
Grade Separation Program	5	✓	✓	✓
Extension or New Road Program	12	✓	✓	✓
Widening Program	17	✓	✓	✓
State of Good Repair/Safety Program	1	✓	✓	✓
TSM Program	8	✓	✓	✓
Goods Movement				
Grade Crossing Safety Improvement Program	1	✓	✓	✓
Arterial Program	1	✓	✓	✓
Rail Program	1	✓	✓	✓
Highways				
Arterial Interchange Program	21	✓	✓	✓
Freeway Interchange Program	6		✓	✓
Freeway Corridor Program	13		✓	✓
Soundwall Program	2	✓	✓	
State of Good Repair/Safety Program	2	✓	✓	✓
TSM Program	3	✓	✓	
Active Transportation				
Bicycle/Pedestrian Program	11	✓	✓	✓
ADA Access Program	1	✓		
Pedestrian Bridge Program	3	✓	✓	
Complete Streets Program	4	✓		✓
Sustainability Program	3		✓	
Park-and-Ride Program	4	✓	✓	
TDM Program	1	✓	✓	
Mobility Hubs/First-Last Mile Program	2	✓	✓	✓
Transit				
Bus Program	15	✓	✓	✓
BRT Program	3		✓	✓
Commuter Rail Program	2	✓	✓	✓
Real-Time Travel Information Program	1	✓		
Rail Program	3		✓	✓
Rail or Bus Program	2		✓	✓
State of Good Repair/Safety Program	1		✓	✓
Transit Center Program	2	✓	✓	

S U B R E G I O N A L   M O B I L I T Y   M A T R I X – S A N   F E R N A N D O   V A L L E Y

5.2 Cost Estimates

This section describes the cost range estimates at the program level. Due to variations in project scope and available cost data, costs estimated for use in the Mobility Matrix are not intended to be used for any future project-level planning. Rather, the cost ranges developed via this process constitute a high-level planning estimate for short-, mid-, and long-term subregional funding needs for the Mobility Matrix effort only.

The purpose of this section is to outline the approach for preparing rough order-of-magnitude capital cost estimates for planning purposes. For the most part, these estimates do not include vehicles, operating, maintenance and financing costs. For consistency, all estimated project and program costs were reported in year 2015 dollars, as this is the base year of the 2014 Short Range Transportation Plan. Estimates from prior years were escalated to year 2015 dollars at a three-percent annual rate.

Since the list was compiled from various sources, some of the projects in the list overlap in their scope or purpose, leading to some duplicative costs in the cost matrix. Projects or programs that cross subregional boundaries may be included in multiple subregional project lists. Where the same projects or programs are included in multiple subregions, the cost estimates include the total estimated project cost, not the cost share for each subregion. The cost sharing will be determined as part of future efforts.

Finally, due to lack of available data and the timeframe of the Mobility Matrix effort, some of the projects and

programs have missing cost estimates or do not include operations and maintenance (O&M) costs. Where O&M costs were available, they were included for the applicable timeframes. O&M costs will be updated as part of the LRTP as the subregions prioritize their projects and programs. It should be noted that for this reason, the cost established may be understated.

A full description of the cost estimating methodology can be found in Appendix C. Relatively few Arterial projects are expected to be implemented or completed in the short-term; approximately $260 to $410 million is estimated to be needed. The majority of the funding for the Arterial category would go towards mid- and long-term projects, most of which are new roads or road widenings. Overall, $1.1 to $2 billion is projected for the Arterial projects.

The Goods Movement programs focus on improving safety at rail crossings and intersections throughout the Subregion, requiring about $150 to $230 million. The Highway projects and programs require about $7.3 to $11.2 billion, with most of the funding going towards freeway corridor projects in the mid- and long-term. Some costs are missing for individual Highway projects, but they are not expected to significantly change the overall total cost.

The costs for Active Transportation projects are relatively small, compared to the other project categories, at $270 to $450 million over 20-plus years. Most of this funding is expected to be used in the short-and mid-term timeframes, as the cities build out their bicycle plans, construct pedestrian bridges, and implement

improvements around transit hubs. The small amount of long-term funding is to support a few phased projects.

The cost range for the Transit projects is high, at $11.5 to $19.8 billion. A few of the projects have different mode options with very different costs, and the proposed LRT, BRT, and HRT extensions have high capital costs. The proposed Metrolink improvements would cost between $2.6 to $4.1 billion for the SFVCOG Mobility Matrix Subregion across the entire time period. Most of the proposed transit projects will not only have capital costs, but also have increased operating and maintenance costs throughout the life of the project. Those operating costs are not included in the report. However, some projects have no capital costs at all, since they only propose to increase service. For those projects, the operating and maintenance costs are included in the totals, although they will likely be funded through a different source.

Table 5-2 shows costs by subprogram, divided over the three time periods. Table 5-3 shows the costs for each category of projects as well as timeframes.

