



# SUBREGIONAL MOBILITY MATRIX SAN GABRIEL VALLEY

Project No. PS-4010-3041-F-01-TO1

Final Report

*Prepared for:*



*Prepared by:*

**Cambridge Systematics, Inc.**  
445 S. Figueroa Street, Suite 3100  
Los Angeles, CA 90071

March 2015

**Final Report**  
**Subregional Mobility Matrix**  
**San Gabriel Valley**  
**PS-4010-3041-F-01-TO1**

*Prepared for:*



*Prepared by:*

Cambridge Systematics, Inc.

*In Association With:*

D. Barton Doyle & Associates  
Emerson Associates  
WKE, Inc.

**Quality Review Tracking**

Version #	Date	Reviewer Signature	Description/Comments
Internal Review Draft	2/13/15	Jolene Hayes	
Revised Draft	2/24/15	Michael Snavelly, Jon Overman	
Revised Draft 2	3/5/15	Jon Overman, Jolene Hayes	

## Table of Contents

<b>EXECUTIVE SUMMARY.....</b>	<b>1</b>
Mobility Matrix Overview.....	1
Project Purpose.....	1
Process <sup>3</sup>	
Subregional Overview .....	3
Goals and Objectives .....	4
Subregional Projects and Programs .....	5
Evaluation.....	6
Findings .....	12
Implementation Timeframes and Cost Estimates .....	12
What’s Next? .....	13
<b>1.0 INTRODUCTION .....</b>	<b>1-1</b>
1.1 Mobility Matrix Overview.....	1-1
1.2 Project Purpose.....	1-1
1.3 Developed by Subregional Jurisdictions and Stakeholders .....	1-4
1.4 What’s in it for the Subregion? .....	1-5
1.5 Policy Context .....	1-5
1.6 Document Overview.....	1-6
<b>2.0 SUBREGIONAL OVERVIEW.....</b>	<b>2-1</b>
2.1 Land Use and Demographics.....	2-2
2.2 Travel Patterns .....	2-5
2.3 Vehicle Travel .....	2-7
2.4 Active Transportation .....	2-12
2.5 Transit .....	2-12
<b>3.0 GOALS AND OBJECTIVES.....</b>	<b>3-1</b>
3.1 Mobility Matrix Themes.....	3-1
3.2 Subregional Priorities.....	3-2
<b>4.0 SUBREGIONAL MOBILITY MATRIX.....</b>	<b>4-1</b>
4.1 Project List .....	4-1
4.2 Evaluation.....	4-3



4.3 Findings ..... 4-8

**5.0 IMPLEMENTATION TIMEFRAMES AND COST ESTIMATES ..... 5-1**

5.1 Cost Estimates ..... 5-1

5.2 Financing the Transportation System ..... 5-8

5.3 What’s Next? ..... 5-8

**6.0 APPENDICES ..... 6-1**

**APPENDIX A MEETING MATRIX ..... A-1**

**APPENDIX B METHODOLOGY MEMORANDUMS ..... B-1**

**APPENDIX C PROJECT DETAIL MATRIX ..... C-1**

**APPENDIX D BASELINE CONDITIONS REPORT ..... D-1**

## List of Tables

Table ES-1. San Gabriel Valley Mobility Matrix Subregion Transportation Programs.....	ES-5
Table ES-2. Evaluation Methodology.....	ES-7
Table ES-3. San Gabriel Valley Mobility Matrix Subregion Performance Evaluation – Summary by Subprogram.....	ES-8
Table ES-4. San Gabriel Valley Mobility Matrix Summary of Rough Order of Magnitude Cost Estimates and Categorizations.....	ES-15
Table 2-1. Summary of Ethnic and Economic Characteristics.....	2-4
Table 2-2. 2012 Commute Travel Mode Share.....	2-5
Table 2-3. Vehicle Travel Volumes to/from San Gabriel Valley Mobility Matrix Subregion, 2014 to 2024.....	2-7
Table 2-4. Peak-Period Vehicle Hours of Travel and Average Trip Time, 2014.....	2-8
Table 3-1. San Gabriel Valley Mobility Matrix Subregional Transportation Priorities.....	3-3
Table 3-2. Strategies and Performance Measures for the San Gabriel Valley Mobility Matrix Subregion.....	3-4
Table 4-1. Evaluation Methodology.....	4-3
Table 4-2. Performance Evaluation – Summary by Subprogram.....	4-4
Table 5-1. San Gabriel Valley Subregional Mobility Matrix Projects and Programs Categorization Summary.....	5-2
Table 5-2. San Gabriel Valley Mobility Matrix Program Cost Estimates and Categorizations.....	5-5
Table 5-3. San Gabriel Valley Mobility Matrix Summary of Rough Order of Magnitude Cost Estimates and Categorizations.....	5-7
Table A-1. San Gabriel Valley Mobility Matrix PDT Meetings and Approvals.....	A-1
Table B-1. Evaluation Methodology.....	B-3
Table C-1. San Gabriel Valley Mobility Matrix – Project and Program List.....	C-1

## List of Figures

Figure ES-1. Los Angeles County Mobility Matrix Subregions .....	ES-2
Figure ES-2. Common Countywide Themes for All Mobility Matrices .....	ES-5
Figure 1-1. Los Angeles County Mobility Matrix Subregions.....	1-2
Figure 1-2. San Gabriel Valley Mobility Matrix Subregion.....	1-3
Figure 2-1. Projected Changes in Employment and Residents, 2014 to 2024 .....	2-3
Figure 2-2. 2014 Average Daily Trips to/From San Gabriel Valley Mobility Matrix Subregion.....	2-6
Figure 2-3. CSAN/CMP Network of Regionally Significant Arterials in the San Gabriel Valley Mobility Matrix Subregion.....	2-9
Figure 2-4. Draft Countywide Strategic Truck Arterial Network in the San Gabriel Valley Mobility Matrix Subregion.....	2-10
Figure 2-5. Bikeway Network in the San Gabriel Valley Mobility Matrix Subregion .....	2-11
Figure 2-6. Bus Transit Service in the San Gabriel Valley Mobility Matrix Subregion.....	2-15
Figure 2-7. Weekday Rail Transit Ridership in the San Gabriel Valley Mobility Matrix Subregion .....	2-16
Figure 3-1. Common Countywide Themes for All Mobility Matrices.....	3-1
Figure 4-1. San Gabriel Valley Mobility Matrix Projects and Programs Map.....	4-2
Figure B-1. Common Countywide Themes for All Mobility Matrices .....	B-2

## List of Terms and Acronyms

Acronyms	Definitions
AB	Assembly Bill
ACS	U.S. Census Bureau American Community Survey
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
ARB	Air Resources Board
BEV	Battery Electric Vehicle
BRT	Bus Rapid Transit
CalEnviroScreen	California Environmental Health Hazard Screening Tool
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Program
COG	Council of Governments
CSAN	Countywide Strategic Arterials Network
CSTAN	Countywide Strategic Truck Arterial Network
GHG	Greenhouse Gas
HOV	High-Occupancy Vehicle
ITS	Intelligent Transportation Systems
LADOT	City of Los Angeles Department of Transportation
LOS	Level-of-Service
LRTP	Long Range Transportation Plan
LUV	Local Use Vehicle
LVMCOG	Las Virgenes/Malibu Council of Governments
MAP-21	Moving Ahead for Progress in the 21 <sup>st</sup> Century Act

Acronyms	Definitions
Metro	Los Angeles County Metropolitan Transportation Authority
MPH	Miles Per Hour
MPO	Metropolitan Planning Organization
O&M	Operations and Maintenance
OPR	Governor's Office of Planning and Research
NCTC	North County Transportation Coalition
PCH	Pacific Coast Highway
PDT	Project Development Team
PHEV	Plug-in Hybrid Electric Vehicle
SB	Senate Bill
SBCCOG	South Bay Cities Council of Governments
SCAG	Southern California Association of Governments
SCS	Sustainability Communities Strategy
SFVCOG	San Fernando Valley Council of Governments
SGVCOG	San Gabriel Valley Council of Governments
SRTP	Short Range Transportation Plan
TIP	Transportation Improvement Program
TSM	Transportation Systems Management
VMT	Vehicle miles traveled
WCCOG	Westside Cities Council of Governments

## EXECUTIVE SUMMARY

### 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 Central Los Angeles, the Las Virgenes/Malibu Council of Governments (LVMCOG), North County Transportation Coalition (NCTC), San Fernando Valley Council of Governments (SFVCOG), San Gabriel Valley Council of Governments (SGVCOG), South Bay Cities Council of Governments (SBCCOG) and Westside Cities Council of Governments (WCCOG) (see Figure ES-1). The Gateway Cities COG is developing its own Strategic Transportation Plan which will serve as its Mobility Matrix.

For the purposes of the Mobility Matrix, cities with membership in two subregions selected one subregion in which to participate. The Arroyo Verdugo subregion decided to include the cities of La Cañada Flintridge, Pasadena, and South Pasadena in the SGVCOG, and Burbank and Glendale in the SFVCOG. The City of Santa Clarita opted to be included in the SFVCOG instead of the NCTC. The City of Industry decided to be included in the San Gabriel Valley rather than the Gateway Cities. Boundaries between the WCCOG and Central Los Angeles, and the WCCOG and SBCCOG, were modified based on Metro Board direction in January 2015.

In January 2015, the Metro Board created the Regional Facilities category. Regional Facilities include projects

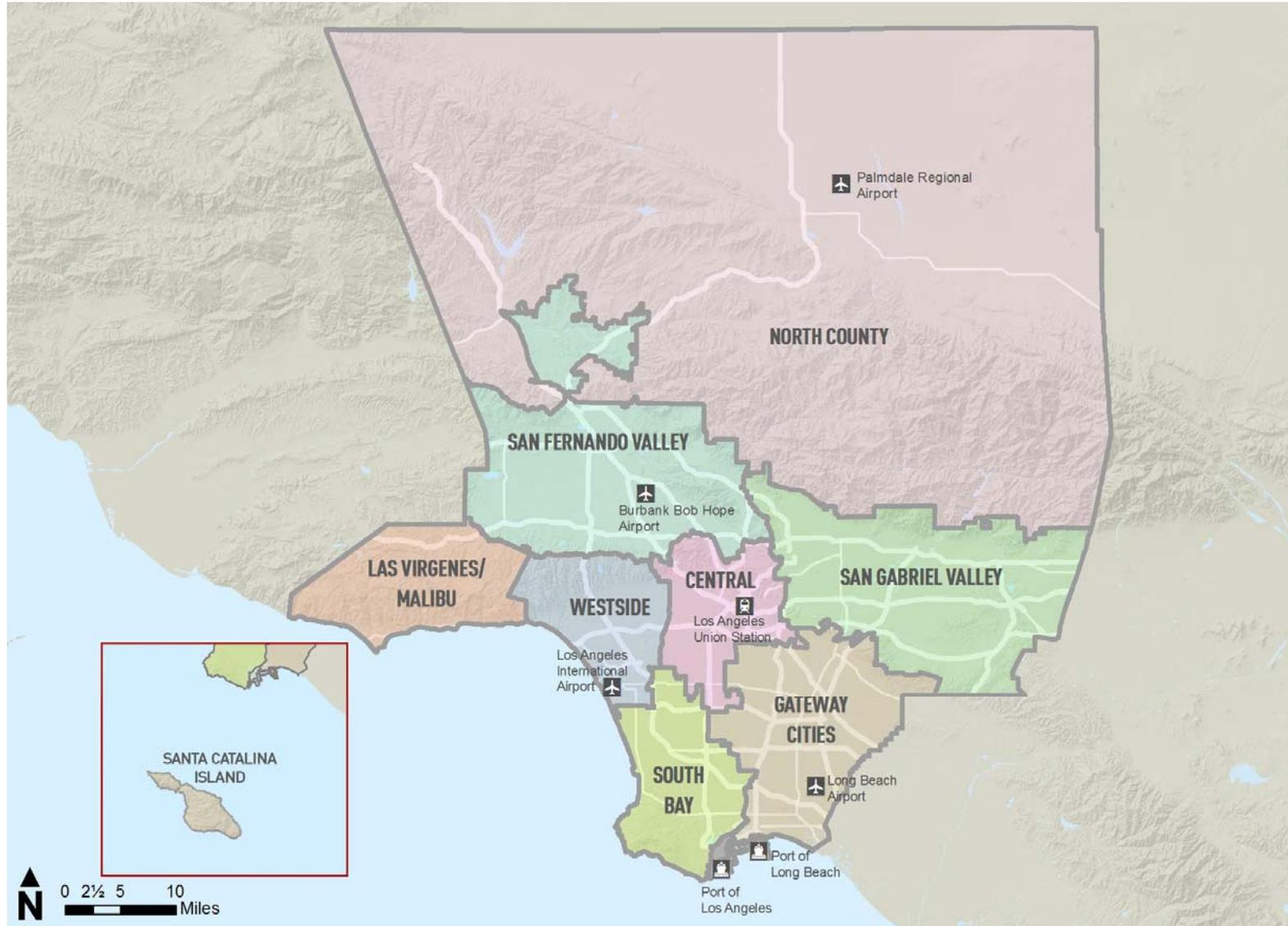
and programs related to Los Angeles County's four commercial airports (Los Angeles International Airport, Burbank Bob Hope Airport, Long Beach Airport, and Palmdale Regional Airport), the two seaports (Port of Los Angeles and Port of Long Beach), and Union Station. The projects/programs related to Regional Facilities have been removed from the subregional Mobility Matrices.

### Project Purpose

The Mobility Matrix will serve as a starting point for the update of the Metro Long-Range Transportation Plan (LRTP) currently scheduled for adoption in 2017. This San Gabriel Valley 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 projects 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 to 2024), mid-term (2025 to 2034) and long-term (2035 to 2045) timeframes. The Mobility Matrix does not prioritize projects, but rather serves as a basis for further quantitative analysis to be performed during the Metro LRTP update, expected in 2017.

Figure ES-1. Los Angeles County Mobility Matrix Subregions



**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

## Process

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 San Gabriel Valley Mobility Matrix Subregion PDT consisted of representatives from the following jurisdictions and stakeholder agencies:

- SGVCOG
- City of Alhambra
- City of Arcadia
- City of Baldwin Park
- City of Claremont
- City of Diamond Bar
- City of Industry
- City of La Puente
- City of Pasadena
- City of Pomona
- City of Rosemead
- City of San Dimas
- City of San Gabriel
- City of South Pasadena
- Alameda Corridor East (ACE)
- California Department of Transportation (Caltrans)
- County of Los Angeles

- Metrolink
- Bike San Gabriel Valley
- Metro Gold Line Foothill Extension Construction Authority

The 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.

## Subregional Overview

The San Gabriel Valley Council of Governments (SGVCOG) is a joint powers authority made up of representatives from 31 cities, three Los Angeles County Supervisorial Districts, and the three Municipal Water Districts located in the San Gabriel Valley. The SGVCOG serves as a regional voice for its member agencies and works to improve the quality of life for the more than two million residents living in the San Gabriel Valley. The SGVCOG works on issues of importance to its member agencies, including transportation, housing, economic development, the environment, and water, and seeks to address these regionally. The SGVCOG strives to be a subregion that is environmentally sustainable, with reduced congestion and a healthy economy. The Baseline Conditions Report, included as Appendix D, identified several key findings regarding the transportation system for the San Gabriel Valley Mobility Matrix Subregion, including but not limited to:

- Population and employment are expected to rise in the San Gabriel Valley study area by eight and four

percent, respectively, over the next decade. This growth is on par with the average growth forecast for all of Los Angeles County.

- The San Gabriel Valley produces about 6.1 million person trips each weekday. Over the next 10 years, vehicle trips in the study area are expected to grow by about five percent (an additional 382,300 daily trips).
- Approximately 70 percent of the study area’s vehicle trips occur entirely within the San Gabriel Valley, averaging 10 minutes in driving time. The San Gabriel Valley’s largest subregional travel markets are the Gateway Cities and Central Los Angeles, with average travel times of 32 and 39 minutes, respectively
- Under 2014 conditions, approximately 265,900 east/west vehicle trips with origins outside the San Gabriel Valley pass through on an average weekday.
- While 19 bus operators, Metrolink and the Metro Gold Line serve the study area, transit ridership is well below the county average. This is due in part to a limited rail network and bus level of service (lower frequency, limited weekend service, etc.) in the San Gabriel Valley compared to the rest of the County.

- Vehicle collisions have steadily decreased over the last several years. Collisions involving pedestrians have fallen while collisions involving bicyclists have risen.

## Goals and Objectives

Members of the PDT helped define the goals and objectives for the San Gabriel Valley Mobility Matrix Subregion. The goals are consistent with the county’s overall framework, which consists of six broad themes common among all subregions (see Figure ES-2). The goals also reflect subregional priorities, and are based on recent studies, cities’ general plans, and discussions with city staff. The San Gabriel Valley Mobility Matrix Subregion PDT developed goal statements intended to address transportation needs, to guide the evaluation of proposed projects/programs, and ultimately to inform Metro’s forthcoming LRTP update. Chapter 3.0 details the goals and objectives for the San Gabriel Valley Mobility Matrix.

**Figure ES-2. Common Countywide Themes for All Mobility Matrices**



### Subregional Projects and Programs

An initial project and program list for the San Gabriel Valley Mobility Matrix Subregion was compiled from Metro’s December 2013 subregional project lists, which included unfunded LRTP projects; unfunded Measure R scope elements; and subregional needs submitted in response to requests by Directors Antonovich and Dubois. The project and program list was updated through the outreach process to incorporate input from the PDT members and other subregion stakeholders.

A total of 374 transportation improvement projects were identified for the San Gabriel Valley Mobility Matrix subregion. Many of the smaller projects were combined or grouped together into larger programs or consolidated improvements for ease of analysis and reporting. Some of the larger improvements were maintained as individual projects for evaluation purposes. Table ES-1 indicates the number of transportation improvement projects included in each Mobility Matrix program.

The San Gabriel Valley Mobility Matrix project list includes transportation improvement priorities identified in countywide planning documents and by local jurisdictions. Arterial improvements and programs compose about one-third of the project list and active transportation projects make up nearly another third. Highway and transit projects make up a significant portion of the remaining project list.

**Table ES-1. San Gabriel Valley Mobility Matrix Subregion Transportation Programs**

Mobility Matrix Program	Total Projects
Active Transportation	75
Demand Based Program	21
Goods Movement Program	1
ITS Program	62
Modal Connectivity Program	14
Soundwall Program	3
State of Good Repair Program	29
System Efficiency Program	71
Transit Program	98

The San Gabriel Valley Mobility Matrix includes improvements that address both existing deficiencies in the transportation system as well as anticipated future needs. The San Gabriel Valley Mobility Matrix:

1. Addresses subregional demand for commute travel within, to/from, and through the San Gabriel Valley Mobility Matrix subregion, including proposed enhancements to bus/rail transit service, extension of the Gold Line, freeway corridor and interchange improvements, major subregional arterial corridor improvements, and expanded park-and-ride facilities.
2. Facilitates more robust transportation system demand management through technology applications and multimodal improvements such as high-occupancy vehicle (HOV) lanes, freeway and arterial intelligent transportation systems (ITS), park-and-ride facilities, circulation improvements for transit access, and expanded transit services.
3. Improves subregional active transportation options through 75 bicycle and pedestrian projects, including bicycle routes, lanes, paths, and pedestrian treatments.
4. Supports the subregional and countywide priority of maintaining a state of good repair on the transportation system.

These improvements are intended to keep the multimodal transportation system functioning smoothly in the future in order to retain and attract business and development in the subregion.

## Evaluation

Each project or program was evaluated through an initial, high-level screening based on its potential to contribute to subregional goals and objectives under each of the six countywide Mobility Matrix themes identified in Figure ES-2. Due to a limited timeframe for project completion and incomplete or inconsistent project/program details and data, this evaluation was qualitative in nature. The evaluation serves not as a prioritization, but as a preliminary screening process to identify projects and programs with the potential to address subregional and countywide transportation goals. This merely serves as a starting point for more rigorous quantitative analysis during the Metro LRTP update process.

Projects or programs received a single score for each subregional goal, as outlined in Table ES-2. Generally speaking, projects or programs that contribute to subregional goals on a larger scale received a higher benefit rating. Note that cost effectiveness was not considered in the application of performance evaluation scores.



Table ES-2. 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

The preliminary performance evaluation shown in Table ES-3 represents a collaborative effort spanning many months, and incorporates input from Metro, consultants and the San Gabriel Valley Mobility Matrix subregion PDT.