Table 5-2. Rough Order-of-Magnitude Capital Cost by Subprogram (2015 thousands of dollars)

Program	# of projects	Projects with Estimated Costs	Projects with Original Costs	Cost Estimates					
				Short-Term		Mid-Term		Long-Term	
				Low	High	Low	High	Low	High
Arterial									
Tunnel Program	2		2	$0	$0	$34,000	$51,000	$34,000	$51,000
Grade Separation Program	5	5		$48,000	$72,000	$96,000	$140,000	$96,000	$140,000
Extension or New Road Program	12	5	7	$120,000	$180,000	$240,000	$520,000	$170,000	$420,000
Widening Program	17	16	1	$78,000	$130,000	$120,000	$180,000	$77,000	$130,000
State of Good Repair/Safety Program	1	1		$5,300	$11,000	$5,300	$11,000	$5,300	$11,000
TSM Program*	8	4	3	$20,000	$30,000	$1,600	$2,400	$70	$110
Goods Movement									
Grade Crossing Safety Improvement Program	1	1		$18,000	$27,000	$18,000	$27,000	$18,000	$27,000
Arterial Program	1	1		$20,000	$30,000	$20,000	$30,000	$20,000	$30,000
Rail Program	1	1		$12,000	$18,000	$12,000	$18,000	$12,000	$18,000
Highway									
Arterial Interchange Program*	21		12	$26,000	$60,000	$120,000	$250,000	$130,000	$200,000
Freeway Interchange Program	6		6	$0	$0	$150,000	$230,000	$670,000	$1,000,000
Freeway Corridor Program*	13		10	$0	$0	$2,000,000	$3,100,000	$4,000,000	$6,100,000
Soundwall Program	2		2	$14,000	$25,000	$1,000	$1,500	$0	$0
State of Good Repair/Safety Program	2	2		$19,000	$28,000	$19,000	$28,000	$19,000	$28,000
TSM Program*	3		2	$77,000	$110,000	$77,000	$110,000	$0	$0

Program	# of projects	Projects with Estimated Costs	Projects with Original Costs	Cost Estimates					
				Short-Term		Mid-Term		Long-Term	
				Low	High	Low	High	Low	High
Active Transportation									
Bicycle/Pedestrian Program*	11	5	4	$85,000	$150,000	$98,000	$170,000	$2,200	$4,400
ADA Access Program*	1	1		$3,000	$5,500	$0	$0	$0	$0
Pedestrian Bridge Program	3	3		$4,000	$6,000	$15,000	$18,000	$0	$0
Complete Streets Program*	4	2		$3,500	$6,400	$3,000	$4,400	$3,000	$4,400
Sustainability Program*	3	1	1	$1,300	$2,000	$48	$72	$0	$0
Park-and-Ride Program*	4	1	2	$13,000	$21,000	$20,000	$28,000	$0	$0
TDM Program	1	1		$550	$800	$550	$800	$0	$0
Mobility Hubs/First-Last Mile Program	2	2		$9,700	$18,000	$9,700	$18,000	$9,700	$17,600
Transit									
Bus Program*	15	14		$59,000	$99,000	$45,000	$73,000	$38,000	$62,000
BRT Program	3	3		$0	$0	$120,000	$190,000	$120,000	$190,000
Commuter Rail Program	2		2	$900,000	$1,300,000	$900,000	$1,300,000	$900,000	$1,300,000
Real-Time Travel Information Program	1	1		$190	$290	$0	$0	$0	$0
Rail Program	3	3		$0	$0	$3,500,000	$4,100,000	$3,400,000	$4,000,000
Rail or Bus Program	2		2	$0	$0	$730,000	$3,300,000	$730,000	$3,300,000
State of Good Repair/Safety Program	1	1		$0	$0	$15,000	$22,000	$15,000	$22,000
Transit Center Program	2		2	$24,000	$30,000	$10,000	$15,000	$0	$0
Total	**153**			**$1,600,000**	**$2,400,000**	**$8,400,000**	**$14,000,000**	**$10,000,000**	**$17,000,000**

*Some individual projects within the subprogram have missing costs, but they are not expected to greatly increase the overall cost of the program.

S U B R E G I O N A L   M O B I L I T Y   M A T R I X   –   S A N   F E R N A N D O   V A L L E Y

Table 5-3. Rough Order-of-Magnitude Project Cost Estimates and Categorizations (2015 dollars)

Type / Category	Arterial	Goods Movement	Highway	Active Transport.	Transit	Total
Short-Term (0-10 yrs)	18 Projects $270M - $410M	3 Projects $50M - $75M	12 Projects $140M - $220M	24 Projects $120M - $210M	18 Projects $980M - $1.5B	75 Projects $1.6B - $2.4B
Mid-Term (11-20 yrs)	31 Projects $500M - $910M	3 Projects $50M - $75M	29 Projects $2.4B - $3.7B	21 Projects $150M - $240M	19 Projects $5.3B - $9B	103 Projects $8.4B - $14B
Long-Term (>20 yrs)	22 Projects $390M - $760M	3 Projects $50M - $75M	32 Projects $ 4.8B - $7.3B	7 Projects $10M - $26M	13 Projects $5.2B - $8.9B	77 Projects $10B - $17B
Total	45 Projects $1.2B - $2.1B	3 Projects $150M - $230M	47 Projects $7.3B - $11B	29 Projects $280M - $480M	29 Projects $11B - $20B	153 Projects $20B - $33B

Note: Some individual projects within the subprogram have missing costs, but they are not expected to greatly increase the overall cost of the program.

Regional Facilities projects and programs at Bob Hope Airport are not included in the table.

5.3   Funding and Finance

5.3.1   2009 LRTP and Identified Additional Needs

The 2009 LRTP lays out a 30-year strategy for keeping Los Angeles County moving and is based on a financial forecast of continued economic growth and moderate inflation. The 2009 LRTP identifies a $297.6 billion investment in Los Angeles County's transportation system through 2040 and is funded with more than 45 sources of federal, state and local revenue. A majority of funding is locally generated through three half-cent voter initiatives, Propositions A and C and Measure R. These local initiatives, other local sources of revenue such as passenger fares, advertising, real estate rentals, bonding, and competitive grants account for 75 percent of Metro's 30-year financial forecast. Many more projects and programs are needed in Los Angeles County than the transportation funding is available. These additional needs constitute the Strategic Unfunded Plan. However, both the funded 2009 Plan and the Strategic Unfunded Plan will require new funding in order to add projects and services and/or accelerate projects identified for funding. Metro's commitment to maintain and improve Los Angeles County's transportation system will depend on funding availability and strategies for obtaining new or increased funding.

5.3.2   2017 LRTP Update and Exploration of New Funding Options

The 2017 LRTP will incorporate significant changes that have occurred since the 2009 LRTP was adopted, including changes in economic conditions, growth patterns, and the transportation costs and funding

forecast. It is anticipated that this Plan would incorporate existing 2009 LRTP projects as well as new project initiatives such as those that may be identified by the sub regions through the Mobility Matrices process. As with past LRTPs, this update will include recommendations for constrained (funded) projects as well as strategic (unfunded) projects that could be built if additional funding becomes available, consistent with adopted Metro Board priorities and actions. The LRTP update will revise funding recommendations for various major transportation programs, including funds available to the Call for Projects by funding category, Regional Rail/Metrolink, Access Services and other programs.   The Plan will also address state of good repair needs, new requirements for sustainability, and other initiatives and policies not anticipated in the 2009 LRTP.

The 2017 LRTP update includes the exploration of several new funding sources beyond those identified in the 2009 LRTP. Most notable is the exploration of a new transportation sales tax measure that could be considered by Los Angeles County voters as soon as November 2016. Approval of a 2016 transportation sales tax measure could significantly augment the availability of new funding included in the LRTP update and increase the size of the constrained plan. In addition to a new transportation sales tax measure, Metro is continuing the exploration of Public-Private Partnerships and congestion pricing for applicable highway and transit projects. Other new funding sources under consideration include, but are not limited to, land value capture around transit stations and California State Cap & Trade funds.

5.4 What's Next?

The Mobility Matrix is the first step in identifying the subregion's transportation projects and programs that require funding. The Mobility Matrix also identifies the subregion's goals and objectives for their unique needs and geographic considerations. The Mobility Matrix work effort resulted in a subregional, project/program list, as well as estimating those projects and program costs. This important work effort serves as a "bottoms-up" approach towards updating Metro's LRTP in the future.

Three major next steps should arise out of the Mobility Matrix process:

■ **SFVCOG Prioritization of Projects** – This Mobility Matrix study does not prioritize projects. Instead, it provides some of the information needed for decision makers to prioritize projects/programs in the next phase of work, and an unconstrained list of all potential transportation projects in the region. In preparation for a potential ballot measure and LRTP update (as described further below), the SFVCOG should decide how it wants to prioritize these projects assuming a constrained funding scenario.

■ **Metro Ballot Measure Preparations** – Metro will continue working with the PDTs of all the Subregions as it starts developing a potential ballot measure. Part of the ballot measure work would involve geographic equity determination, as well as determining the amount of funding available for each category of projects/programs and subregion of the County.

■ **Metro LRTP Update** – The potential ballot measure would then feed into a future Metro LRTP update and be integrated into the LRTP Finance Plan. If additional funding becomes available through a ballot measure or other new funding sources or initiatives, the list of projects developed through the Mobility Matrix and any subsequent list developed by the subregion could be used to update the constrained project list for the LRTP moving forward.

6.0 APPENDICES

The following appendices provide further information on issues discussed in this document.

Appendix A: Meeting Matrix

Appendix B: Baseline Conditions Report

Appendix C: Methodologies

Appendix D: Project Detail Matrix