**Table ES-3. San Gabriel Valley Mobility Matrix Subregion Performance Evaluation – Summary by Subprogram**

San Gabriel Valley Mobility Matrix Projects & Programs	Number of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		<ul style="list-style-type: none"> <li>*Improve mobility &amp; reduce congestion</li> <li>*Minimize vehicular &amp; truck impacts</li> <li>*Reduce bus &amp; rail transit congestion</li> <li>*Develop first/last mile strategies</li> <li>*Reduce congestion caused by goods movement</li> </ul>	<ul style="list-style-type: none"> <li>*Increase pedestrian &amp; bicyclist safety</li> <li>*Increase transit user safety</li> <li>*Increase rail &amp; roadway safety</li> </ul>	<ul style="list-style-type: none"> <li>*Prepare for extreme weather events</li> <li>*Improve air quality and reduce GHG emissions</li> <li>*Improve public health and reduce obesity</li> <li>*Improve quality of life</li> <li>*Conserve water and manage storm water</li> </ul>	<ul style="list-style-type: none"> <li>*Improve goods movement infrastructure</li> <li>*Improve access to jobs</li> <li>*Reduce travel time for workers and goods</li> <li>*Provide infrastructure to attract new business</li> <li>*Promote development at station areas &amp; corridors</li> </ul>	<ul style="list-style-type: none"> <li>*Improve transit, bike, ped access to activity and job growth centers</li> <li>*Provide access to transit-dependent populations</li> <li>*Increase bike/pedestrian access to transit</li> <li>*Compliance with ADA at transit stations and stops</li> </ul>	<ul style="list-style-type: none"> <li>*Maintain safe &amp; reliable mobility</li> <li>*Minimize rehabilitation &amp; reconstruction costs</li> </ul>
<b>Active Transportation</b>	<b>75</b>						
Active Transportation Program	75	◐	●	●	◐	●	◐
<b>Demand Based Program</b>	<b>21</b>						
Park-and-Ride/Station Access Program	12	●	◐	◐	◐	◐	○
I-10 to I-605 Carpool Lane connectors	1	●	◐	◐	○	○	○
SR-60 to I-605 Carpool Lane Connectors	1	●	◐	◐	○	○	○
I-605 Carpool Lanes: I-10 to I-210	1	●	◐	◐	◐	○	◐
SR-57 Carpool Lanes: SR-60 to I-210	1	◐	◐	◐	○	○	○
SR-60 Carpool Lanes: US-101 to I-605	1	●	◐	◐	◐	○	○
Long-Term Managed Lane Program	4	●	◐	◐	○	○	○
<b>Goods Movement Program</b>	<b>1</b>						
Alameda Corridor East Project	1	◐	●	◐	◐	○	◐

		Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
<b>San Gabriel Valley Mobility Matrix Projects &amp; Programs</b>	<b>Number of Projects</b>	*Improve mobility & reduce congestion *Minimize vehicular & truck impacts *Reduce bus & rail transit congestion *Develop first/last mile strategies *Reduce congestion caused by goods movement	*Increase pedestrian & bicyclist safety *Increase transit user safety *Increase rail & roadway safety	*Prepare for extreme weather events *Improve air quality and reduce GHG emissions *Improve public health and reduce obesity *Improve quality of life *Conserve water and manage storm water	*Improve goods movement infrastructure *Improve access to jobs *Reduce travel time for workers and goods *Provide infrastructure to attract new business *Promote development at station areas & corridors	*Improve transit, bike, ped access to activity and job growth centers *Provide access to transit-dependent populations *Increase bike/pedestrian access to transit *Compliance with ADA at transit stations and stops	*Maintain safe & reliable mobility *Minimize rehabilitation & reconstruction costs
<b>ITS Program</b>	<b>62</b>						
I-210 Connected Corridors Project	2	●	◐	◐	◐	○	◐
Arterial ITS Program	51	◐	◐	◐	◐	○	◐
Highway ITS Program	9	◐	◐	◐	◐	○	◐
<b>Modal Connectivity Program</b>	<b>14</b>						
Complete Streets Program	6	◐	◐	●	○	●	◐
First/Last Mile Program	4	●	◐	●	◐	●	◐
Multi-Modal Corridor Program	4	◐	◐	◐	◐	●	◐
<b>Soundwall Program</b>	<b>3</b>						
Highway Soundwalls	3	○	○	◐	○	○	○
<b>State of Good Repair Program</b>	<b>29</b>						
State of Good Repair Program	29	◐	◐	◐	◐	○	●

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

San Gabriel Valley Mobility Matrix Projects & Programs	Number of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		<ul style="list-style-type: none"> <li>*Improve mobility &amp; reduce congestion</li> <li>*Minimize vehicular &amp; truck impacts</li> <li>*Reduce bus &amp; rail transit congestion</li> <li>*Develop first/last mile strategies</li> <li>*Reduce congestion caused by goods movement</li> </ul>	<ul style="list-style-type: none"> <li>*Increase pedestrian &amp; bicyclist safety</li> <li>*Increase transit user safety</li> <li>*Increase rail &amp; roadway safety</li> </ul>	<ul style="list-style-type: none"> <li>*Prepare for extreme weather events</li> <li>*Improve air quality and reduce GHG emissions</li> <li>*Improve public health and reduce obesity</li> <li>*Improve quality of life</li> <li>*Conserve water and manage storm water</li> </ul>	<ul style="list-style-type: none"> <li>*Improve goods movement infrastructure</li> <li>*Improve access to jobs</li> <li>*Reduce travel time for workers and goods</li> <li>*Provide infrastructure to attract new business</li> <li>*Promote development at station areas &amp; corridors</li> </ul>	<ul style="list-style-type: none"> <li>*Improve transit, bike, ped access to activity and job growth centers</li> <li>*Provide access to transit-dependent populations</li> <li>*Increase bike/pedestrian access to transit</li> <li>*Compliance with ADA at transit stations and stops</li> </ul>	<ul style="list-style-type: none"> <li>*Maintain safe &amp; reliable mobility</li> <li>*Minimize rehabilitation &amp; reconstruction costs</li> </ul>
<b>System Efficiency Program</b>	<b>71</b>						
I-10/I-605 Interchange Improvements	1	●	◐	○	◐	○	◐
I-10 Improvement: I-605 to Durfee Avenue	1	●	◐	○	○	○	◐
SR-60/I-605 Interchange Improvements	1	●	◐	○	◐	○	◐
SR-60/SR-57 Interchange Improvements	1	●	◐	○	◐	○	◐
SR-71 Highway to Freeway Project	2	●	◐	◐	◐	○	◐
SR-710 North Gap Closure Project*	1	●	◐	◐	◐	◐	◐
I-10 Hotspots	1	●	◐	○	◐	○	◐
SR-60 Hotspots	1	●	◐	○	◐	○	◐
Arterial Capacity Enhancement Program	13	●	◐	○	◐	○	◐
Arterial TSM Program	17	◐	◐	◐	◐	○	◐
Grade Crossing Program	5	●	●	◐	◐	○	○
Highway Capacity Enhancement Program	5	●	◐	—	◐	○	◐

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

San Gabriel Valley Mobility Matrix Projects & Programs	Number of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		*Improve mobility & reduce congestion *Minimize vehicular & truck impacts *Reduce bus & rail transit congestion *Develop first/last mile strategies *Reduce congestion caused by goods movement	*Increase pedestrian & bicyclist safety *Increase transit user safety *Increase rail & roadway safety	*Prepare for extreme weather events *Improve air quality and reduce GHG emissions *Improve public health and reduce obesity *Improve quality of life *Conserve water and manage storm water	*Improve goods movement infrastructure *Improve access to jobs *Reduce travel time for workers and goods *Provide infrastructure to attract new business *Promote development at station areas & corridors	*Improve transit, bike, ped access to activity and job growth centers *Provide access to transit-dependent populations *Increase bike/pedestrian access to transit *Compliance with ADA at transit stations and stops	*Maintain safe & reliable mobility *Minimize rehabilitation & reconstruction costs
Highway Ramps and Interchanges Program	17	●	◐	○	◐	○	◐
Highway TSM Program	5	◐	◐	◐	◐	○	◐
<b>Transit Program</b>	<b>98</b>						
Metro Gold Line Eastside Extension	1	●	◐	●	◐	●	○
Metro Gold Line Foothill Extension - Phase 2B	1	●	◐	●	◐	●	○
SR-134 High Capacity Transit Corridor	1	●	◐	●	◐	●	○
Bus Expansion Program	9	◐	◐	◐	◐	◐	○
Bus Rapid Transit Program	7	●	◐	●	◐	●	○
MetroLink Enhancement Program	66	●	◐	●	◐	●	◐
Transit Operations Program	13	◐	◐	◐	○	◐	◐
<b>Total</b>	<b>374</b>						

● High Benefit   ◐ Medium Benefit   ◑ Low Benefit   ○ Neutral/No Benefit   — Negative Impact

\* The SR 710 North project was not evaluated on a single alternative, but rather evaluated based on the severity of the problem it is intending to solve. The various alignments and their impacts and benefits will be detailed in the forthcoming Environmental Impact Report. The benefit evaluations shown are therefore speculative, and subject to change dependent upon which, if any, alternative is ultimately selected.

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

## Findings

The San Gabriel Valley Mobility Matrix addresses each of the six countywide themes:

- **Mobility.** The Mobility Matrix addresses subregional mobility across all modes. Local travel is supported by strong first/last mile, complete streets, and active transportation programs. Vehicle travel reliability is enhanced by capacity improvements, system management, and ITS improvements to both arterials and freeways. Interregional travel is facilitated by a robust demand-based program featuring new carpool lane connectors, park-and-ride access and managed lanes, which help to relieve congestion and strain on local roads. The Mobility Matrix includes much needed expansion to transit, including enhancements to Metrolink, three new rapid transit lines, bus rapid transit and support for the region's many municipal and tier two bus operators.
- **Safety.** Safety is enhanced by several railroad grade separations and crossings, including those affiliated with the Alameda Corridor East Project, which separate user groups and eliminate conflict potential. The Mobility Matrix also supports the subregional goals of reducing bicyclist and pedestrian collisions through its active transportation, complete streets and first/last mile programs. A wide slate of freeway, arterial and transit improvement projects, including Metrolink, serve to enhance transit and vehicle safety and improve reliability.
- **Sustainability.** The Mobility Matrix contributes to reduced emissions, improved air quality, and greater quality of life in the study area. Active transportation, modal connectivity programs, carpool connectors and transit programs do so by facilitating travel by modes other than single occupant vehicle, improving public health and quality of life. Certain freeway and arterial enhancements contribute to reduced delay and emissions along specific corridors or locations.
- **Economy.** Regional goods movement is facilitated by a series of projects, including upgrades to freight rail corridors and critical freeway interchanges impacting truck routes. New fixed-guideway transit provides ample opportunities for transit-oriented development.
- **Accessibility.** The Mobility Matrix effort identified several transit and commuter rail improvements, a new modal connectivity program, and numerous improvements to system efficiency, all of which improve accessibility for the San Gabriel Valley's large and diverse transit-dependent population.
- **State of Good Repair.** The Mobility Matrix includes a large multimodal state of good repair program, as well as dozens of additional projects that include repaving, transit asset management, and other elements that contribute to a longer life for critical multimodal transportation assets.

## Implementation Timeframes and Cost Estimates

The Mobility Matrix included the development of high-level, rough order-of-magnitude planning-cost ranges for short-, mid-, and long-term subregional funding needs. Table ES-4 indicates anticipated Mobility Matrix

cost estimate ranges by project type and implementation timeframe.

Due to variations in project scope and available data, costs estimated for the Mobility Matrix are not intended to be used for future project-level planning. Rather, the cost ranges developed via this process constitute a high-level, rough order-of-magnitude planning estimate range for short-, mid-, and long-term subregional funding needs for the Mobility Matrix effort only. For the most part, these estimates do not include vehicles, operating, maintenance and financing costs. More detailed analysis will be conducted in the Metro LRTP update process, which may necessitate refinement of project/program details and associated cost estimates. A full description of the cost estimation methodology can be found in Appendix B.

Since the list was compiled from various sources, some of the projects in the list overlap in scope or purpose, leading to 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 short 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 revisited as part of the Metro LRTP update.

## What's Next?

The Mobility Matrix is the first step in identifying San Gabriel Valley Mobility Matrix subregion transportation projects and programs that require funding. 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:

- **San Gabriel Valley 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/programs in the region. In preparation for a potential ballot measure and LRTP update (as described further below), the SGVCOG should decide how it wants to prioritize these projects/programs 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.

**Table ES-4. San Gabriel Valley Mobility Matrix Summary of Rough Order of Magnitude Cost Estimates and Categorizations**

Type/ Category	Arterial	Goods Movement	Highway	Active Transportation	Transit	Multi-Modal	Total
Short-Term (0-10 yrs)	115 Projects \$705M to \$1.07B	1 project \$56M to \$84M	41 projects \$1.14B to \$1.69B/TBD	75 projects \$371M to \$552M	85 projects \$1.57B to \$2.39B	26 projects \$142M to \$210M	343 projects \$4.03B to \$6.07B
Mid-Term (11-20 yrs)	1 projects/TBD \$699M to \$1.15B	\$0	15 projects \$1.92B to \$8.51B	TBD projects \$371M to \$552M	8 projects/TBD \$1.83B to \$7.61B	TBD projects \$142M to \$210M	24 projects/TBD \$5.04B to \$15.46B
Long-Term (>20 yrs)	1 projects/TBD \$695M to \$1.04B	\$0	6 projects \$2.61B to \$3.92B	TBD projects \$371M to \$552M	6 project/TBD \$552M to \$3.21B	TBD projects \$142M to \$210M	13 projects/TBD \$4.42B to \$8.99B
<b>Total</b>	<b>117 projects/ TBD \$2.10B to \$3.25B</b>	<b>1 project \$56M to \$84M</b>	<b>57 projects \$5.67B to \$14.12B</b>	<b>75 projects/ TBD \$1.11B to \$1.66B</b>	<b>98 projects/TBD \$3.95B to \$13.20B</b>	<b>26 projects/TBD \$426M to \$633M</b>	<b>374 projects \$13.49B to \$30.52B</b>

Estimated costs in 2015 dollars.

TBD for project costs indicates the cost estimation is under development or there was not enough information to estimate one or more subprograms under this project type.

Programs that are ongoing, such as State of Good Repair and Bicycle/Pedestrian, are counted in each timeframe. The total value of these programs is based on the cost estimates of the projects within the programs that were available. Many of these programs have not yet identified projects for outer years so the values of the programs for the mid- and long-term categories are based on the same levels of funding as the short-term.

The counts by time period for Highway projects and Transit projects do not sum to total because five Highway and one Transit projects are being phased and are included in two time periods.

Maximum project costs for Highway, Transit, and Arterial each include the high estimate for the SR-710 North project for the particular mode.

These estimates underrepresent the operations and maintenance costs due to limitations of data availability. Costs are also underestimated due to projects and programs where cost estimate ranges are still under development.

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.

## 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 San Gabriel Valley Council of Governments (SGVCOG) (see Figure 1-1). The Gateway Cities COG is developing its own Strategic Transportation Plan which will serve as their Mobility Matrix. The San Gabriel Valley Mobility Matrix Subregion also referred to as the study area in this document, is presented in Figure 1-2.

For the purposes of the Mobility Matrix work, cities with membership in two COGs/subregions selected one in which to participate. The Arroyo Verdugo subregion decided to include the Cities of La Cañada Flintridge, Pasadena, and South Pasadena in the SGVCOG, and Burbank and Glendale in the SFVCOG. The City of Santa Clarita opted to be included in the SFVCOG instead of the NCTC. Additionally, in response to Metro Board's 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.

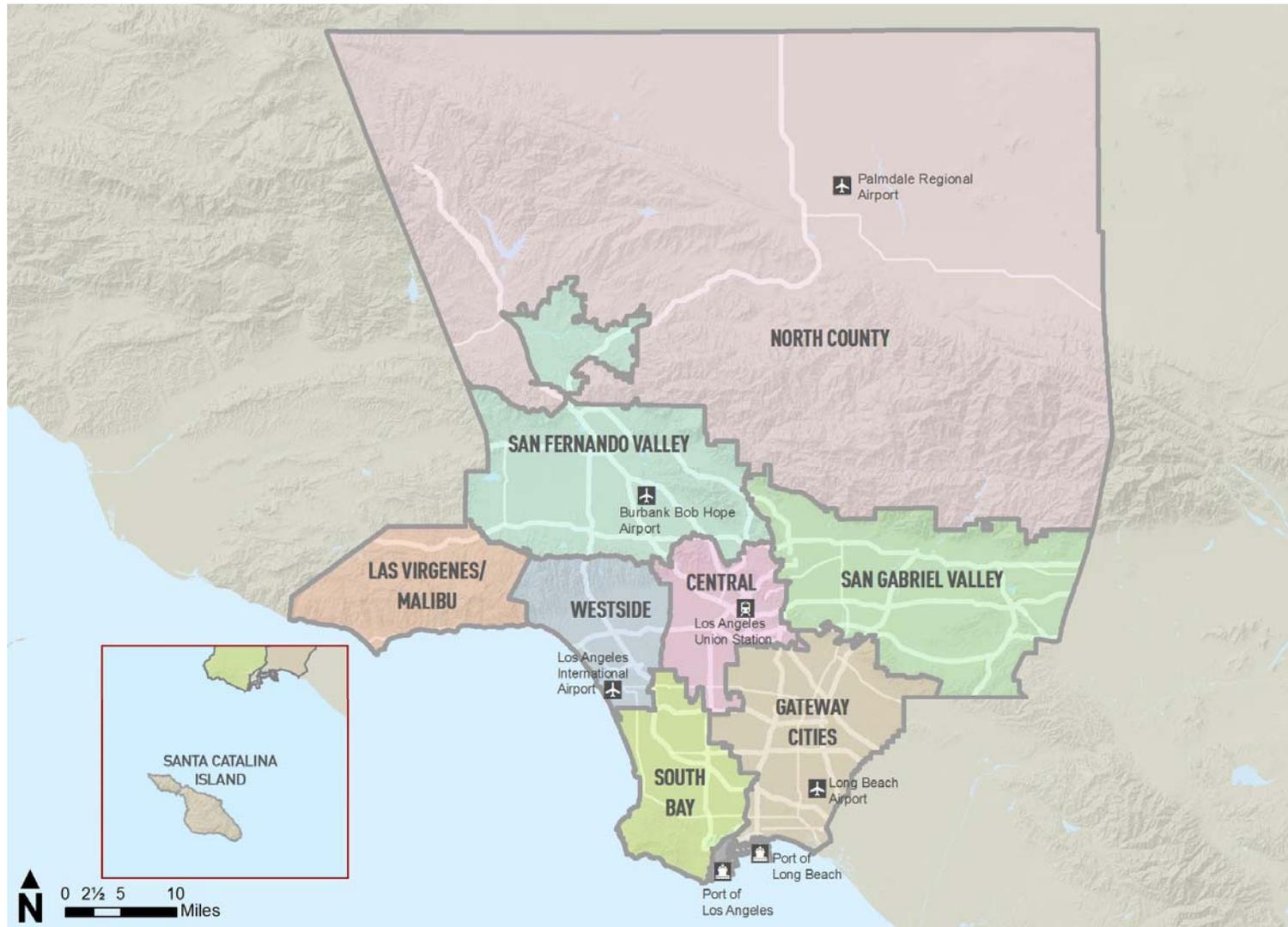
Also, in January 2015, the Metro Board created the Regional Facilities category. Regional Facilities include projects and programs related to Los Angeles County's four commercial airports (Los Angeles International Airport, Burbank Bob Hope Airport, Long Beach Airport, and Palmdale Regional Airport), 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 Gabriel Valley Subregional Mobility Matrix is to establish subregional transportation goals and objectives, to identify and evaluate projects and programs that meet these goals and objectives, and will serve as a starting point for the update of the Metro Long Range Transportation Plan (LRTP) currently scheduled for adoption in 2017.

This San Gabriel Valley 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 projects and programs based on their potential to address subregional objectives and countywide performance themes. The Mobility Matrix includes a high level assessment of anticipated investment needs

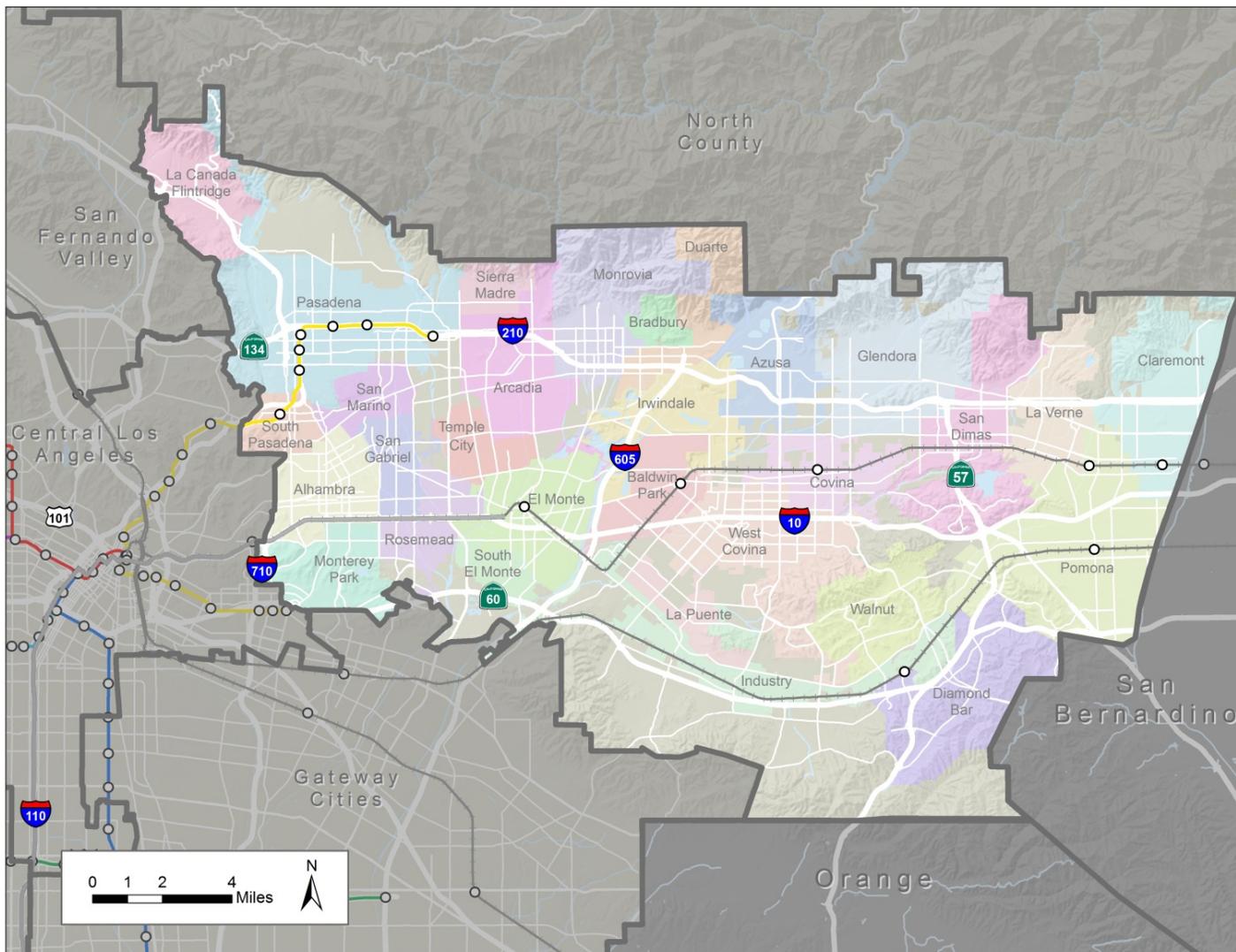
Figure 1-1. Los Angeles County Mobility Matrix Subregions



Source: Cambridge Systematics, 2015.

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Figure 1-2. San Gabriel Valley Mobility Matrix Subregion



Source: Cambridge Systematics, 2015.

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

and project and program implementation over the short-term (2015 to 2024), mid-term (2025 to 2034) and long-term (2035 to 2045) timeframes. 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.

### 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 San Gabriel Valley PDT consisted of representatives from the following jurisdictions and stakeholder agencies:

- SGVCOG
- City of Alhambra
- City of Arcadia
- City of Baldwin Park
- City of Claremont
- City of Diamond Bar
- City of Industry
- City of La Puente
- City of Pasadena
- City of Pomona

- City of Rosemead
- City of San Dimas
- City of San Gabriel
- City of South Pasadena
- Alameda Corridor East (ACE)
- California Department of Transportation (Caltrans)
- County of Los Angeles
- Metrolink
- Bike San Gabriel Valley
- Metro Gold Line Foothill Extension Construction Authority

The San Gabriel Valley PDT met six times over the eight-month study period to guide the creation of strategic goals and objectives, identify a subregional 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. Several meetings with adjacent Mobility Matrix subregions were held in late 2014 to ensure coordination on projects and programs that crossed or approached subregional boundaries. The purpose of these meetings was to ensure consistency for projects that crossed subregional boundaries and to ensure that negative affects would not be created. 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 process, 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 update and beyond.
- **An initial framework for LRTP performance analysis.** The consensus-building process included articulating a set of subregional goals and objectives; a high level analysis 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 of projects and programs approved by the subregion intended to address transportation system deficiencies and needs.
- **Draft cost ranges and implementation timeframes.** Based on project/program readiness and high-level, rough order-of-magnitude planning estimate project cost ranges, the Mobility Matrix presents the subregional draft investment needs to be considered in the next LRTP update 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

- Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21, 2012), the Federal Transportation Authorization Bill, places a greater emphasis on performance-based planning for Metropolitan Planning Organizations (MPO), 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 LRTP update, scheduled for adoption in 2017.
- 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 San Gabriel Valley 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 goals and objectives to guide subregional transportation investments in the San Gabriel Valley.
- **Chapter 4.0 – Subregional Mobility Matrix.** An initial evaluation of subregional priority projects and programs.
- **Chapter 5.0 – Implementation Time Frames and Cost Estimates.** An initial categorization of project and program implementation into short-, mid- and long-term investment needs, and a summary of next steps for the Mobility Matrix.
- **Appendices.** Includes a log of the PDT and outreach process; methodology memorandums; a full project list; and the Baseline Conditions Report.

## 2.0 SUBREGIONAL OVERVIEW

The San Gabriel Valley Council of Governments (SGVCOG) is a joint powers authority made up of representatives from 31 cities, three Los Angeles County Supervisorial Districts, and the three Municipal Water Districts located in the San Gabriel Valley. The SGVCOG serves as a regional voice for its member agencies and works to improve the quality of life for the more than two million residents living in the San Gabriel Valley. The SGVCOG works on issues of importance to its member agencies, including transportation, housing, economic development, the environment, and water, and seeks to address these regionally. The SGVCOG is striving to be a subregion that is environmentally sustainable, has reduced congestion, and a healthy economy.

This chapter presents an overview of the 2014 baseline transportation conditions within the San Gabriel Valley and forecasted conditions for year 2024. It provides an understanding of the major transportation conditions and issues in the subregion, and provides an overview of subregional needs. This chapter summarizes results of the subregional Baseline Conditions Report, an interim work product which assessed the following:

- **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 patterns.** An assessment of trip origins and destinations to, from, and within the subregion, as well as subregional commute travel mode choice.
- **Vehicle travel.** Countywide Strategic Arterials Network (CSAN) facilities within the area, vehicle hours traveled and average trip times, designated truck routes per the Draft Countywide Strategic Truck Arterial Network (CSTAN), and motor vehicle and truck collisions.
- **Transit.** Transit mode share, rail transit including weekday boardings on Metrorail and Metrolink, and Metro and municipal bus routes.
- **Active transportation.** Active transportation mode share, existing bikeways, and bicycle/pedestrian-involved collisions.

The Baseline Conditions Report identified several key findings regarding the transportation system for the San Gabriel Valley study area, including but not limited to:

- Population and employment are expected to rise in the San Gabriel Valley study area by eight and four percent increases, respectively, over the next decade. This growth is on par with the average growth forecast for all of Los Angeles County.
- Approximately 70 percent of the study area’s vehicle trips occur within the San Gabriel Valley and average 10 minutes in driving time. The San Gabriel Valley’s largest subregional travel markets are the Gateway Cities and Central Los Angeles, with average travel times of 32 and 39 minutes, respectively. Total vehicle trips are forecasted to grow by five percent by 2024.



- There are approximately 19 bus operators, as well as Metrolink and Metro Gold Line light rail transit serving the San Gabriel Valley study area, but transit ridership is still well below the county average (4.1 percent compared to 7.2 percent). This is due in part to the limited rail network and bus level of service (low frequency, limited weekend service, etc.) in the San Gabriel Valley.
- Overall vehicle collisions have steadily decreased over the last several years. Collisions involving pedestrians have fallen while collisions involving bicyclists have risen.

The following sections summarize the results of the San Gabriel Valley Mobility Matrix baseline conditions analysis.

## **2.1 Land Use and Demographics**

The San Gabriel Valley Mobility Matrix Subregion features diverse land use and demographics.

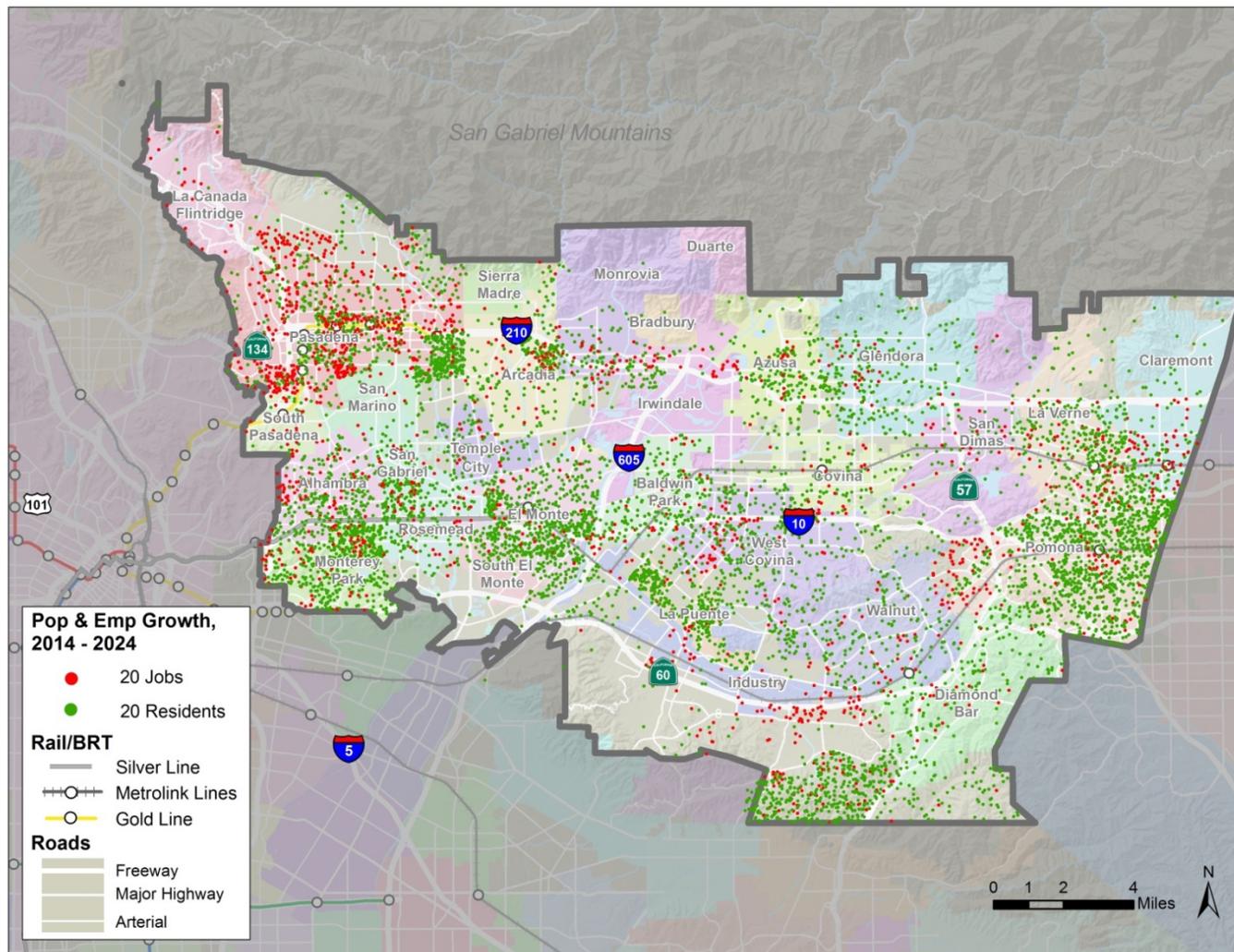
### **2.1.1 Land Use**

The study area features large concentrations of low-density residential and industrial uses, as well as mixed use and rural residential areas making it a very diverse region in Los Angeles County. The majority of the region is zoned residential, while the SR 60 corridor features pockets of significant industrial, warehouse, and commercial activity. Areas along the existing Gold Line and planned Gold Line extension to Azusa feature concentrations of mixed-use development, including high-density residential near stations.

### **2.1.2 Population and Employment**

According to SCAG population and employment estimates and forecasts developed for the Metro 2014 Short Range Transportation Plan (SRTP), the San Gabriel Valley Mobility Matrix Subregion is expected to grow from about 1.4 million residents in 2014 to 1.5 million by 2024, an increase of eight percent. Employment in the study area is expected to grow by four percent over the same period. These growth rates are on par with the forecasted countywide average growth forecasts of eight percent (residents) and five percent (jobs). Figure 2-1 shows the location of forecasted growth in jobs and residents from 2014 to 2024.

The Cities of Irwindale, Pomona, La Puente and Monterey Park expect the largest rates of population growth in the subregion at 17, 16, 15, and 14 percent, respectively. Combined, these four cities alone will add approximately 40,000 new residents. Conversely to its population growth, Irwindale is the only city within the subregion expected to experience an overall reduction in employment with an estimated loss of four percent from 2014 to 2040.

**Figure 2-1. Projected Changes in Employment and Residents, 2014 to 2024**


Source: Metro 2014 SRTP.

Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long-Range Transportation Plan (LRTP) subregional boundaries.

### 2.1.3 Environmental Justice

Concentrations of minority and low-income communities were identified using U.S. Census Bureau American Community Survey (ACS) 2012 data. Table 2-1 provides an overview of the minority and economic characteristics for the San Gabriel Valley, compared to the Los Angeles County average.

San Gabriel Valley is both ethnically and economically diverse. In 2012, minority populations, defined as nonwhite (including Hispanic), exceeded the Countywide average of 72.2 percent in 16 San Gabriel Valley cities. Minority populations compose more than 94 percent of the residents in Baldwin Park, El Monte, Irwindale, La Puente, Monterey Park, Rosemead and South El Monte.

In 2012, Azusa, Baldwin Park, El Monte, Pomona, Rosemead, and South El Monte exceeded the countywide average (17.1 percent) of residents living below the poverty line. El Monte had the highest poverty rate at 22.8 percent, while La Cañada Flintridge had the lowest poverty rate, 2.1 percent.

Disadvantaged communities were identified using the California Environmental Health Hazard Screening Tool (CalEnviroScreen). This tool 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. In the San Gabriel Valley, higher risk areas include the areas near I-605, the westerly segments of I-10 and SR 60, as well as Pomona. The study area is home to many at-risk population factors. These same areas contain high transit-dependent populations.

**Table 2-1. Summary of Ethnic and Economic Characteristics**

City	Percentage Total Minority <sup>*</sup>	Median Household Income <sup>^</sup>	Percentage Population Living Below Poverty Level
Alhambra	89.4%	\$53,917	13.4%
Arcadia	72.8%	\$77,342	9.9%
Azusa	80.1%	\$53,063	19.2%
Baldwin Park	95.3%	\$51,244	17.4%
Bradbury	44.2%	\$117,500	9.2%
Claremont	42.4%	\$80,754	8.6%
Covina	70.6%	\$66,818	11.4%
Diamond Bar	78.4%	\$90,181	5.2%
Duarte	71.2%	\$63,160	11.0%
El Monte	94.9%	\$41,861	22.8%
Glendora	41.4%	\$74,619	7.9%
Industry	55.9%	\$49,419	3.4%
Irwindale	94.3%	\$61,719	11.6%
La Cañada Flintridge	36.2%	\$154,947	2.1%
La Puente	96.0%	\$52,886	11.8%
La Verne	46.5%	\$76,519	7.3%
Monrovia	57.7%	\$69,449	9.6%
Monterey Park	95.6%	\$55,800	14.5%
Pasadena	60.0%	\$68,310	12.9%
Pomona	87.6%	\$48,864	20.4%
Rosemead	95.1%	\$46,781	17.2%
San Dimas	47.4%	\$76,454	7.0%
San Gabriel	88.3%	\$56,260	12.4%
San Marino	61.3%	\$139,122	4.6%
Sierra Madre	30.2%	\$90,321	9.6%
South El Monte	96.6%	\$48,056	20.6%
South Pasadena	58.6%	\$84,185	7.6%
Temple City	76.3%	\$64,148	9.1%
Walnut	87.2%	\$102,093	5.0%
West Covina	85.9%	\$68,677	9.3%
LA County Average	72.2%	\$56,241	17.1%

Source: U.S. Census Bureau, American Community Survey, 2012.

<sup>\*</sup> Minority Population calculated as: Total Population – Population that is White Alone, Not Hispanic or Latino.

<sup>^</sup>In 2012 Inflation-adjusted dollars.

## 2.2 Travel Patterns

### 2.2.1 Interregional Travel Patterns

Figure 2-2 indicates estimated year 2014 average weekday person trips (all modes) between the San Gabriel Valley study area and neighboring Mobility Matrix subregions based on Metro Travel Demand Model results. Trip productions are defined as the home end (origin or destination) of a home-based trip, or origin of a non-home based trip. Trip attractions are defined as the non-home end (origin or destination) of a home-based trip, or destination of a non-home based trip. The San Gabriel Valley produces about 6.1 million trips and attracts about 5.7 million person trips each weekday. About 70 percent of weekday person trips consist of trips occurring entirely within the San Gabriel Valley. Central Los Angeles is the most popular trip origin, followed by the Gateway Cities, while the Gateway Cities represent the most popular trip destination for San Gabriel Valley residents, followed by Central Los Angeles. San Bernardino County and San Fernando Valley represent the next most popular travel markets for the San Gabriel Valley Mobility Matrix subregion.

### 2.2.2 Commute Travel Modes

Table 2-2 presents San Gabriel Valley commute travel mode share by jurisdiction alongside the county average. Motor vehicle is the travel mode of choice for more than 75 percent of study area commuters. While the region commutes via auto somewhat more than the county average, it features a higher rate of carpooling (11.8 percent) and commuter rail (0.4 percent as compared to 0.2 percent). A variety of factors (e.g., transit options, service frequency and hours, land uses, etc.) makes transit and active transportation alternatives more

difficult for San Gabriel Valley residents than others in the Los Angeles basin.

**Table 2-2. 2012 Commute Travel Mode Share**

Commute Mode	San Gabriel Valley Study Area	LA County Average
Drive Alone	75.5%	72.4%
Carpool	11.8%	10.5%
Bus	3.3%	6.5%
Rail Transit (Metro)	0.4%	0.7%
Railroad (Metrolink)	0.4%	0.2%
Bicycle	0.8%	0.9%
Walk	2.5%	2.9%
Work at Home	4.2%	5.0%
Other <sup>a</sup>	75.5%	0.01%

Source: U.S. Census, ACS 3-year estimate, 2012.

Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 Short-Range Transportation Plan (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 Long Range Transportation Plan (LRTP) subregional boundaries.

<sup>a</sup> Motorcycle, taxi, and ferry.

### 2.2.3 Passenger Vehicle Travel Demands

Table 2-3 provides an estimate of average weekday vehicle travel between the San Gabriel Valley study area and neighboring subregions in 2014, and forecasted growth by 2024. In 2014, over seven million vehicle trips either originated or terminated in the study area and about 70 percent occurred entirely within the San Gabriel Valley. Between 2014 and 2024, vehicle trips in the study area are expected to grow by about five percent (an additional 382,300 trips each weekday).

**Figure 2-2. 2014 Average Daily Trips to/From San Gabriel Valley Mobility Matrix Subregion**


Source: Metro 2014 SRTP.

Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 Short Range Transportation Plan (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 Long-Range Transportation Plan (LRTP) subregional boundaries. Values are rounded to the nearest hundred.



Table 2-3. Vehicle Travel Volumes to/from San Gabriel Valley Mobility Matrix Subregion, 2014 to 2024

Subregion	2014 Vehicle Trips	2024 Vehicle Trips	Δ Trips (2014-2024)	% Growth
Central LA	521,521	548,498	26,977	5%
Gateway Cities	538,480	559,238	20,758	4%
Las Virgenes/Malibu	10,169	11,115	946	9%
North County	19,687	21,858	2,171	11%
Orange County	203,022	212,343	9,321	5%
Riverside County	58,392	64,814	6,422	11%
San Fernando Valley	281,192	295,209	14,017	5%
<b>Within San Gabriel Valley</b>	<b>5,112,942</b>	<b>5,379,010</b>	<b>266,068</b>	<b>5%</b>
South Bay	152,268	158,316	6,048	4%
San Bernardino County	331,695	357,707	26,012	8%
Ventura County	15,760	16,456	696	4%
Westside	119,140	121,970	2,830	2%
<b>Total</b>	<b>7,364,268</b>	<b>7,746,534</b>	<b>382,266</b>	<b>5%</b>

Source: Metro 2014 SRTP.

Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 Short Range Transportation Plan (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 Long Range Transportation Plan (LRTP) subregional boundaries.

### 2.2.4 Passenger Vehicle Through Trips

Under 2014 conditions, the Metro Travel Demand Model estimates that approximately 265,900 east/west vehicle trips travel through the study area on an average weekday (origins and destinations are outside of the San Gabriel Valley study area, but they pass through). By 2024, the Model forecasts that east/west vehicle through trips will increase by 22,000 vehicles each weekday.

## 2.3 Vehicle Travel

The San Gabriel Valley Mobility Matrix Subregion contains nine primary freeways:

### North-South Freeways

- **SR 110.** This north-south freeway connects Pasadena to downtown Los Angeles, where it becomes I-110 and continues south to San Pedro. Trucks over 3 tons are prohibited on SR 110.
- **I-710.** Located parallel and east of SR 110, this is a major north-south connector between Long Beach and I-10. The corridor experiences heavy truck traffic between Long Beach and the SR 60 (up to 30 percent) and heavy commuter traffic between I-105 and I-10.
- **I-605.** To the east of I-710, this freeway generally follows the San Gabriel River and extends from the I-210 in Irwindale to I-405 in Los Alamitos adjacent to the Los Angeles County line
- **SR 57.** The easternmost north-south freeway north of I-10 in the San Gabriel Valley with limits from the I-210 near San Dimas to I-5 in Orange
- **SR 71.** North-south connector that merges with SR 57 near Pomona and extends south to SR 91 near Corona. The SR 71 is the only north-south route in the study area that has southeast/northwest rather than a southwest/northeast orientation.

### East-West Freeways

- **I-10.** Major east-west, coast-to-coast interstate highway between Santa Monica, California and Jacksonville, Florida. It connects the San Gabriel Valley cities of Alhambra and Claremont, and it

provides high-occupancy toll (HOT) lanes from Alameda Street in downtown Los Angeles to I-605.

- **I-210.** Paralleling I-10 to the north, this freeway is a primary connector along the foothills from Claremont to Pasadena. The easterly expansion from SR 57 to I-15 in San Bernardino County opened in 2002.
- **SR 134.** Provides east-west connection between the San Gabriel Valley and the San Fernando Valley. Only a small section of SR 134 between Pasadena and Glendale resides in the San Gabriel Valley.
- **SR 60.** Provides the southernmost east-west connection through the San Gabriel Valley south of and parallel to I-10 from I-5 in Los Angeles County to I-15 in Riverside County. This freeway provides primary access to expansive warehouse and industrial development and the City of Industry Union Pacific Rail Yard, and experiences high truck volumes as a result.

Figure 2-3 shows primary arterials in the region captured in the Countywide Strategic Arterials Network (CSAN), as amended by subregional stakeholders through the Metro Congestion Management Program (CMP). San Gabriel Valley has been actively involved in the Regional Traffic Signal Forum Program, established in 1995, which has implemented Traffic Signal Synchronization and Intelligent Transportation Systems (ITS) throughout the subregion. The San Gabriel Valley study area also contains several routes of critical importance to regional goods movement, as designated by jurisdictions and identified through the Draft Countywide Strategic Truck Arterial Network (CSTAN), shown in Figure 2-4.

### 2.3.1 Driving Times

Table 2-4 presents vehicle hours traveled and average trip times between the San Gabriel Valley study area and other Mobility Matrix subregions. The vehicle hours of travel reflects the total number of hours that vehicles are traveling within, to, and from the San Gabriel Valley Mobility Matrix Subregion, whereas the average trip time is derived by dividing the number of vehicle trips by the number of vehicle hours of travel.

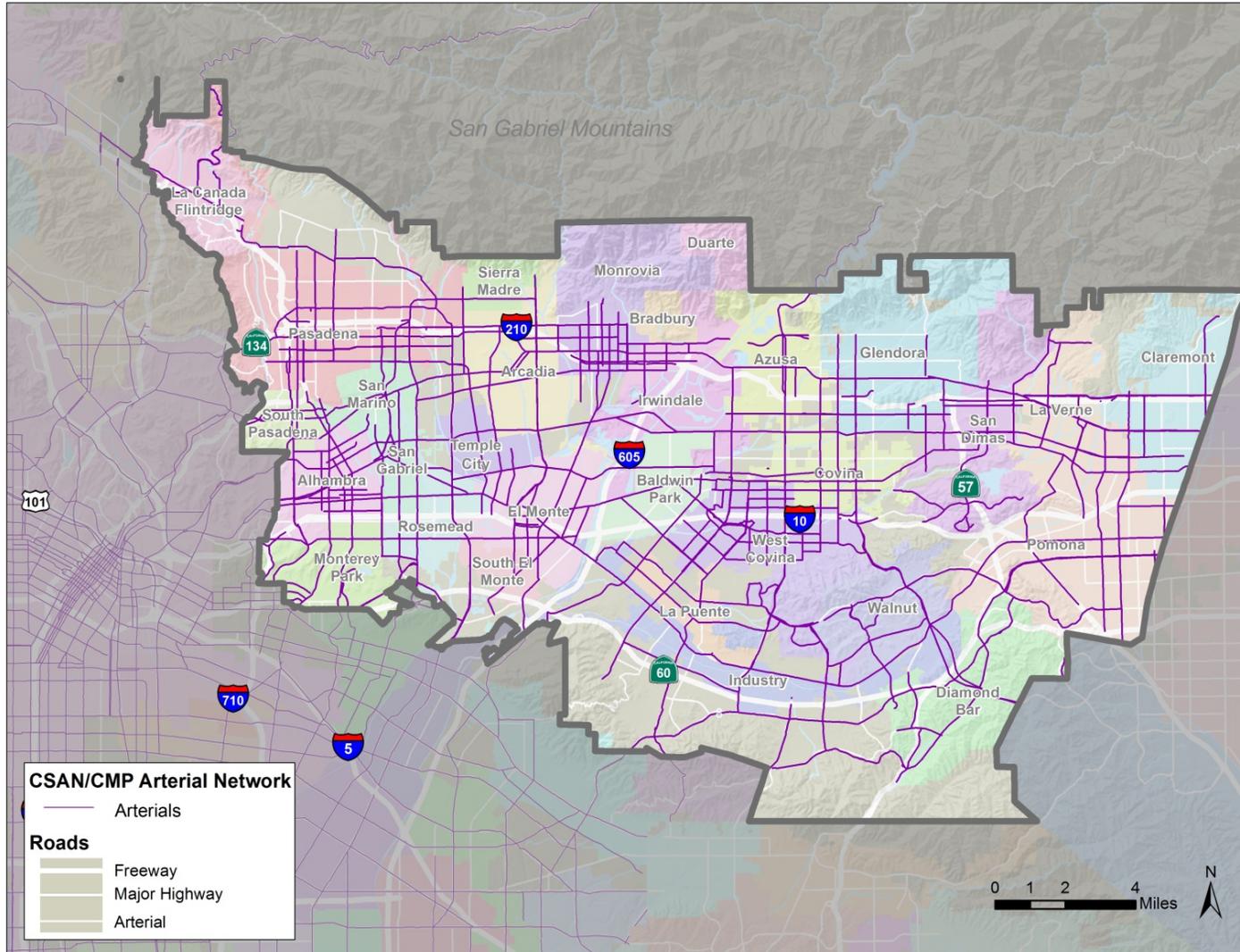
**Table 2-4. Peak-Period Vehicle Hours of Travel and Average Trip Time, 2014**

Subregion or County	Vehicle Hours of Travel	Average Trip Time (Minutes)
Central LA	188,632	39
Gateway Cities	182,788	32
Las Virgenes/Malibu	12,568	93
North County	10,753	87
Orange County	135,446	65
Riverside County	20,749	56
San Bernardino County	50,868	25
San Fernando Valley	102,123	43
<b>Within San Gabriel Valley</b>	<b>414,409</b>	<b>10</b>
South Bay	133,299	70
Ventura County	9,537	88
Westside	114,151	77
<b>Total/Average</b>	<b>1,375,323</b>	<b>22</b>

Source: Metro 2014 SRTP.

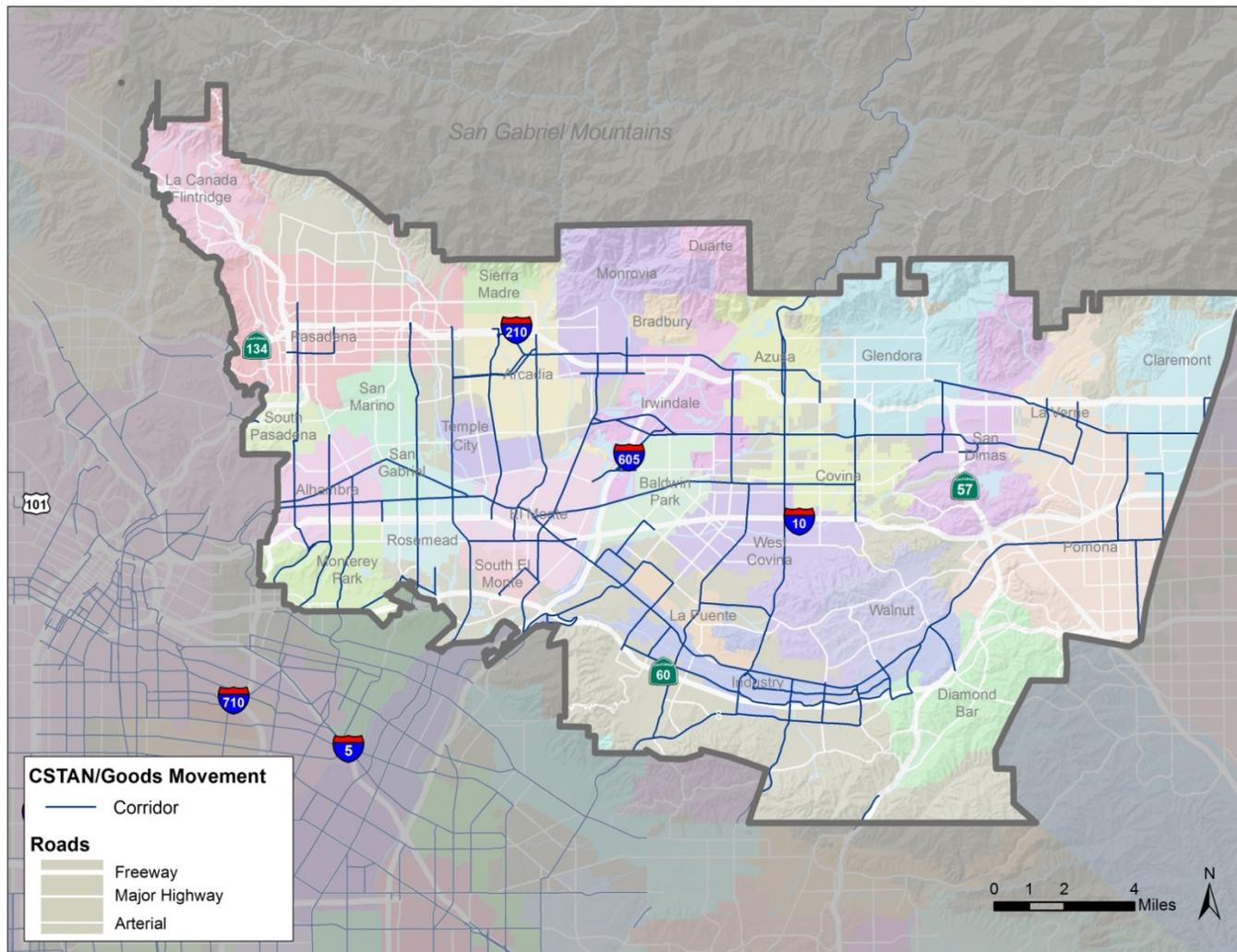
Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long-Range Transportation Plan (LRTP) subregional boundaries.

Figure 2-3. CSAN/CMP Network of Regionally Significant Arterials in the San Gabriel Valley Mobility Matrix Subregion



Source: Metro, 2014.

Figure 2-4. Draft Countywide Strategic Truck Arterial Network in the San Gabriel Valley Mobility Matrix Subregion



Source: Metro, 2014.



Vehicle trips occurring entirely within San Gabriel Valley are generally short, averaging 10 minutes in duration. Average travel times to San Gabriel Valley’s three largest travel markets are 32 minutes (Gateway Cities), 39 minutes (Central Los Angeles), and 25 minutes (San Bernardino). Overall, trip lengths within the study area average about 22 minutes.

## 2.4 Active Transportation

Bicycle infrastructure in the San Gabriel Valley Mobility Matrix Subregion includes a range of facilities from shared roads to bike paths (Figure 2-5). Many of the cities also provide extensive pedestrian facilities with sidewalks common in many neighborhoods and commercial districts. Several cities in the subregion have plans for expanding their active transportation networks.

The region offers several major regional off-street bikeways, including a main path located along the San Gabriel River from Irwindale to Long Beach. Several cities in the study area provide Class I, II, and III bicycle facilities and have plans to expand their networks. Many of the cities also provide extensive pedestrian facilities with sidewalks common in many neighborhoods and commercial districts. Local jurisdictions actively participated in the development of the Los Angeles County Bicycle Master Plan (2012) and share a common vision for completing system gaps and providing access to transit in the study area.

Existing bicycle and pedestrian facilities in the study area are concentrated most heavily in Pasadena with the cities of Arcadia, Glendora, Diamond Bar, West Covina and Claremont also making significant improvements. Many of the developed cities have had longstanding

development codes that require installation of sidewalks as a condition of development. More recently, several cities have also been requiring bicycle parking and transit stop amenities. A more recent challenge for many cities has been the maintenance of sidewalks, bikeways, and multiuse trails, as well as providing access to new transit services.

Together, bicycling and walking currently represent approximately 3.3 percent of all commute trips in the study area.

## 2.5 Transit

The San Gabriel Valley Mobility Matrix Subregion features rail service by the Metro Gold Line and Metrolink, as well as a diverse set of local, rapid, and express bus services operated by Metro, Foothill Transit, and municipal providers.

Due in part to long commute times and limited existing transit options in the eastern portion of the San Gabriel Valley, transit commute trips account for only 4.6 percent of regional commute trips, compared to a countywide average of 7.4 percent (see Figure 2-6 for passenger rail service within the study area). The Metro Gold Line light rail transit system provides existing service between Sierra Madre Station in East Pasadena and Union Station in the City of Los Angeles, with an extension to Azusa scheduled to open in the near future. Service is provided seven days a week beginning southbound from Sierra Madre at 4:36 a.m. and northbound out of Union Station at 3:40 a.m. The system operates at 15- to 30-minute headways during non-peak periods, six minute headways during peak commute times, and seven to eight minute daytime headways on weekends and holidays. During the last

quarter of 2014, the system averaged 13,305 weekday boardings within the study area.

The Metrolink San Bernardino and Riverside corridors provide commuter rail service between the study area and Los Angeles Union Station. The San Bernardino Line provides service throughout the day and on Saturday and Sunday, whereas the Riverside Line operates during peak commute times and does not operate on the weekend. In the second quarter of 2014, Metrolink stations within the study area averaged 4,869 daily boardings (see Figure 2-6).

There are 19 bus operators serving the study area (see Figure 2-7). Countywide, regional, and local bus systems provide important connections to other transit systems such as Metrolink and the Metro Gold Line, as well as access to key activity centers throughout the study area. The following describes the bus services available in the San Gabriel Valley Mobility Matrix subregion. These lines include the Silver Line Bus Rapid Transit (BRT) corridor.

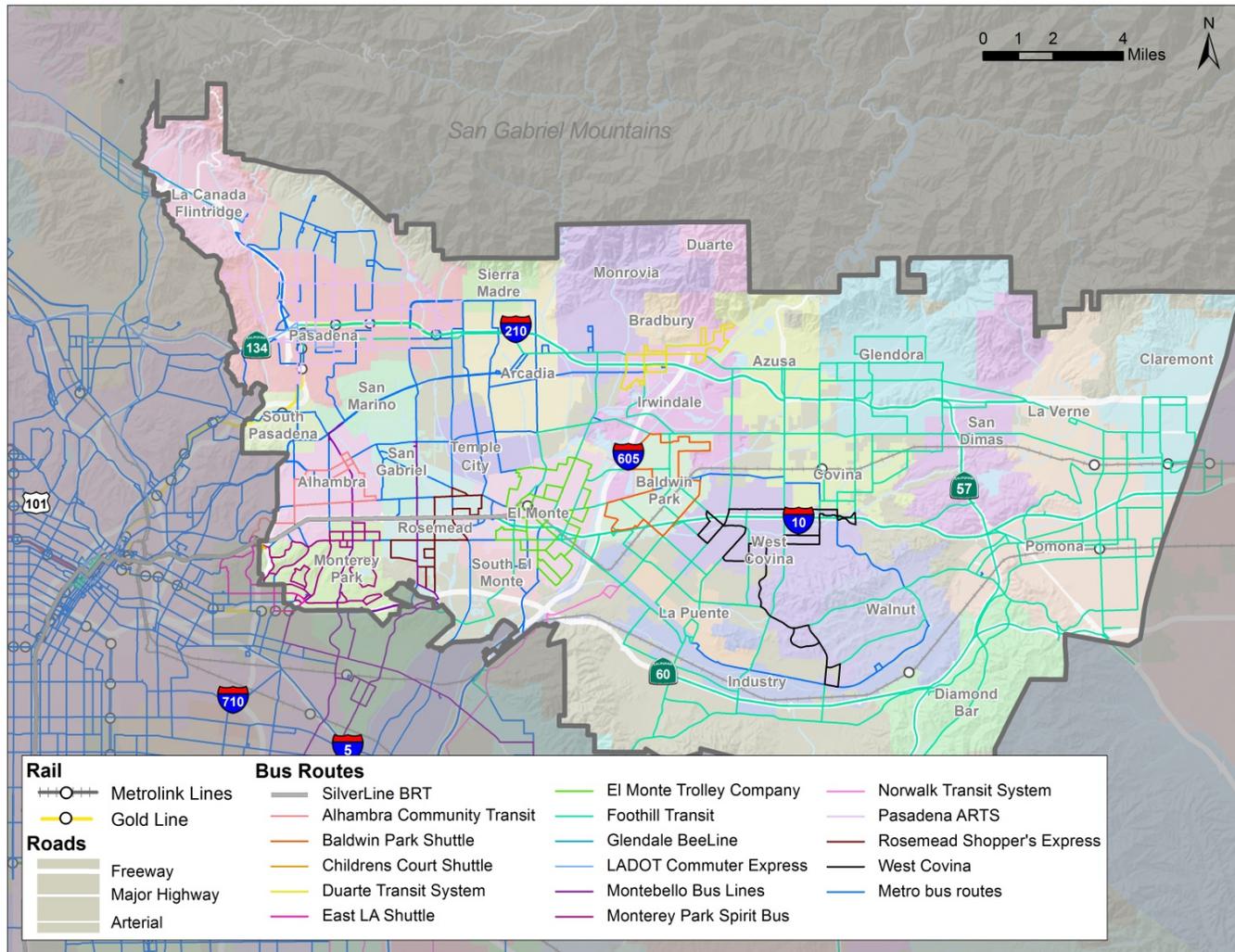
- **Foothill Transit.** Fixed route bus service operated by a joint powers authority consisting of 21 member cities in the San Gabriel and Pomona Valleys. It operates 23 local routes with weekend service and nine express and four school supplementary routes on weekdays. Local routes operate in the San Gabriel Valley cities of Industry, Pomona, Montebello, Baldwin Park, West Covina, La Habra Heights, Glendora, Azusa and San Dimas. School routes operate in West Covina, Diamond Bar and Pomona. Foothill Transit’s Silver Streak bus offers express service from Montclair to downtown Los Angeles on the I-10 express lanes.
- **Metro Bus Service.** Serving the western portion of the subregion with 25 routes, seven days a week,

including the Silver Line rapid bus operating on the El Monte Busway.

- **LADOT Commuter Express Service.** Provides several routes and service seven days a week throughout the City of Los Angeles with connections to adjacent cities, including Pasadena.
- **Alhambra Community Transit (ACT).** Local fixed route shuttle service operating two bus routes, including one that operates only during the AM and PM commutes.
- **Arcadia Transit.** Curb-to-curb on-demand shuttle service operating within the City.
- **Baldwin Park.** Local fixed route shuttle service operating two routes, seven days a week.
- **Children’s Court Shuttle.** Operated by the Children’s Court, this system provides one route with connections to Metrolink and Cal State Los Angeles.
- **Duarte Transit.** Operates two fixed routes six days a week and one commuter route on weekdays.
- **East LA Shuttle.** Operated by Los Angeles County with a connection to Monterey Park. The system operates three routes, seven days a week.
- **El Monte Trolley Company.** Provides five routes in the City of El Monte six days a week (Monday – Saturday).
- **Glendale Beeline.** Provides two routes that provide connections between La Canada Flintridge and Glendale, including connections to the Jet Propulsion Laboratory and La Canada High School.
- **La Puente LINK.** Local fixed route shuttle service operating two routes, six days.

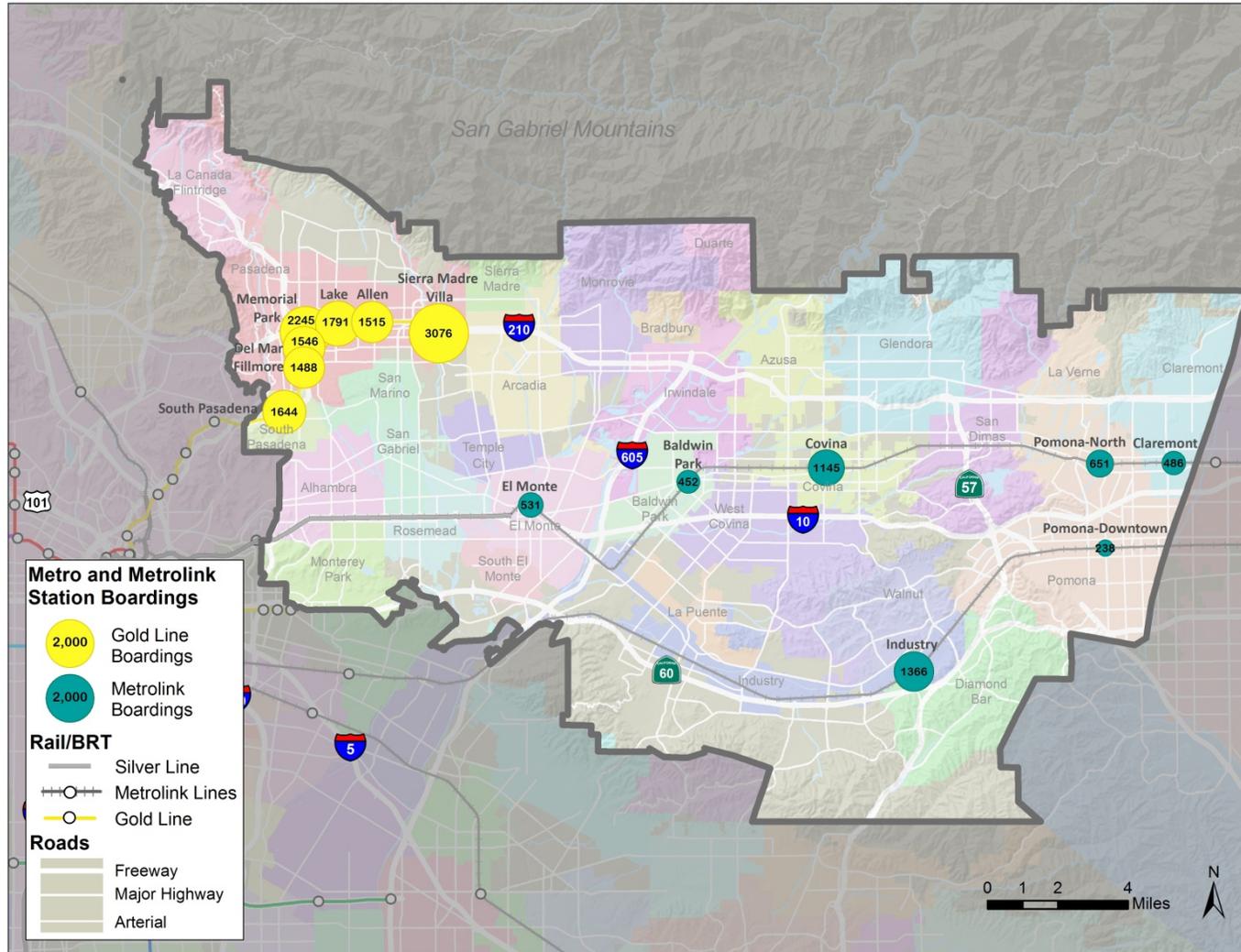


- **Monrovia Transit.** Curb-to-curb on-demand shuttle service operating within the City.
- **Montebello Bus Line (MBL).** Fixed route transit serving the communities of Alhambra, Bell Gardens, Boyle Heights, Commerce, Downtown Los Angeles, East Los Angeles, La Mirada, Montebello, Monterey Park, Pico Rivera, Rosemead, South Gate and Whittier. Operates seven regular lines seven days a week and two peak hour lines on weekdays.
- **Monterey Park Spirit Bus.** Operates five fixed routes six days a week in Monterey Park with Route 5 providing connection to Cal State Los Angeles.
- **Norwalk Transit.** Provides five routes in the Gateway Cities, but only one route provides service in the southeast area of the San Gabriel Valley Mobility Matrix subregion near City of Industry.
- **Pasadena Area Rapid Transit System (ARTS).** Operates six fixed routes six days a week including commuter service to Gold Line stations.
- **Rosemead Explorer and Commuter Connection.** Operates two fixed routes seven days a week including commuter service to the El Monte Metrolink and Metro Bus Stations on weekdays.
- **West Covina.** Provides three routes in West Covina on weekdays only.

**Figure 2-6. Bus Transit Service in the San Gabriel Valley Mobility Matrix Subregion**


Source: Metro, 2014.

Figure 2-7. Weekday Rail Transit Ridership in the San Gabriel Valley Mobility Matrix Subregion



Source: Metro, 2014.

### 3.0 GOALS AND OBJECTIVES

This chapter describes the goals and objectives of the San Gabriel Valley Mobility Matrix Subregion. The goals are consistent with the county’s overall framework, which consists of six broad themes common among all the subregions. The goals also reflect the subregion’s priorities, and are based on relevant city, county, and regional planning documents, such as the San Gabriel Valley Strategic Plan, as well as discussions with subregional stakeholders.

#### 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 received one evaluation score for each of the six themes.

State of Good Repair, which includes major rehabilitation and restoration, ensures that mature transportation system assets are preserved and adequately maintained. New projects or programs included for consideration in the Mobility Matrix work effort do not necessarily require state of good repair. However, state of good repair remains a priority for Metro and local jurisdictions. MAP-21 called for a renewed focus on ensuring transportation infrastructure is maintained in good condition.

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



MAP-21 included national performance measures for interstate highway conditions, and a requirement that state and metropolitan plans indicate how project selection helps achieve measure targets. There are similar requirements for transit impacting Federal funding with the requirement to 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 to highlight 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. This revealed a number of goals, issues, and projects/programs/strategies of priority to the subregion, shown in Table 3-1. Table 3-2 lists the San Gabriel Valley Mobility Matrix Subregion strategies and performance measures for each theme.

**Table 3-1. San Gabriel Valley Mobility Matrix Subregional Transportation Priorities**

Theme	Subregional Transportation Priorities
<b>Mobility</b>	<ul style="list-style-type: none"> <li>Improving mobility and reducing congestion on the main freeways that intersect the San Gabriel Valley, including SR 110, I-210, I-10, SR 60, I-710, SR 71, I-605, and SR 57</li> <li>Minimizing vehicular and truck impacts on local arterials by establishing a network of context sensitive, and wherever possible, “complete streets”</li> <li>Reducing bus and rail transit congestion</li> <li>Developing First and Last Mile strategies</li> <li>Reducing congestion caused by goods movement, including reducing truck congestion, congestion at at-grade crossings, and regional freight rail congestion</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>Increasing pedestrian and bicycle safety</li> <li>Increasing rail and roadway safety</li> <li>Increasing transit user safety. There is a need for projects and strategies (e.g., transportation operations, incident management) that will yield travel reliability, reductions in non-recurrent traffic congestion, and safety improvements.</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>Diversifying energy resources (i.e., local production of renewable energy)</li> <li>Preparing for extreme weather events to minimize transportation system disruptions</li> <li>Improving air quality and reducing GHG emissions</li> <li>Assisting cities in meeting AB 32 requirements</li> <li>Improving public health and reducing obesity through active transportation</li> <li>Improving quality of life by reducing travel times</li> </ul>
<b>Economy</b>	<ul style="list-style-type: none"> <li>Improving goods movement infrastructure</li> <li>Improving access to jobs</li> <li>Reducing travel time for workers and goods</li> <li>Providing necessary infrastructure to attract new businesses</li> <li>Encouraging and promoting economic development at station areas and along regional corridors and arterials</li> </ul>
<b>Accessibility</b>	<ul style="list-style-type: none"> <li>Providing increased access to transit, especially for transit-dependent populations</li> <li>Increasing bicycle and pedestrian access to transit</li> <li>Assure compliance with the Americans with Disabilities Act requirements, in particular, for sidewalks and at transit stations/stops</li> <li>Providing increased transit, bicycle and pedestrian connectivity to key activity centers, especially those serving a proportionately higher number of the non-driving population, such as youth and senior activity centers</li> </ul>
<b>State of Good Repair</b>	<ul style="list-style-type: none"> <li>Proactively maintaining critical infrastructure in a state of good repair to ensure safe and reliable mobility and minimize rehabilitation and/or reconstruction costs directly attributable to lack of maintenance</li> </ul>

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

**Table 3-2. Strategies and Performance Measures for the San Gabriel Valley Mobility Matrix Subregion**

Theme	Strategies	Performance Metrics
<b>Mobility</b>	<ul style="list-style-type: none"> <li>Identify and close gaps in the roadway, pedestrian, and bicycle networks, prioritized by critical need to serve driving and non-driving public</li> <li>Provide critical connections to uses serving high amount of nondriving public, access to transit, access to major activity centers, and demand</li> <li>Implement planned 1) ITS and 2) Real-time traveler information for all modes, especially transit, auto and freight</li> <li>Identify hotspots on regional highways and implement improvements to address them</li> </ul>	<ul style="list-style-type: none"> <li>Improve travel times</li> <li>Improve system connectivity</li> <li>Increase person throughput</li> <li>Increase travel by transit &amp; active modes</li> <li>Improve reliability</li> <li>Reduce VMT</li> </ul>
<b>Safety</b>	<ul style="list-style-type: none"> <li>Identify collision/conflict hotspots and develop potential solutions</li> <li>Implement ridesharing programs at transit hubs to include bikes and e-vehicles</li> <li>Create off-road bike/pedestrian pathways utilizing regional flood control network, such as Eaton Wash, San Jose Creek, and Walnut Creek</li> <li>Develop a regional design manual for safe, living streets</li> <li>Develop enhanced Safe Routes to School Guidelines, which include measures for improving bicycle and pedestrian safety and redirecting through traffic to non-school zone routes</li> <li>Develop a Safe Routes to School program for the subregion that assists school districts and cities with identifying and implementing physical and operational enhancements within 1/4-mile of all K-12 schools</li> </ul>	<ul style="list-style-type: none"> <li>Reduce incidents and/or severity</li> <li>Improve personal safety</li> </ul>
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>Provide infrastructure to support all low and zero emission mobility modes, including e-bikes/autos/trucks/transit vehicles</li> <li>Fleet conversions (transit, freight, taxis, SOVs, construction equipment, etc.) to cleaner fuels through subsidies and fueling infrastructure support</li> <li>Regional planning and ongoing training and coordination to ensure quick response to transportation system disruptions resulting from natural and manmade events</li> <li>Minimize irrigation needs by developing guidelines and requirements for planting drought-tolerant landscape</li> <li>Identify opportunities to retain, treat, and reuse stormwater</li> </ul>	<ul style="list-style-type: none"> <li>Reduce GHG</li> <li>Reduce VMT</li> <li>Improve quality of life</li> </ul>
<b>Economy</b>	<ul style="list-style-type: none"> <li>Work with private industry to understand their mobility needs, and implement improvements to address them</li> </ul>	<ul style="list-style-type: none"> <li>Increase economic output</li> <li>Increase job creation &amp; retention</li> <li>Goods movement efficiency</li> </ul>

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Theme	Strategies	Performance Metrics
Accessibility	<ul style="list-style-type: none"> <li>Identify nodes of transit-dependent/non-driving populations and key activity and employment centers and identify gaps in transit, pedestrian, and bicycle facilities between those nodes</li> <li>Identify ADA non-compliant transportation infrastructure, and then develop and implement a plan for bringing the infrastructure into compliance</li> </ul>	<ul style="list-style-type: none"> <li>Improve first-last mile connections</li> <li>Increase population served by facility</li> <li>Increase service to transit-dependent populations</li> </ul>
State of Good Repair	<ul style="list-style-type: none"> <li>Seek and advocate for infrastructure maintenance funding indexed to asset management plan</li> <li>Develop life-cycle costs for all new transportation infrastructure projects, including technology</li> <li>Fix-it-first policy</li> </ul>	<ul style="list-style-type: none"> <li>Extend life of facility or equipment</li> <li>Maintain in good condition</li> </ul>

## 4.0 SUBREGIONAL MOBILITY MATRIX

An initial San Gabriel Valley Mobility Matrix Subregion project and program list was prepared consisting of Metro's December 2013 subregional project lists, which included: unfunded Long Range Transportation Plan (LRTP) projects; unfunded Measure R scope elements; and subregional needs submitted in response to requests by Directors Antonovich and Dubois, respectively. The project and program list was then updated through the outreach process to incorporate input from the PDT members and other subregion stakeholders. Projects that were completed, under construction, or fully funded were removed from the list. The list reflects not only transportation needs within cities, but also includes many projects/programs with wider subregional and regional impacts.

This chapter summarizes the transportation needs of the San Gabriel Valley study area, as demonstrated by the project and program list, and describes the high-level evaluation of project and program performance.

### 4.1 Project List

A total of 374 projects and programs were identified for the San Gabriel Valley Subregion. The projects and programs are divided into nine major categories, each containing subcategories. Within each type, the projects are further grouped by similarity into programs or consolidated improvements for the purposes of the project evaluation described later in this chapter. The transportation improvement types include:

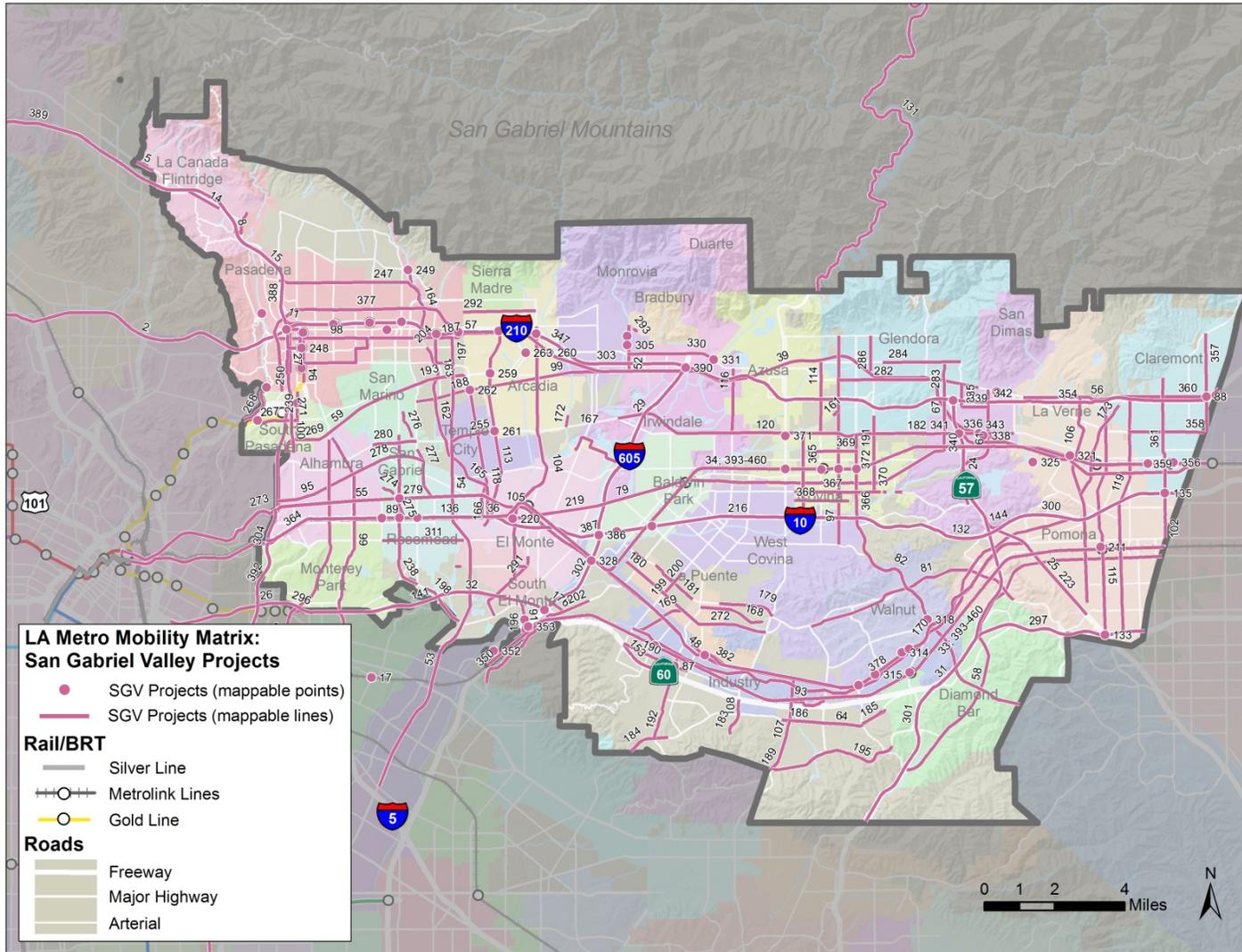
- Active Transportation Program

- Demand Based Program
- ITS Program
- Modal Connectivity Program
- Soundwall Program
- State of Good Repair Program
- System Efficiency Program
- Transit Program

A summary of the programs and subprograms is provided later in this chapter (see Table 4-2).

Arterial improvements and programs compose about one-quarter of the project list, and bicycle and pedestrian facility projects compose nearly another quarter. In addition, the list includes a large amount of Intelligent Transportation System (ITS) projects, including the I-210 Connected Corridors project.

A full list of the projects and programs can be found in Appendix C. Figure 4-1 presents a map of the San Gabriel Valley Mobility Matrix projects and programs, where sufficient information was available to map. The numbers on the map correspond to the Project IDs in the Appendix C project and program list. In addition, an interactive website allowing users to view Mobility Matrix project location and information is under development and will be available upon completion of this effort.

**Figure 4-1. San Gabriel Valley Mobility Matrix Projects and Programs Map**


Source: Cambridge Systematics, 2015.

## 4.2 Evaluation

The evaluation is meant as a high-level analysis of the projects and programs that have the potential to address subregional and countywide transportation goals for later quantitative analysis in the Metro 2009 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 the limited timeframe for completion and the presence of 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.

**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 <b>subregional</b> scale
 MEDIUM BENEFIT	Significantly benefits one or more theme goals or metrics on a <b>corridor or activity center</b> scale
 LOW BENEFIT	Addresses one or more theme goals or metrics on a <b>limited/localized</b> 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

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

### 4.2.1 Evaluation Matrix

Due to the subregional scale of the study, many of the smaller projects were combined or grouped into larger programs or consolidated improvements for ease of analysis, while some of the larger improvements were maintained as individual projects. The evaluation assigns ratings at the larger program or consolidated improvements level for each of the six Mobility Matrix themes.

As mentioned in Chapter 3.0, state of good repair is a priority for Metro and local jurisdictions so it is a theme for the Mobility Matrix effort. However, since most new projects or programs included for consideration do not necessarily require or include maintenance or preservation, it was recognized that most projects and programs would not achieve significant benefits under the State of Good Repair theme. As such, it has been listed last for the evaluation results.

As discussed in Chapter 3.0, the San Gabriel Valley subregion has developed a set of subregion-specific goals and objectives associated with the six countywide themes. A project's or program's score is determined by its potential to contribute to one or more of these subregional goals and objectives. The evaluation ratings are shown in Table 4-2.

**Table 4-2. Performance Evaluation – Summary by Subprogram**

		Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
<b>San Gabriel Valley Mobility Matrix Projects &amp; Programs</b>	<b>Number of Projects</b>	<ul style="list-style-type: none"> <li>*Improve mobility &amp; reduce congestion</li> <li>*Minimize vehicular &amp; truck impacts</li> <li>*Reduce bus &amp; rail transit congestion</li> <li>*Develop first/last mile strategies</li> <li>*Reduce congestion caused by goods movement</li> </ul>	<ul style="list-style-type: none"> <li>*Increase pedestrian &amp; bicyclist safety</li> <li>*Increase transit user safety</li> <li>*Increase rail &amp; roadway safety</li> </ul>	<ul style="list-style-type: none"> <li>*Prepare for extreme weather events</li> <li>*Improve air quality and reduce GHG emissions</li> <li>*Improve public health and reduce obesity</li> <li>*Improve quality of life</li> <li>*Conserve water and manage storm water</li> </ul>	<ul style="list-style-type: none"> <li>*Improve goods movement infrastructure</li> <li>*Improve access to jobs</li> <li>*Reduce travel time for workers and goods</li> <li>*Provide infrastructure to attract new business</li> <li>*Promote development at station areas &amp; corridors</li> </ul>	<ul style="list-style-type: none"> <li>*Improve transit, bike, ped access to activity and job growth centers</li> <li>*Provide access to transit-dependent populations</li> <li>*Increase bike/pedestrian access to transit</li> <li>*Compliance with ADA at transit stations and stops</li> </ul>	<ul style="list-style-type: none"> <li>*Maintain safe &amp; reliable mobility</li> <li>*Minimize rehabilitation &amp; reconstruction costs</li> </ul>
<b>Active Transportation</b>	<b>75</b>						
Active Transportation Program	75	●	●	●	●	●	●
<b>Demand Based Program</b>	<b>21</b>						
Park-and-Ride/Station Access Program	12	●	●	●	●	●	○
I-10 to I-605 Carpool Lane connectors	1	●	●	●	○	○	○
SR-60 to I-605 Carpool Lane Connectors	1	●	●	●	○	○	○
I-605 Carpool Lanes: I-10 to I-210	1	●	●	●	●	○	●
SR-57 Carpool Lanes: SR-60 to I-210	1	●	●	●	○	○	○
SR-60 Carpool Lanes: US-101 to I-605	1	●	●	●	●	○	○
Long-Term Managed Lane Program	4	●	●	●	○	○	○
<b>Goods Movement Program</b>	<b>1</b>						
Alameda Corridor East Project	1	●	●	●	●	○	●

		Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
<b>San Gabriel Valley Mobility Matrix Projects &amp; Programs</b>	<b>Number of Projects</b>	*Improve mobility & reduce congestion *Minimize vehicular & truck impacts *Reduce bus & rail transit congestion *Develop first/last mile strategies *Reduce congestion caused by goods movement	*Increase pedestrian & bicyclist safety *Increase transit user safety *Increase rail & roadway safety	*Prepare for extreme weather events *Improve air quality and reduce GHG emissions *Improve public health and reduce obesity *Improve quality of life *Conserve water and manage storm water	*Improve goods movement infrastructure *Improve access to jobs *Reduce travel time for workers and goods *Provide infrastructure to attract new business *Promote development at station areas & corridors	*Improve transit, bike, ped access to activity and job growth centers *Provide access to transit-dependent populations *Increase bike/pedestrian access to transit *Compliance with ADA at transit stations and stops	*Maintain safe & reliable mobility *Minimize rehabilitation & reconstruction costs
<b>ITS Program</b>	<b>62</b>						
I-210 Connected Corridors Project	2	●	◐	◐	◐	○	◐
Arterial ITS Program	51	◐	◐	◐	◐	○	◐
Highway ITS Program	9	◐	◐	◐	◐	○	◐
<b>Modal Connectivity Program</b>	<b>14</b>						
Complete Streets Program	6	◐	◐	●	○	●	◐
First/Last Mile Program	4	●	◐	●	◐	●	◐
Multi-Modal Corridor Program	4	◐	◐	◐	◐	●	◐
<b>Soundwall Program</b>	<b>3</b>						
Highway Soundwalls	3	○	○	◐	○	○	○
<b>State of Good Repair Program</b>	<b>29</b>						
State of Good Repair Program	29	◐	◐	◐	◐	○	●

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

San Gabriel Valley Mobility Matrix Projects & Programs	Number of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		<ul style="list-style-type: none"> <li>*Improve mobility &amp; reduce congestion</li> <li>*Minimize vehicular &amp; truck impacts</li> <li>*Reduce bus &amp; rail transit congestion</li> <li>*Develop first/last mile strategies</li> <li>*Reduce congestion caused by goods movement</li> </ul>	<ul style="list-style-type: none"> <li>*Increase pedestrian &amp; bicyclist safety</li> <li>*Increase transit user safety</li> <li>*Increase rail &amp; roadway safety</li> </ul>	<ul style="list-style-type: none"> <li>*Prepare for extreme weather events</li> <li>*Improve air quality and reduce GHG emissions</li> <li>*Improve public health and reduce obesity</li> <li>*Improve quality of life</li> <li>*Conserve water and manage storm water</li> </ul>	<ul style="list-style-type: none"> <li>*Improve goods movement infrastructure</li> <li>*Improve access to jobs</li> <li>*Reduce travel time for workers and goods</li> <li>*Provide infrastructure to attract new business</li> <li>*Promote development at station areas &amp; corridors</li> </ul>	<ul style="list-style-type: none"> <li>*Improve transit, bike, ped access to activity and job growth centers</li> <li>*Provide access to transit-dependent populations</li> <li>*Increase bike/pedestrian access to transit</li> <li>*Compliance with ADA at transit stations and stops</li> </ul>	<ul style="list-style-type: none"> <li>*Maintain safe &amp; reliable mobility</li> <li>*Minimize rehabilitation &amp; reconstruction costs</li> </ul>
<b>System Efficiency Program</b>	<b>71</b>						
I-10/I-605 Interchange Improvements	1	●	◐	○	◐	○	◐
I-10 Improvement: I-605 to Durfee Avenue	1	●	◐	○	○	○	◐
SR-60/I-605 Interchange Improvements	1	●	◐	○	◐	○	◐
SR-60/SR-57 Interchange Improvements	1	●	◐	○	◐	○	◐
SR-71 Highway to Freeway Project	2	●	◐	◐	◐	○	◐
SR-710 North Gap Closure Project*	1	●	◐	◐	◐	◐	◐
I-10 Hotspots	1	●	◐	○	◐	○	◐
SR-60 Hotspots	1	●	◐	○	◐	○	◐
Arterial Capacity Enhancement Program	13	●	◐	○	◐	○	◐
Arterial TSM Program	17	◐	◐	◐	◐	○	◐
Grade Crossing Program	5	●	●	◐	◐	○	○
Highway Capacity Enhancement Program	5	●	◐	—	◐	○	◐
Highway Ramps and Interchanges Program	17	●	◐	○	◐	○	◐
Highway TSM Program	5	◐	◐	◐	◐	○	◐

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

San Gabriel Valley Mobility Matrix Projects & Programs	Number of Projects	Mobility	Safety	Sustainability	Economy	Accessibility	State of Good Repair
		*Improve mobility & reduce congestion *Minimize vehicular & truck impacts *Reduce bus & rail transit congestion *Develop first/last mile strategies *Reduce congestion caused by goods movement	*Increase pedestrian & bicyclist safety *Increase transit user safety *Increase rail & roadway safety	*Prepare for extreme weather events *Improve air quality and reduce GHG emissions *Improve public health and reduce obesity *Improve quality of life *Conserve water and manage storm water	*Improve goods movement infrastructure *Improve access to jobs *Reduce travel time for workers and goods *Provide infrastructure to attract new business *Promote development at station areas & corridors	*Improve transit, bike, ped access to activity and job growth centers *Provide access to transit-dependent populations *Increase bike/pedestrian access to transit *Compliance with ADA at transit stations and stops	*Maintain safe & reliable mobility *Minimize rehabilitation & reconstruction costs
<b>Transit Program</b>	<b>98</b>						
Metro Gold Line Eastside Extension	1	●	◐	●	◐	●	○
Metro Gold Line Foothill Extension - Phase 2B	1	●	◐	●	◐	●	○
SR-134 High Capacity Transit Corridor	1	●	◐	●	◐	●	○
Bus Expansion Program	9	◐	◐	◐	◐	◐	○
Bus Rapid Transit Program	7	●	◐	●	◐	●	○
Metrolink Enhancement Program	66	●	◐	●	◐	●	◐
Transit Operations Program	13	◐	◐	◐	○	◐	◐
<b>Total</b>	<b>374</b>						

● High Benefit   ◐ Medium Benefit   ◑ Low Benefit   ○ Neutral/No Benefit   — Negative Impact

\* The SR 710 North project was not evaluated on a single alternative, but rather evaluated based on the severity of the problem it is intending to solve. The various alignments and their impacts and benefits will be detailed in the forthcoming Environmental Impact Report. The benefit evaluations shown are therefore speculative, and subject to change dependent upon which, if any, alternative is ultimately selected.

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

### 4.3 Findings

Under each of the six themes, the subregions identified performance measures. The benefit analysis was based on the ability of a program or project to contribute significantly to one or more of the performance measures within each theme, as well as the program or project's ability to provide subregional contributions to the theme. Overall, most projects provide mobility benefits, whereas the other benefits provided by the different projects and programs tend to vary. The San Gabriel Valley PDT requested that this section provide explanations about how the benefits of the projects and programs were developed, particularly when different measurements occur between seemingly similar programs.

**Demand Based Program.** Overall, the projects within this program provide high mobility benefits to the subregion. Only one project within the Demand Based Program scored as Medium Benefit, the SR-57 carpool lanes from SR-60 to I-210, due to comparatively lower projected usage. Under Economy, the Demand Based projects along routes with high truck volumes measured some benefit for improving goods movement. Generally, the projects within the Demand Based Program do not benefit subregional State of Good Repair; however, the I-605 Carpool Lanes project includes rehabilitation of the I-605 mainline.

**Goods Movement Program.** Only one program in the San Gabriel Valley falls under this program, the Alameda Corridor East Project. This project consisting of several at-grade crossing safety improvements and grade separations is nearing completion. While this project primarily results in localized benefits to mobility, safety and noise, it also provides regional benefits, such as

improved safety and air quality. Grade separations also improve reliability for trucks accessing logistics facilities near rail corridors, and they reduce the potential for collisions, which can result in significant delays to trains moving goods to market.

**ITS Program.** This program, which includes the I-210 Connected Corridors Project, the Arterial ITS Program and the Highway ITS Program, provides moderate mobility benefits, and similar to the Demand Based Program, also provides some safety, sustainability and economic benefits. ITS programs provide a slight benefit to State of Good Repair by focusing traffic on major corridors and reducing traffic on local streets that were not designed for high traffic volumes.

**System Efficiency Program.** The majority of the projects within this program provide substantial mobility benefits. One slight difference between the benefits for the Grade Crossing Program and the Alameda Corridor East (ACE) project occurs solely based on the extent of the programs. The Grade Crossing Program covers more crossings, and therefore, is expected to create slightly more benefit. The benefits of these programs also differ in the State of Good Repair category in which ACE provides some benefit because the project involves replacing old tracks at several locations.

**Transit Program.** The Gold Line Eastside extension alignment reflects high mobility and accessibility benefits because it provides a service that does not currently exist in this area. The Gold Line Foothill extension will increase mobility for short trips within the subregion connecting to many employment centers.

## 5.0 IMPLEMENTATION TIMEFRAMES AND COST ESTIMATES

The projects and programs described in Chapter 4 were categorized into the three different timeframes based on a number of factors, including project 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 10- and 20-year timeframes. The timeframes correspond to when the projects are anticipated to be completed and in operation. Some projects span multiple timeframes, particularly those involving ongoing operations or maintenance and programs.

Metro, the Mobility Matrix consultants, PDT members, cities and other stakeholders worked collaboratively to determine project implementation timeframes. Table 5-1 presents the categorization for the San Gabriel Valley project/program categories. A full description of the categorization methodology can be found in Appendix B.

Most of the projects and programs in the San Gabriel Valley fall into the short- and mid-term implementation timeframes, with a few expected to be phased into the long-term. 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.

### 5.1 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.

**Table 5-1. San Gabriel Valley Subregional Mobility Matrix Projects and Programs Categorization Summary**

San Gabriel Valley Mobility Matrix Projects and Programs	Number of Projects	Project Categories		
		Short Term (0-10 Years)	Mid Term (20 Years)	Long Term (20+ Years)
<b>Active Transportation Program</b>	75			
Active Transportation	75	✓	✓	✓
<b>Demand Based Program</b>	21			
Park-and-Ride/Station Access Program	12	✓	✓	✓
I-10 to I-605 Carpool Lane connectors	1		✓	
SR-60 to I-605 Carpool Lane Connectors	1		✓	
I-605 Carpool Lanes: I-10 to I-210	1			✓
SR-57 Carpool Lanes: SR-60 to I-210	1	✓	✓	
SR-60 Carpool Lanes: US-101 to I-605	1			✓
Long-Term Managed Lane Program	4			✓
<b>Goods Movement Program</b>	1			
Alameda Corridor East Project	1	✓		
<b>ITS Program</b>	62			
I-210 Connected Corridors Project	2		✓	✓
Arterial ITS Program	51	✓	✓	✓
Highway ITS Program	9	✓	✓	✓
<b>Modal Connectivity Program</b>	14			
Complete Streets Program	6	✓	✓	✓
First/Last Mile Program	4	✓	✓	✓
Multi-Modal Corridor Program	4	✓	✓	✓
<b>Soundwall Program</b>	3			
Highway Soundwalls	3	✓	✓	

San Gabriel Valley Mobility Matrix Projects and Programs	Number of Projects	Project Categories		
		Short Term (0-10 Years)	Mid Term (20 Years)	Long Term (20+ Years)
<b>State of Good Repair Program</b>	<b>29</b>			
State of Good Repair Program	29	✓	✓	✓
<b>System Efficiency Program</b>	<b>71</b>			
I-10/I-605 Interchange Improvements	1	✓	✓	
I-10 Improvement: I-605 to Durfee Avenue	1		✓	
SR-60/I-605 Interchange Improvements	1		✓	
SR-60/SR-57 Interchange Improvements	1	✓	✓	
SR-71 Highway to Freeway Project	2	✓	✓	
SR-710 North Gap Closure Project	1		✓	
I-10 Hotspots	1		✓	
SR-60 Hotspots	1		✓	
Arterial Capacity Enhancement Program	13	✓	✓	✓
Arterial TSM Program	17	✓	✓	✓
Grade Crossing Program	5	✓		
Highway Capacity Enhancement Program	5	✓	✓	✓
Highway Ramps and Interchanges Program	17	✓	✓	✓
Highway TSM Program	5	✓	✓	✓
<b>Transit Program</b>	<b>98</b>			
Metro Gold Line Eastside Extension	1		✓	
Metro Gold Line Foothill Extension - Phase 2B	1	✓		
SR-134 High Capacity Transit Corridor	1		✓	✓
Bus Expansion Program	9	✓	✓	✓
Bus Rapid Transit Program	7	✓	✓	
Metrolink Enhancement Program	66	✓	✓	✓
Transit Operation Program	13	✓	✓	✓

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

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. Table 5-2 shows costs by Program and Subprogram. Table 5-3 shows the costs for each category, divided into the three time periods.

The costs for Active Transportation projects are relatively small, compared to the other project categories, at \$370 to \$550 million over each time period. Most of the identified projects are expected to be completed 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 Highway project range is very high, between \$9.4 and \$14 billion, with some cost estimates still under development. The costs for arterial projects range from about \$700 million to \$1 billion for each of the 10-year time periods, with similar costs for ITS, TSM, Capacity Enhancement, and State of Good Repair.

The cost range for the Transit projects is extremely wide, at \$4 to \$10.9 billion. A few of the projects have different mode options with very different costs, and the proposed LRT and BRT extensions have high capital costs. Additionally, should transit be chosen as the alternative for the SR-710 North project, the costs for Transit in Table 5.2 would increase and System Efficiency costs would decrease. The proposed Metrolink improvements would cost between \$952 million and \$1.4 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. San Gabriel Valley Mobility Matrix Program Cost Estimates and Categorizations**

San Gabriel Valley Mobility Matrix Projects & Programs	Total Projects	Projects with Estimated Costs	Projects with Original Costs	Short Term Cost (Thousands) (0 to 10 Years)		Mid Term Cost (Thousands) (11 to 20 Years)		Long Term (Thousands) (20 plus Years)	
				Low	High	Low	High	Low	High
				<b>Active Transportation Program</b>	75	75	55	\$371,000	\$552,000
Active Transportation Program	75	75	55	\$371,000	\$552,000	\$371,000	\$552,000	\$371,000	\$552,000
<b>Demand-Based Program</b>	21	21	15	\$170,000	\$255,000	\$639,000	\$959,000	\$2,050,000	\$3,085,000
Park-and-Ride/Station Access Program	12	12	6	\$90,000	\$135,000	\$90,000	\$135,000	\$90,000	\$135,000
I-10 to I-605 Carpool Lane connectors	1	1	1	\$-	\$-	\$217,000	\$326,000	\$-	\$-
SR 60 to I-605 Carpool Lane Connectors	1	1	1	\$-	\$-	\$252,000	\$378,000	\$-	\$-
I-605 Carpool Lanes: I-10 to I-210	1	1	1	\$-	\$-	\$-	\$-	\$260,000	\$390,000
SR 57 Carpool Lanes: SR 60 to I-210	1	1	1	\$80,000	\$120,000	\$80,000	\$120,000	\$-	\$-
SR 60 Carpool Lanes: U.S. 101 to I-605	1	1	1	\$-	\$-	\$-	\$-	\$480,000	\$720,000
Long-Term Managed Lane Program	4	4	4	\$-	\$-	\$-	\$-	\$1,220,000	\$1,840,000
<b>Goods Movement Program</b>	1	1	1	\$56,000	\$84,000	\$-	\$-	\$-	\$-
Alameda Corridor East Project	1	1	1	\$56,000	\$84,000	\$-	\$-	\$-	\$-
<b>ITS Program</b>	62	62	52	\$224,000	\$327,000	\$228,560	\$333,700	\$225,250	\$330,750
I-210 Connected Corridors Project	2	2	2	\$-	\$-	\$4,560	\$6,700	\$1,250	\$3,750
Arterial ITS Program	51	51	42	\$102,000	\$153,000	\$102,000	\$153,000	\$102,000	\$153,000
Highway ITS Program	9	9	8	\$122,000	\$174,000	\$122,000	\$174,000	\$122,000	\$174,000
<b>Modal Connectivity Program</b>	14	10	8	\$52,000	\$75,900	\$52,000	\$75,900	\$52,000	\$75,900
Complete Streets Program	6	6	5	\$39,800	\$57,700	\$39,800	\$57,700	\$39,800	\$57,700
First/Last Mile Program	4	4	3	\$12,200	\$18,200	\$12,200	\$18,200	\$12,200	\$18,200
Multi-Modal Corridor Program	4	0	0	Under Development	Under Development	Under Development	Under Development	Under Development	Under Development
<b>Soundwall Program</b>	3	3	2	\$16,550	\$24,850	\$16,550	\$24,850	\$-	\$-
Highway Soundwalls	3	3	2	\$16,550	\$24,850	\$16,550	\$24,850	\$-	\$-
<b>State of Good Repair Program</b>	29	29	27	\$199,000	\$298,000	\$199,000	\$298,000	\$199,000	\$298,000
State of Good Repair	29	29	27	\$199,000	\$298,000	\$199,000	\$298,000	\$199,000	\$298,000
<b>System Efficiency Program</b>	71	67	47	\$1,324,000	\$1,979,000	\$1,729,000	\$8,076,000	\$924,000	\$1,378,000
I-10/I-605 Interchange Improvements	1	1	1	\$28,400	\$42,600	\$28,400	\$42,600	\$-	\$-
I-10 Improvement: I-605 to Durfee Avenue	1	1	1	\$-	\$-	\$87,000	\$130,000	\$-	\$-

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

San Gabriel Valley Mobility Matrix Projects & Programs	Total Projects	Projects with Estimate d Costs	Projects with Original Costs	Short Term Cost (Thousands) (0 to 10 Years)		Mid Term Cost (Thousands) (11 to 20 Years)		Long Term (Thousands) (20 plus Years)	
				Low	High	Low	High	Low	High
				SR 60/I-605 Interchange Improvements	1	1	1	\$-	\$-
SR 60/SR 57 Interchange Improvements	1	1	1	\$190,000	\$285,000	\$190,000	\$285,000	\$-	\$-
SR 71 Highway to Freeway Project	2	2	2	\$170,000	\$255,000	\$170,000	\$255,000	\$-	\$-
SR 710 North Gap Closure Project*	1	1	1	\$-	\$-	\$105,000	\$5,650,000	\$-	\$-
I-10 Hotspots	1	1	1	\$-	\$-	\$60,000	\$90,000	\$-	\$-
SR 60 Hotspots	1	1	1	\$-	\$-	\$60,000	\$90,000	\$-	\$-
Arterial Capacity Enhancement Program	13	13	8	\$215,000	\$319,000	\$215,000	\$319,000	\$215,000	\$319,000
Arterial TSM Program	17	17	12	\$178,000	\$266,000	\$178,000	\$266,000	\$178,000	\$266,000
Grade Crossing Program	5	5	4	\$11,000	\$19,000	\$-	\$-	\$-	\$-
Highway Capacity Enhancement Program	5	5	4	\$81,100	\$122,000	\$81,100	\$122,000	\$81,100	\$122,000
Highway Ramps and Interchanges Program	17	17	10	\$449,000	\$669,000	\$449,000	\$669,000	\$449,000	\$669,000
Highway TSM Program	5	1	0	\$1,120	\$1,680	\$1,120	\$1,680	\$1,120	\$1,680
<b>Transit Program</b>	<b>98</b>	<b>93</b>	<b>85</b>	<b>\$1,618,000</b>	<b>\$2,470,000</b>	<b>\$1,805,000</b>	<b>\$5,143,000</b>	<b>\$595,000</b>	<b>\$3,274,000</b>
Metro Gold Line Eastside Extension	1	1	1	\$-	\$-	\$1,150,000	\$1,720,000	\$-	\$-
Metro Gold Line Foothill Extension – Phase 2B**	1	1	1	\$904,000	\$1,360,000	\$-	\$-	\$-	\$-
SR 134 High Capacity Transit Corridor***	1	1	0	\$-	\$-	\$65,000	\$2,500,000	\$65,000	\$2,500,000
Bus Expansion Program	9	9	2	\$123,000	\$162,000	\$123,000	\$162,000	\$81,800	\$108,000
Bus Rapid Transit Program	7	2	1	\$9,190	\$73,500	\$9,190	\$73,500	\$-	\$-
Metrolink Enhancement Program	66	66	66	\$417,000	\$626,000	\$293,000	\$439,000	\$242,000	\$364,000
Transit Operations Program	13	13	13	\$165,000	\$248,000	\$165,000	\$248,000	\$165,000	\$248,000
<b>Total</b>	<b>374</b>	<b>360</b>	<b>291</b>	<b>\$4,030,000</b>	<b>\$6,066,000</b>	<b>\$5,040,000</b>	<b>\$15,462,000</b>	<b>\$4,416,000</b>	<b>\$8,993,000</b>

Notes: Estimated costs in 2015 dollars. Refer to Appendix B for a detailed explanation of the cost estimating process.

These estimates under-represent the operations and maintenance costs due to limitations of data availability. Costs are also underestimated due to projects and programs where cost estimate ranges are still under development.

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.

\*SR-710 Project cost estimate based on low and high range of the alternatives still under consideration after the 2015 draft Environmental Impact Report. The low estimate is for the TDM/TSM alternative and the high range is for a freeway tunnel alternative

\*\*Metro Gold Line Foothill Extension – Phase 2B project cost range based on Gold Line Construction Authority board approved cost of \$1.13 billion for Los Angeles County share

\*\*\* SR 134 High Capacity Transit Corridor cost range based on bus rapid transit (low estimate) and light rail transit (high estimate)

**Table 5-3. San Gabriel Valley Mobility Matrix Summary of Rough Order of Magnitude Cost Estimates and Categorizations**

Type/ Category	Arterial	Goods Movement	Highway	Active Transportation	Transit	Multi-Modal	Total
Short-Term (0-10 yrs)	115 Projects \$705M to \$1.07B	1 Project \$56M to \$84M	41 Projects \$1.14B to \$1.69B/TBD	75 Projects \$371M to \$552M	85 projects \$1.57B to \$2.39B	26 Projects \$142M to \$210M	343 Projects \$4.03B to \$6.07B
Mid-Term (11-20 yrs)	1 projects/TBD \$699M to \$1.15B	\$0	15 Projects \$1.92B to \$8.51B	TBD Projects \$371M to \$552M	8 projects/TBD \$1.83B to \$7.61B	TBD Projects \$142M to \$210M	24 Projects \$5.04B to \$15.46B
Long-Term (>20 yrs)	1 projects/TBD \$695M to \$1.04B	\$0	6 Projects \$2.61B to \$3.92B	TBD Projects \$371M to \$552M	6 project/TBD \$552M to \$3.21B	TBD Projects \$142M to \$210M	13 Projects \$4.42B to \$8.99B
<b>Total</b>	<b>117 Projects/TBD \$2.10B to \$3.25B</b>	<b>1 Project \$56M to \$84M</b>	<b>57 Projects \$5.67B to \$14.12B</b>	<b>75 Projects/TBD \$1.11B to \$1.66B</b>	<b>98 projects/TBD \$3.95B to \$13.20B</b>	<b>26 Projects/TBD \$426 M to \$633M</b>	<b>374 Projects \$13.49B to \$30.52B</b>

Estimated costs in 2015 dollars.

TBD for project costs indicates the cost estimation is under development or there was not enough information to estimate one or more subprograms under this project type.

Programs that are ongoing, such as State of Good Repair and Bicycle/Pedestrian, are counted in each timeframe. The total value of these programs is based on the cost estimates of the projects within the programs that were available. Many of these programs have not yet identified projects for outer years so the values of the programs for the mid- and long-term categories are based on the same levels of funding as the short term.

The counts by time period for Highway projects and Transit projects do not sum to total because five Highway and one Transit projects are being phased and are included in two time periods.

Maximum project costs for Highway, Transit, and Arterial each include the high estimate for the SR-710 North project for the particular mode.

These estimates underrepresent the operations and maintenance costs due to limitations of data availability. Costs are also underestimated due to projects and programs where cost estimate ranges are still under development.

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.

## 5.2 Financing the Transportation System

### 2009 Long Range Transportation Plan and Identified Additional Needs

The 2009 Long Range Transportation Plan (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.

### 2017 Long Range Transportation Plan 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 subregions 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.

## 5.3 What's Next?

The Mobility Matrix is the first step in identifying San Gabriel Valley 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:

- **San Gabriel Valley 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/programs in the region. In preparation for a potential ballot measure and LRTP update (as described further below), the SGVCOG should decide how it wants to prioritize these projects/programs 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: Methodology Memorandums

Appendix C: Project Detail Matrix

Appendix D: Baseline Conditions Report

## APPENDIX A MEETING MATRIX

The following matrix documents PDT coordination meetings and SGVCOG Board Approvals as part of the San Gabriel Valley Subregional Mobility Matrix Study.

**Table A-1. San Gabriel Valley Mobility Matrix PDT Meetings and Approvals**

Meeting Type	Date/Time	Meeting Location	Discussion Points/Actions
PDT Meeting #1	08/21/14 8:30 AM to 10:00 AM	ACE Construction Authority 4900 Rivergrade Road, Suite A120 Irwindale, CA 91706	Obtained consensus on the Mobility Matrix guiding principles, schedule, approach; developed a schedule to update the project list already distributed to PDT members; and developed a better understanding of Subregional goals and objectives
PDT Meeting #2	10/02/14 8:30 AM to 10:00 AM	ACE Construction Authority 4900 Rivergrade Road, Suite A120 Irwindale, CA 91706	Obtained consensus on the revised subregional goals and objectives; discussed the status and updates to the preliminary project list; and, discussed and obtained feedback on the performance metrics
SGVCOG Transportation Committee Briefing	10/20/14 4:00 PM to 5:00 PM	Garvey Community Center 9108 Garvey Avenue Rosemead, CA 91770	Provided overview briefing of the Mobility Matrix and discussed the project list
PDT Meeting #3	11/06/14 8:30 AM to 10:00 AM	ACE Construction Authority 4900 Rivergrade Road, Suite A120 Irwindale, CA 91706	Discussed the status of the preliminary project list; presented the finalized goals and objectives; discussed the performance metrics and evaluation approach; and, reviewed the baseline conditions data. Metro presented overview of LRTP update process and proposed ballot measure.
PDT Meeting #4	12/04/14 8:30 AM to 10:00 AM	ACE Construction Authority 4900 Rivergrade Road, Suite A120 Irwindale, CA 91706	Reviewed the revised subregional project list; reviewed the draft baseline conditions analysis; reviewed performance metrics and initial program/project evaluation; and, discussed the categorization of projects.

<b>Meeting Type</b>	<b>Date/Time</b>	<b>Meeting Location</b>	<b>Discussion Points/Actions</b>
PDT Meeting #5	01/22/15 8:30 AM to 10:00 AM	ACE Construction Authority 4900 Rivergrade Road, Suite A120 Irwindale, CA 91706	Finalized the baseline conditions analysis and discussed the initial performance analysis and categorization of the projects. Metro provided an overview of the mobility matrices, the ballot measure, and the Metro LRTP update processes.
PDT Meeting #6	02/19/15 8:30 AM to 10:00 AM	ACE Construction Authority 4900 Rivergrade Road, Suite A120 Irwindale, CA 91706	Approved performance evaluation, Baseline Conditions Report, and project list updates; reviewed draft cost estimates and presented draft final report structure and next steps
SGVCOG Transportation Committee	03/04/15 3:00 PM to 4:00 PM	TBD	Recommend approval of Final Report
SGVCOG Board Meeting	03/19/15 6:00 PM to 8:00 PM	Upper San Gabriel Valley Municipal Water District Offices, Board Room 602 E. Huntington Drive Monrovia, CA	Approve Final Report

## APPENDIX B    METHODOLOGY MEMORANDUMS

### Introduction

The following document describes the methodologies used for the performance evaluation, project categorization, and cost estimating exercises under Metro’s Subregional Mobility Matrix studies.

### Program Evaluation Methodology Overview

This document outlines the context and approach for evaluating projects/programs submitted for consideration in the subregional Mobility Matrices.

### Background and Context

The Mobility Matrices are intended as a preliminary input into Metro’s forthcoming Long Range Transportation Plan (LRTP) update process. The Mobility Matrix effort has involved collecting improvement projects and defining subregional improvement programs, defining subregional goals and objectives, analysis of baseline conditions, and a high-level evaluation of programs submitted for consideration. This document outlines the approach for evaluation of subregional projects and programs.

The Mobility Matrix process does not involve any prioritization. Rather, the Mobility Matrix is intended as a screening tool and a starting point in the Metro 2017 LRTP update process. It is also a tool to assist subregions in reaching consensus on goals and objectives and unmet transportation needs.

The intent of the Mobility Matrix process is to identify subregional projects and programs with the potential to address subregional and countywide transportation needs and goals for later quantitative analysis.

Metro and the Mobility Matrix consultant teams investigated the potential for a quantitative screening evaluation process, but this proved infeasible for the following reasons:

- **Inconsistent project details.** Most cities in Los Angeles County did not have the resources or staff available to provide detailed data on their project concepts within the Mobility Matrix development timeframe. Performing quantitative analysis on inconsistent project lists would result in skewed evaluations.
- **Insufficient time and scope to fill in all data gaps.** The condensed time frame and limited scope of Mobility Matrix process was deemed insufficient to warrant a detailed outreach to all 89 jurisdictions to collect all the data and project details necessary for a rigorous quantitative evaluation.

Due to the limited time frame for completion and largely incomplete and inconsistent project/program details and data, the Mobility Matrix evaluation is qualitative in nature, focusing on each program’s potential to address countywide and subregional goals and objectives. This was done to ensure a consistent, holistic county-wide approach.

### Countywide Mobility Matrix Themes

Six broad themes guide the development of the Mobility Matrices, as shown in Figure B-1. These themes were

developed based on the Metro LRTP and are shared among all subregions in the county. Each program considered in the Mobility Matrices receives one score for each of these six themes.

**Figure B-1. Common Countywide Themes for All Mobility Matrices**



- **Mobility.** Develop projects and programs that improve traffic flow, reduce travel times, 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 personal 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 contribute to job creation and business expansion resulting from improved mobility.

- **Accessibility.** Invest in projects and programs that improve access to destinations such as jobs, recreation, medical facilities, schools, and others. Provide 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 many of the projects/programs 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. The Federal bill Moving Ahead for Progress in the 21<sup>st</sup> Century Act (MAP-21) calls for a renewed focus on ensuring transportation infrastructure is maintained in good conditions. 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.

### Subregional Goals and Objectives

Through the Mobility Matrix process, each Metro subregion has developed a set of subregion-specific goals and objectives associated with the six countywide themes identified in Chapter 3.0. A program’s score is determined by its potential to contribute to one or more of these subregional goals and objectives.

### Subregional Performance Metrics

The Mobility Matrix processes also included the development of subregional performance metrics associated with the six countywide themes identified above. These performance metrics are intended to inform future evaluation through the 2017 LRTP update process.

### Evaluation Scores

The qualitative screening evaluation of projects and programs was intended to be easy to understand, qualitative in nature, and logical and consistent across all subregions. The evaluation methodology shown in Table B-1 represents a collaborative effort spanning many months, and incorporates input from subregional representatives across the County.

Projects and programs were evaluated based on submitted project descriptions and attributes, and the potential of these to address subregional goals related to the Countywide Mobility Matrix Themes reported in Chapter 3.0.

**Table B-2. 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 subregional scale
 MEDIUM BENEFIT	Significantly benefits one or more theme goals or metrics on a corridor or activity center scale
 LOW BENEFIT	Addresses one or more theme goals or metrics on a limited/localized 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

### Project Categorization Methodology Overview

This document outlines the approach for categorizing the potential implementation timeframes for projects and programs submitted for consideration in the subregional Mobility Matrices.

### Background and Context

The Mobility Matrices are intended as a preliminary input into Metro’s forthcoming Long Range Transportation Plan (LRTP) process. The Mobility Matrix effort has involved collecting improvement projects and defining subregional improvement programs, defining subregional goals and objectives, analysis of baseline conditions, and a high-level evaluation of programs submitted for consideration. This document outlines the approach for

categorizing the projects and programs into short-, mid- and long- term implementation timeframes.

The Mobility Matrix process does not involve any prioritization. Rather, the Mobility Matrix project/program categorization process is intended as an informational tool for use by subregions.

### Categorization Timeframes

A 20-plus year timeframe was used as the basis for categorizing projects. As shown below, three timeframes were developed into which projects and programs could be categorized, with breakpoints at the 10- and 20-year timeframes. The timeframes correspond to when the projects are completed and in operation.

<b>Short-Term</b> 0-10 years (2015-2024) Projects can be completed and in operation in less than 10 years.
<b>Mid-Term</b> 11-20 years (2025-2034) Projects can be completed and in operation in 11 to 20 years.
<b>Long-Term</b> 20+ years (After 2035) Projects can be completed and in operation in more than 20 years.

### Categorization Factors

Projects and programs were categorized into the three different timeframes based on a number of factors,

including their readiness, need, funding availability or potential, and phasing, as described below:

- **Project Readiness** – What initial steps have been completed to-date or are in progress for the project or program – environmental documentation, project study report, alternatives analysis, feasibility study, engineering, inclusion in an approved plan or document, etc.? What steps are needed before the project can be implemented? If a project has a number of these steps in progress or completed, it can more appropriately be placed in the short- or mid-term categories. A project with little or no progress to-date is more likely to be placed in the mid- or long-term categories.
- **Project Need** – Does the project or program serve a known deficiency, immediate need, or transportation problem that exists today (e.g., bottleneck, safety, etc.)? If the need is immediate, a project can more appropriately be placed in the short-term category. Projects fulfilling future needs (for example, in support of a major development planned 15 years from now) will likely fall into the mid- or long-term categories
- **Project Funding** – Has any funding been identified to date for the project or program? What is the overall project cost and in what timeframe will funding potentially be available? Projects with some funding available will be easier to categorize as short-term, as well as projects with lower cost values. Projects with large funding gaps or large cost estimates may need to be categorized as mid- or long-term to reserve the funding needed for implementation.



- **Project Phasing** – Is the project or program single or multiphased? Are there other phases or projects/programs that need to be completed first before this project or program or next phase can move forward? Many programs or large projects will likely cover more than one timeframe.

### **Categorization Process**

Metro, Mobility Matrix consultants, PDT members, cities and other stakeholders worked collaboratively to determine project implementation timeframes. For projects or programs located in only one jurisdiction, that jurisdiction was given the first opportunity to define a feasible timeframe for its projects and programs. Subregional and regional projects were categorized in conjunction with affected jurisdictions, and any conflicts between category suggestions by the affected jurisdictions were discussed and determined as a group. Project categorizations will be approved as part of the Final Subregional Mobility Matrix Report.

### **Cost Estimation Methodology Overview**

This document outlines the context and approach for estimating rough order-of-magnitude construction cost estimate ranges for transportation projects and programs included in the subregional Mobility Matrices.

#### **Purpose**

The Mobility Matrices are intended as preliminary input into Metro’s forthcoming Long Range Transportation Plan (LRTP) update process. The Mobility Matrix effort has involved collecting transportation improvement projects and defining subregional improvement programs, defining subregional goals and objectives,

analysis of baseline conditions, and a high-level screening evaluation of transportation programs submitted for consideration. The purpose of this document is to outline the approach for preparing rough order-of-magnitude capital cost estimates, not including vehicles, operating, maintenance and financing cost, for the unfunded transportation projects and programs in each subregion.

Some projects and programs on the Mobility Matrix lists contained capital cost estimates, while others did not. Furthermore, some projects submitted by stakeholder jurisdictions had defined scope and limits, while other projects were less defined or programmatic in nature.

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 future project-level planning. Rather, the cost ranges developed via this process constitute a high-level, rough order-of-magnitude planning range for short-, mid-, and long-term subregional funding needs for the Mobility Matrix effort only. More detailed analysis will be conducted in the LRTP process, which may necessitate refinement of project/program and associated cost estimates.

#### **Capital Cost Estimation Methodology**

This section explains the process by which consistent transportation improvement project cost minimum/maximum range estimates were developed at the program level.

#### **Major Transit Project Cost Estimates Developed by Metro**

Metro’s Cost Estimating Department provided parametric unit cost estimates for major transit projects such as bus

rapid transit, light rail transit, heavy rail transit, and maintenance and operations facilities, based on Metro historical project costs.

### Major Freeway Project Cost Estimates Developed by Caltrans

The California Department of Transportation (Caltrans) provided unit cost estimates for major freeway and highway projects. If Caltrans did not provide highway/freeway project cost estimates, they were left blank for the purposes of the Mobility Matrix.

### Projects with Cost Estimates Provided by Jurisdictions

If available, jurisdictions submitted cost estimates for their transportation improvement projects and programs. For some, jurisdictions submitted specific cost estimates, while for others, jurisdictions submitted minimum and maximum cost estimate ranges. Given the high-level planning nature of the Mobility Matrix process, and in the interest of subregional consistency, a minimum/maximum cost range was developed for each project or program:

- **Capital projects** submitted with minimum/maximum cost ranges were left unchanged. Projects submitted with specific cost estimates were expanded to a minimum (20 percent below specific estimate) and maximum (20 percent above specific estimate) cost range.
- **Program ongoing** costs were assumed to continue throughout the Mobility Matrix categorization periods, or throughout the short, medium and long-term period, if duration was unknown. Again, cost

estimates were adjusted to include a minimum range (20 percent below) and maximum range (20 percent above) around each annual cost estimate.

### Projects or Programs Without Cost Estimates

Projects or programs submitted without costs were assigned cost estimates based on per-unit or per-mile industry standard factors by project or program type, or on the average per-unit or per-mile costs of comparable projects/programs with cost information submitted for consideration in the Mobility Matrix. The following methods were used to develop these placeholder cost estimates:

- **Using Comparable Mobility Matrix Project Costs.** First, Mobility Matrix projects or programs with similar characteristics were sorted by type, and average costs were calculated based on per mile or per unit costs. For any projects or programs with similar characteristics, these average per mile and per unit costs were applied. This estimate was expanded to a minimum (20 percent below) and maximum (20 percent above) cost range.
- **Using Comparable Mobility Matrix Project Costs.** First, Mobility Matrix projects or programs with similar characteristics were sorted by type, and average costs were calculated based on per mile or per unit costs. For any projects or programs with similar characteristics, these average per mile and per unit costs were applied. This estimate was expanded to a minimum (20 percent below) and maximum (20 percent above) cost range.
- **Estimating Remaining Project Costs by Project Type.** For those remaining projects or programs with costs

that could not be estimated using other submitted projects or by research literature, the average total cost of similar submitted project/program types was used to approximate project cost.

- **Estimating Remaining Project Costs by Project Type.** For remaining projects, the average total cost of other projects in the same program was used to approximate project cost.

For example, if 15 out of 20 pedestrian program projects have cost estimates that total \$15 million, the remaining five pedestrian improvement projects were assumed to have similar average costs (\$1 million per project). In this example, if the original value of the 15 known projects was \$15 million, the assumed cost of the full program of 20 projects would be \$20 million.

### **Program-Level Estimates**

Cost ranges developed through this process are for high-level planning purposes only, and should not be used in project-specific planning. In the interest of consistency, project-level cost estimates were rolled up to the program level and not reported at the project-specific level.

### **All Project Costs Reported in Year 2015 Dollars**

For consistency, all estimated project and program costs are in year 2015 dollars, as this is the base year of the 2009 Long Range Transportation Plan update process. Project cost estimates from prior years were escalated to year 2015 dollars at a three-percent annual rate.

### **Metro Cost Estimating Department Reviewed Major Cost Estimates**

As a final step to ensure consistency with Metro's cost estimating processes, the Metro Cost Estimating Department provided a high-level review of transit cost estimates to ensure consultant estimates were consistent with Metro practices.

**APPENDIX C PROJECT DETAIL MATRIX**
**Table C-3. San Gabriel Valley Mobility Matrix – Project and Program List**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Active Transportation Program	Active Transportation Program	13	Arroyo Verdugo COG	Regionally significant local bicycle projects
		156	County of Los Angeles, San Gabriel Valley	I-10 – Install bike racks on buses along I-10 parallel arterials Corridor-wide
		157		San Gabriel River Bikeway- Arrow Highway Gap Closure
		158	City of Los Angeles	I-10 – Coordinate pedestrian, bicycle, and transit information and amenities corridor-wide
		161	County of Los Angeles	Big Dalton Wash Bike Path – Gladstone Avenue to Barranca Avenue; Class 1 Bike Path
		162	County of Los Angeles	Eaton Wash Channel Bike Path – Duarte Road to Rosemead Blvd; Class 1 Bike Path
		163	County of Los Angeles	Eaton Wash Channel – Del Mar Blvd to Duarte Road; Class 1 Bike Path
		164	County of Los Angeles	Eaton Wash Channel – New York Drive to Foothill Blvd; Class 1 Bike Path
		165	County of Los Angeles	Eaton Wash Channel – Rosemead Blvd to Temple City Blvd; Class 1 Bike Path
		166	County of Los Angeles	Eaton Wash Channel – Temple City Blvd to Rio Hondo Bikeway; Class 1 Bike Path
		167	County of Los Angeles	Emerald Necklace East-West Connectors; Quarry Clasp, Rush Street/Rio Hondo Bike Trail, San Gabriel Blvd/Rio Hondo Bike Trail Connectors; Class 1 Bike Path
		168	County of Los Angeles	Puente Creek Bike Path – Hacienda Blvd to Rimgrove Ave; Class 1 Bike Path
		169	County of Los Angeles	Puente Creek – 7th Ave (San Jose Creek – to Temple Ave; Class 1 Bike Path
		170	County of Los Angeles	San Jose Creek – 7th Avenue (Industry) to Murchison Avenue (Pomona); Class 1 Bike Path
		172	County of Los Angeles	Santa Anita Wash – Longden Avenue to Live Oak Avenue; Class 1 Bike Path
		173	County of Los Angeles	Thompson Creek – Lockhaven Way to White Avenue; Class 1 Bike Path
		175	County of Los Angeles	Pedestrian Improvements; construct new sidewalks at locations where absent
		176	County of Los Angeles	San Jose Creek Bike Trail Phase 2B – Bike Trail Class 1 Facility/Connector between the San Gabriel River Bike Trail and the San Jose Creek Bike Trail
		179	County of Los Angeles	Amar Rd – Aileron Ave to Azusa Ave; Class 2 Bike Lanes
		180	County of Los Angeles	Amar Rd – Vineland Avenue to N. Puente Avenue; Class 2 Bike Lanes
181	County of Los Angeles	Amar Rd – Willow Avenue to N. Unruh Avenue; Class 2 Bike Lanes		
182	County of Los Angeles	Arrow Hwy – Glendora Av to Valley Center Blvd; Class 2 Bike Lanes		
183	County of Los Angeles	Azusa Ave – Colima Road to Glenfold Drive; Class 2 Bike Lanes		
184	County of Los Angeles	Colima Rd – Casino Drive to Allenton Avenue; Class 2 Bike Lanes		
185	County of Los Angeles	Colima Rd – Fairway Dr/Brea Cyn Cutoff Rd to Tierra Luna; Class 2 Bike Lanes		
186	County of Los Angeles	Colima Rd – Larkvane Rd to Brea Cyn Cutoff; Class 2 Bike Lanes		
187	County of Los Angeles	Colorado Boulevard - Kinneloa Avenue to Michillinda Avenue; Class 2 Bike Lanes		
188	County of Los Angeles	Duarte Road - Sultana Ave to Oak Avenue; Class 2 Bike Lanes		

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Active Transportation Program (continued)	Active Transportation Program (continued)	189	County of Los Angeles	Fullerton Rd - Colima Road to Pathfinder Road; Class 2 Bike Lanes
		190	County of Los Angeles	Gale Ave - 7th Ave to Stimson Ave; Class 2 Bike Lanes
		191	County of Los Angeles	Glendora Av - Arrow Hwy to Cienega Av; Class 2 Bike Lanes
		192	County of Los Angeles	Hacienda Blvd - N Community Boundary to Colima Rd; Class 2 Bike Lanes
		193	County of Los Angeles	Huntington Drive - San Gabriel Boulevard to Michillinda Avenue; Class 2 Bike Lanes
		194	County of Los Angeles	Local Bikeways; Class 2 & Class 3 Bikeways on Local Streets in San Gabriel Valley subregion
		195	County of Los Angeles	Pathfinder Rd - Fullerton Road to Canyon Ridge Rd; Class 2 Bike Lanes
		196	County of Los Angeles	Peck Road - San Gabriel River Path to Workman Mill Rd; Class 2 Bike Lanes
		197	County of Los Angeles	Rosemead Blvd - Colorado Boulevard to Callita Street; Class 2 Bike Lanes
		198	County of Los Angeles	San Gabriel Blvd - Delta Ave to Lincoln Ave; Class 2 Bike Lanes
		199	County of Los Angeles	Sunset Ave - Amar Road to Temple Avenue; Class 2 Bike Lanes
		200	County of Los Angeles	Sunset Ave - Fairgrove Avenue to Amar Road; Class 2 Bike Lanes
		201	County of Los Angeles	Various Major Highways; Class 3 Bike Routes. Construct on-street Class III bike routes on arterial & secondary highways
		202	County of Los Angeles	Workman Mill Road - San Jose Creek Bicycle Path to Oakman Dr; Class 2 Bike Lanes
		206	San Dimas, La Verne, Pomona, Claremont	San Gabriel Valley Regional Greenway Network Initiative
		245	Pasadena	Citywide Bicycle Transportation Plan projects
		251	Pasadena	Citywide Safe Route to School Projects
		253	Pomona	Bikeways and Pedestrian Improvements
		256	Temple City	Bicycle Master Plan Implementation: Installation of 12.6 Miles of Class II & III Bicycle Lanes throughout the City
		266	Arcadia	Arcadia Citywide Bicycle Program
		268	South Pasadena	Arroyo Seco Bicycle and Pedestrian Trail
		269	South Pasadena	Huntington Drive Bikeway
		274	San Gabriel	Alhambra Wash Channel: Ramona Street to Hovey Avenue; Class I Bike Path; 0.5 miles
		275	San Gabriel	Alhambra Wash Channel: Del Mar Ave to I-10 Freeway; Class I Bike Path; 0.4 mile
		276	San Gabriel	Rubio Wash Channel: Rose Avenue to Elm Avenue; Class I Bike Path; 0.8 mile
		277	San Gabriel	Rubio Wash Channel: San Gabriel Blvd to Valley Blvd; Class I Bike Path; 1.5 miles
		278	San Gabriel	Union Pacific Railroad Right-of-Way: West City Limits to East City Limits; Class I Bike Path; 2.2 miles (along north remnant of UPRR right-of-way following San Gabriel Trench grade separation project)
279	San Gabriel	Valley Boulevard: West City Limits to East City Limits; Class II Bike Lanes; 1.4 miles		
Active Transportation	Active Transportation Program (continued)	280	San Gabriel	Las Tunas Drive: West City Limits to San Gabriel Boulevard; Class II Bike Lanes; 1.3 miles

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Program (continued)		290	San Marino	San Marino Bicycle Plan Implementation Program
		291	South El Monte	Pedestrian improvements on Santa Anita Avenue, Tyler Ave, and portion of Rush (walkability)
		292	Sierra Madre	Orange Grove Blvd: Class II bike lanes from Michillinda Avenue to Santa Anita Avenue
		308		Emerald Necklace - Implement Phase 1 (Mixed-Use trails and additional bicycle paths not listed in project #167)
		309		San Gabriel River - Implement unfunded elements of San Gabriel River master plan
		312	County of Los Angeles	San Gabriel Valley Unincorporated Communities - Active Transportation Planning
		313	County of Los Angeles	Pedestrian Improvements: Construct new sidewalks
		316	Walnut	Pedestrian Enhancements - Install new sidewalk, curb ramps, high visibility crosswalks
		350	County of Los Angeles	Workman Mill Road. Class 2 Bike Lanes from San Jose Creek Bicycle Path to Strong Avenue
		357	Claremont	Monte Vista Avenue/Padua Avenue, (Mt. Baldy Road to Foothill Boulevard) Pedestrian and Bicycle facilities
		362	Claremont	Active Transportation Plan Implementation Program
		365	Covina	Hollenbeck Ave. 2.27 miles of Class II bicycle path
		366	Covina	Grand Avenue 2.15 miles of Class II bicycle path
		367	Covina	Puente St 1.26 miles of Class II and 1.51 miles of Class II bicycle path
		368	Covina	Rowland Ave 1.73 miles of Class II bicycle path
		369	Covina	Covina Blvd 3.76 miles of Class II bicycle path
		370	Covina	Glendora Ave 1.41 miles of Class II bicycle path
378	Industry	Class I bike path, along the southerly side of Valley Blvd, within the Union Pacific Railroad right of way, from Brea Canyon Road westerly to Glendora Avenue		
Demand Based Program	I-10 to I-605 Carpool Lane connectors	386	Baldwin Park, County of Los Angeles:	Route I-605 & I-10: Construct NB I-605 to EB I-10 HOV to HOV Direct Connector and Return Move. Construct SB I-605 to EB I-10 HOV to HOV Direct Connector and Return Move.
	I-605 Carpool Lanes: I-10 to I-210	29	SGVCOG	Highway - Carpool Lane Completion; I-605 Carpool Lanes in each direction along the I-605 Freeway from I-10 to the I-210
	Long-Term Managed Lane Program	389	Caltrans	HOV Lanes on I-210 from Rte 5 to Rte134
		390	Caltrans	Rte210/605 HOV Direct Connector
		391	Caltrans	Rte210/57 HOV Direct Connector)
392	Caltrans	HOV Lanes on I-710 from Rte5 to Rte10		

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Demand Based Program (continued)	Park-and-Ride/Station Access Program	159	City of Los Angeles	I-10 – Expansion of park-and-ride facilities Corridor-wide
		160	City of Los Angeles	I-10 – Promotion of ridesharing and TDM strategies Corridor-wide
		177	Pomona	Congestion Management Program
		178		SR-60 – Add/expand various park-and-ride lots from I-605 to San Bernardino County Line throughout SR-60 corridor
		211	Pomona	Parking Structure (Regional Transit)
		215		Construct multimodal station with Metrolink, Foothill Transit, HOV direct connection to Brea Canyon Station at various locations to be determined
		220	El Monte	El Monte Busway Transit Station- Rebuild to meet current and projected needs of transit commuters
		281	San Gabriel	Parking Structure (Transit): in the vicinity of Del Mar Ave & Valley Blvd
	Park-and-Ride/Station Access Program (continued)	321	La Verne	Parking Structure (Regional Transit)
		338	San Dimas	Park and Ride Lot of Approx. 55,000 sq. ft. - Monte Vista Ave and Railway Street (Surplus Metro ROW)
		363	Azuza, Industry, West Covina	Park-and-ride facilities (transit-oriented neighborhood program). 3 park-and-rides located in the Cities of Azusa, Industry, and West Covina
		373	Covina	Covina Metrolink Transit Station and South Platform Pedestrian Plaza
	SR-57 Carpool Lanes: SR-60 to I-210	24	SGVCOG	SR-57 Carpool Lanes: SR-60 to I-210
	SR-60 Carpool Lanes: US-101 to I-605	26	SGVCOG	SR-60 Carpool Lanes: US-101 to I-605
SR-60 to I-605 Carpool Lane connectors	385	Industry, County of Los Angeles	Route I-605 & SR-60: Construct NB I-605 to EB SR-60 HOV to HOV Direct Connector and Return Move. Construct SB I-605 to EB SR-60 HOV to HOV Direct Connector and Return Move.	
Goods Movement Program	Alameda Corridor East Project	17	SGVCOG	Alameda Corridor East - Phase II - Three unfunded grade separations
Intelligent Transportation Systems Program	Arterial ITS Program	4	Pasadena	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.
		46	County of Los Angeles	San Gabriel Valley ITS Improvements
		51	Rosemead	I-10- Improve signal coordination along I-10 at City of Rosemead
		52	County of Los Angeles	Mountain Av - Foothill Bl to Duarte Rd
		53	County of Los Angeles	Rosemead Bl - Rush St to Telegraph Rd
		56	County of Los Angeles	Base Line Rd- Foothill Bl to County Line
		57	County of Los Angeles	Colorado St - Michillinda Av to Colorado Place
Intelligent Transportation	Arterial ITS Program (continued)	58	County of Los Angeles	Diamond Bar Bl/Mission Bl- Brea Canyon Rd to County Line
		59	County of Los Angeles	Huntington Dr - Fair Oaks Av to San Gabriel Blvd

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Systems Program (continued)		60	City of Los Angeles	I-10- Implement direction-based traffic signal coordination Corridor-wide
		61	County of Los Angeles	San Dimas Av - Foothill Bl to Via Verde
		65	El Monte, Rosemead	I-10- Implement signal coordination along I-10 near Santa Anita Race Track
		66	County of Los Angeles	Garfield Av - Pine St to Olympic Bl
		67	County of Los Angeles	Lone Hill Av - Route 66 to Covina Bl
		68	County of Los Angeles	Information Exchange Network Phase IV; Intelligent Transportation System
		81	County of Los Angeles	Amar Rd/Temple Av- Nogales St to Golden Springs Dr
		82	County of Los Angeles	Grand Av - Rowland St to Longview Dr
		89	City of Los Angeles	I-10- Corridor-wide – Install CCTV and other communications systems
		92	County of Los Angeles	Traffic Signal Improvements; Operational Upgrades. Modernize and upgrade traffic signals to improve operations and safety
		94	County of Los Angeles	Arroyo Parkway - Colorado Bl to Glenarm St
		95	County of Los Angeles	Mission Rd - Winchester Av to Santa Anita St
		97	County of Los Angeles	Barranca Av/Barranca St - Sierra Madre Av to Cameron Av
		98	County of Los Angeles	Colorado Bl - Orange Grove Bl to Michillinda Av
		99	County of Los Angeles	Duarte Rd - San Gabriel Bl to Highland Av
		100	County of Los Angeles	Fremont Av - Columbia St to Alhambra Road
		102	County of Los Angeles	Indian Hill Bl - American Av to Holt Av
		104	County of Los Angeles	Santa Anita Av - Foothill Bl to Durfee Av
		105	County of Los Angeles	Valley Bl - Temple City Bl to Durfee Av
		106	County of Los Angeles	White Av - Foothill Bl to Lexington Av
		112	County of Los Angeles	Atlantic Bl/Atlantic Av - Pine St to Pacific Coast Hwy
		113	County of Los Angeles	Baldwin Av - Foothill Bl to 10-Fwy
		114	County of Los Angeles	Citrus Av - Foothill Bl to Arrow Hwy
		115	County of Los Angeles	Garey Av - College Wy to 60 Fwy
		116	County of Los Angeles	Irwindale Av - Foothill Bl to Arrow Hwy
		118	County of Los Angeles	Temple City Bl - Duarte Rd to 10 Fwy
119	County of Los Angeles	Towne Av - Base Line Rd to 60 Fwy		
238	County of Los Angeles	Del Mar Avenue/Hill Drive - Hermosa Drive to San Gabriel Boulevard		
239	County of Los Angeles	Fair Oaks Avenue - Columbia Street to Huntington Drive		
242	County of Los Angeles	ITS System Operation		

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Intelligent Transportation Systems Program (continued)	Arterial ITS Program (continued)	246	Pasadena	Traffic Signal Preemption Systems
		265	Arcadia	Arcadia ITS Traffic Control System
		287	Glendora	Traffic Signal Improvements: Operational Upgrades
		305	Monrovia	Mountain Avenue and Royal Oaks Drive (installation of new poles with appropriate mast arms, wiring, conduits, pullbox, etc.)
		314	Walnut, Industry, County of Los Angeles	Traffic Signal at Carrey Road and Pierre Road
		315	City of Industry, LA Co, Walnut	Valley Bl - Install Traffic Signal at Bourdet Avenue
		317	City of Industry, LA Co, Walnut	Traffic Signal at Valley Boulevard and Suzanne Road
		324	La Verne	Installation of new and upgrade of existing traffic signals - various locations
		330	Duarte	Huntington Drive: Signal upgrades on Huntington Drive in Duarte
		334	San Dimas	Enhancement of existing Traffic Signal and Synchronization Improvements - Eastern to Western City Limits
		336	San Dimas	Signal synchronization, addition of detection cameras - All signals on Bonita
		337	San Dimas	Signal installation to improve congestion - Foothill Blvd/Walnut Ave
	Highway ITS Program	129	City of Los Angeles	I-10- Corridor-wide – Upgrade surveillance system throughout this segment of I-10
		295	Caltrans	Routes 2, 57, 60, 66, 71, and 110, Upgrade traffic signal system and install CCTV cameras
		296	Caltrans	In Los Angeles County, Monterey Park, Montebello, Rosemead, and South El Monte on Rte 60 from Route 710 to Route 605, PM 3.2/11.7, Upgrade Transportation Management System
		297	Caltrans	In Diamond Bar & Pomona, on Rte 60, from Rte 57 to SBd Co Line, PM 25.4/30.5, Install CCTV & Communications Systems
		300	Caltrans	In Pomona and Claremont on Route 10 from Route 57 to the San Bernardino County Line, PM 42.4/48.26, Upgrade Transportation Management System
		301	Caltrans	In Diamond Bar, Pomona, San Dimas, and Glendora on Route 57 from Orange County Line to Route 210, PM 0.0/11.9, Upgrade Transportation Management System
		302	Caltrans	In City of Industry, Baldwin Park and Irwindale on Route 605 from Route 60 to Route 210, PM 17.4/26.0, Upgrade Transportation Management System
		303	Caltrans	Routes 134 and 210, Upgrade traffic signal system and install CCTV cameras
304	Caltrans	In Alhambra from Ramona Blvd to Valley Blvd. on Rte 710, PM 26.4/27.475, Install CCTV & Communications Systems		

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Intelligent Transportation Systems Program (continued)	I-210 Connected Corridors Project	243	Caltrans District 7, Pasadena, Arcadia, Monrovia, Duarte, County of Los Angeles	I-210 Connected Corridors Pilot (Phase 1) Rte 134 to Rte 605
		332	Caltrans District 7, Irwindale, Azusa, Glendora, San Dimas, La Verne, and County of Los Angeles	I-210 Connected Corridors (Phase 2) Rte 605 to SR 57
Modal Connectivity Program	Complete Streets Program	14	La Canada Flintridge	Downtown Village Complete Street Project - Foothill Boulevard between La Canada Boulevard to Gould Avenue.
		207	County of Los Angeles	Aesthetics-Beautification; Construct landscaping, hardscaping, urban forestry improvements in rights of way of various streets
		247	Pasadena	Complete Streets project - Washington Blvd: Lincoln Ave to Sierra Madre Blvd
		267	South Pasadena	Redesign and construction of Monterey Road from Pasadena Ave to Fair Oaks Ave (Study and construction (road rehabilitation) of Monterey Road, including possible ADA requirements, road diet, bicycle lanes.
		323	La Verne	Aesthetics-Beautification; Landscaping, Hardscaping, Urban Forestry
		377	Pasadena	Complete Streets project - Orange Grove Blvd: Columbia St to Rosemead Bl/ E Foothill Bl
Modal Connectivity Program (continued)	First/Last Mile Program	204	County of Los Angeles	Sierra Madre Villa Gold Line Transit Oriented District (TOD); Colorado Blvd, Rosemead Blvd, Del Mar Blvd, California Blvd, Madre St. ; Bicycle, Pedestrian, Transit Station Access Improvements
		248	Pasadena	First Mile/Last Mile Projects within one mile of Pasadena Gold Line Light Rail Stations
		322	La Verne	La Verne Gold Line Transit Oriented District (TOD); Bicycle, Pedestrian, Transit Station Access Improvements
		466		First/Last Mile improvements for access to/from future fixed guideway transit stations
	Multi-Modal Corridor Program	54	SGVCOG	Regional Corridor Studies; Rosemead Boulevard
		55	SGVCOG	Regional Corridor Studies; Valley Boulevard
		79	SGVCOG	Implement recommendations listed in Ramona-Badillo Regional Corridor Study
		120	SGVCOG	Implement recommendations from Arrow Highway regional corridor study
Soundwall Program	Highway Soundwalls	8	La Canada Flintridge	I-210 Soundwalls from Berkshire Av to Waltonia Ave
		11	Pasadena	I-210- Soundwall Construction – North 210 Freeway, Orange Grove to Arroyo Parkway
		382	La Puente	Sound Wall and parkway improvements from Central Ave to Dora Guzman Ave

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
State of Good Repair Program	State of Good Repair Program	43	Pomona	Pavement Management System (per year)
		69	County of Los Angeles	Bridge Rehabilitation; Repair and rehabilitate highway bridges at various locations
		70	County of Los Angeles	Sidewalk, Curb, Parkway Preservation; Repair and reconstruct sidewalk, curbs, parkway improvements at various locations
		71	County of Los Angeles	Pavement Preservation; Rehabilitate/resurface street pavements to extend useful life and improve rideability
		131	SGVCOG	Highway 39: rehabilitate, re-open, and construct roadway improvements on Route 39 within the Angeles National Forest north of the City of Duarte
		249	Pasadena	Bridge Maintenance and Seismic Retrofit Project
		255	Temple City	Las Tunas Dr. between Rowland Ave and Rosemead Blvd.; Redesign: safety enhancements and beautification.
		282	Glendora	Pavement Preservation; Rehabilitation, Resurfacing, Reconstruction Route 66 - Barranca to Cataract
		283	Glendora	Pavement Preservation; Rehabilitation, Resurfacing, Reconstruction: Lone Hill - Gladstone to Foothill
		284	Glendora	Pavement Preservation; Rehabilitation, Resurfacing, Reconstruction: Foothill - Cullen to Amelia
		285	Glendora	Pavement Preservation; Rehabilitation, Resurfacing, Reconstruction Amelia - Auto Centre to Foothill
		286	Glendora	Pavement Preservation; Rehabilitation, Resurfacing, Reconstruction Glendora: Gladstone to Route 66 then Ada to Sierra Madre
		288	Glendora	Pedestrian Improvements; Construct new sidewalks
		289	Glendora	Glendora Transportation Planning
		319	La Verne	Pavement Management System (Annually)
		339	San Dimas	Pavement Preservation, Rehabilitation, Reconstruction - Allen Ave from Amelia Ave to San Dimas Ave
340	San Dimas	Pavement Preservation, Rehabilitation, Reconstruction - Lone Hill Ave from Covina Blvd to Cienega		
341	San Dimas	Pavement Preservation, Rehabilitation, Reconstruction. Arrow Highway - Valley Center to San Dimas Canyon Road		

Program	Subprogram	MM Project ID	Jurisdiction*	Description
State of Good Repair Program (continued)	State of Good Repair Program (continued)	342	San Dimas	Pavement Preservation, Rehabilitation, Reconstruction. Foothill Blvd - Cataract to San Dimas Canyon Road
		343	San Dimas	Pavement Preservation, Rehabilitation, Reconstruction on Bonita Ave from Arrow Hwy to San Dimas Canyon Rd
		358	Claremont	Pavement Preservation and Rehabilitation: Foothill Boulevard: West City Boundary Line to East City Boundary Line
		359	Claremont	Pavement Preservation and Rehabilitation: Arrow Hwy: West City Boundary Line to East City Boundary Line
		360	Claremont	Pavement Preservation and Rehabilitation: Base Line Road: West City Boundary Line to East City Boundary Line
		361	Claremont	Pavement Preservation and Rehabilitation: Indian Hill Boulevard: American to Armstrong
		371	Covina	Azusa Ave Bridge Repair and Rehabilitation
		372	Covina	Grand Ave Resurfacing Arrow to San Bernardino
		379	San Gabriel	Bridge Maintenance and Rehabilitation
		380	San Gabriel	Pavement Preservation
		381	San Gabriel	Sidewalk, Curb, Parkway Repair and Preservation
System Efficiency Program	Arterial Capacity Enhancement Program	48	Industry, La Puente, Walnut, West Covina	Valley Bl- Widen Valley Bl from I-605 to SR-57
		64	County of Los Angeles	Colima Rd – Fullerton Rd to Diamond Bar City Boundary- Road Widening
		87	County of Los Angeles	Hacienda Bl at Gale Av Et Al.- Intersection Improvements, Widen and Reconfigure Intersection to improve traffic flow
		91	County of Los Angeles	Peck Road - Durfee Avenue to Pellesier Place; Widen Roadway and I-605 Overcrossing, Reconfigure Intersections
		93	County of Los Angeles	Gale Av Widening - Widen from four to six lanes from Fullerton Rd to Nogales St
		107	County of Los Angeles	Fullerton Road Corridor Improvements - Valley Boulevard to Pathfinder Road; Widen and Reconfigure Roadway to improve traffic flow
		108	County of Los Angeles	Azusa Avenue - SR-60 to Colima Road; Reconfigure intersections to improve traffic flow. Widen intersection approaches to improve turning movement capacity
		272	La Puente, Industry, County of Los Angeles	Temple Avenue - Widen and add medians from Puente Ave to Azusa Ave
		293	Bradbury	Bradbury Road Widening (Winding Oak Lane to Bradbury Estates entrance)
		318	Walnut	Grand Avenue and La Puente Road - Add left turn lanes to northbound approach on Grand Avenue. Includes ROW Acquisition
		325	La Verne	Bridge Widening Puddingstone east of Wheeler
		327	Industry	Widening of Valley Blvd. Bridge: Over Old Valley Blvd. Increase capacity, reduce congestion
		331	Duarte, Azusa	Widen Huntington Drive Bridge at San Gabriel River

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
System Efficiency Program (continued)	Arterial TSM Program	5	La Canada Flintridge	West Foothill Boulevard Gateway Project - Foothill Boulevard between Briggs Street and Leata Lane
		16	Pomona	Streets and Roads (w/ Transit)
		62	City of Los Angeles	I-10- Arterial reconfiguration to facilitate directional flow such as reversible lanes Corridor-wide
		63	City of Los Angeles	I-10- Re-stripe various arterials for turn pockets and additional lanes Corridor-wide
		88	Claremont	Monte Vista and Baseline Intersection Improvements. Widen the intersection of Base Line Road and Monte Vista/Padua Avenues to allow for an additional w/b left turn pocket to reduce existing accidents between w/b left turn and e/b movement.
		250	Pasadena	Pasadena Avenue and St. John Avenue Street Improvements
		258	Arcadia	Arcadia Intersection Improvement Program: Santa Anita Ave and I-210 Ramps
		259	Arcadia	Arcadia Intersection Improvement Program: Huntington Drive and Baldwin Ave
		260	Arcadia	Arcadia Intersection Improvement Program: Huntington Drive and Second Ave
		261	Arcadia	Arcadia Intersection Improvement Program: Baldwin Ave and Las Tunas Dr
		262	Arcadia	Arcadia Intersection Improvement Program: Sunset Blvd and Duarte Rd
		263	Arcadia	Arcadia Intersection Improvement Program: Huntington Drive and Colorado Pl
		264	Arcadia	Arcadia Intersection Improvement Program: Colorado Pl and Colorado Blvd
		271	South Pasadena	Fremont Ave Traffic Improvement Plan
	306	Monrovia	Mountain Avenue and Lemon Avenue (dedicated left turn lane signal to improve safety, realignment of street lane striping, and replacement of the existing signal poles/mast arms, conduits, wiring, etc.)	
	329	Industry, County of Los Angeles	Peck Road/Rooks Road: PROVIDE DUAL WESTBOUND LEFT TURN LANES, RE-STRIPE THE SOUTHBOUND APPROACH TO PROVIDED A DEDICATED LANE TO THE SB I-605 ON-RAMP	
	335	San Dimas	Intersection Improvements - Bonita Ave/Cataract Ave Intersection	
Grade Crossing Program	270	South Pasadena	Pasadena Ave/Monterey Road Rail Crossing	
	355	Claremont	Install quad gates at Metrolink crossings: Cambridge Avenue, Indian Hill Blvd., College Avenue, Claremont Blvd.	
	463	Industry	Lemon Avenue Crossing Improvements: Enhance at grade crossing	
	464	Industry	Bixby Drive Crossing Improvements: Enhance at grade crossing	
	465	Industry	Stimson Avenue Crossing Improvements: Enhance at grade crossing	
Highway Capacity Enhancement Program	141	Montebello, Rosemead	Widen SR-60 to add EB 5th lane from Paramount Bl to San Gabriel Bl	
	144	Pomona, San Dimas	I-10- Construct truck climbing lane on WB I-10 to WB SR-57 connector, modify off-ramp	
	153	County of Los Angeles	SR-60- Add a WB auxiliary lane along SR-60 from Hacienda Bl to 7th Av	
	347	Caltrans	I-210- construct westbound auxiliary lane from Santa Anita Avenue to Baldwin Avenue and eastbound auxiliary lane from Santa Anita Avenue to Huntington Drive.	

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
System Efficiency Program (continued)	Highway Ramps and Interchanges Program	388	Caltrans	Auxiliary lane: Extend the discontinued lane from WB I-210/SR-134 EB connectors to Lincoln Ave.
		7	Arroyo Verdugo COG	SR-134/I-210 Interchange Improvements (Arroyo Verdugo COG/La Canada Flintridge)
		123	Baldwin Park	I-10- Modify interchanges along I-10 in Baldwin Park - (at Frazier, Francisquito and others in Baldwin Park)
		133		SR-60- Improve SR-71 and SR-60 interchange
		135	Claremont	I-10 and Indian hill Boulevard Interchange. Widen the Indian Hill Boulevard undercrossing at the Interstate 10 freeway (and associated bridge reconstruction), to include one additional northbound and southbound lane.
		138	San Gabriel	I-10 at Del Mar Av – Study, design and reconstruct the off-ramps to provide signalized control
		139	San Gabriel	I-10 at New Av – Study, design and reconstruct the off-ramps to provide signalized control
		140	San Gabriel	I-10 at San Gabriel Bl – Study, design and reconstruct the off-ramps to provide signalized control
		148	South Pasadena	SR-110- Redesign and construction of exit and entrance ramps at Fair Oaks Ave, including the construction of a hook ramp on-ramp at end of State St and expansion of Off-Ramp by one lane.
		328	Industry	Valley Blvd/I-605 ramp improvements: Valley Blvd. on-off ramp improvements to the I 605 freeway. PSR completed and approved November 2013
		333	San Dimas	North Bound Off Ramp/Street Intersection Improvements - Arrow Hwy at Bonita Ave/SR 57 Ramp
		344	Caltrans	Westbound I-210: connect and converge Altadena Drive on-ramps into a single on-ramp.
		345	Caltrans	I-210 westbound at Lake Avenue: construct center drop ramp with two drop ramps to serve HOV and general purpose vehicles heading toward SR-134.
		346	Caltrans	Westbound I-210: connect and converge Santa Anita Avenue on-ramps into a single on-ramp.
	Highway Ramps and Interchanges Program (continued)	348	Caltrans	I-210: modify Rosemead Boulevard/Michilinda Avenue interchange; converge westbound I-210 on-ramps.
		349	Caltrans	I-210: modify north side of I-210 at Baldwin Avenue interchange and eliminate collector-distributor.
		352	Industry	I-605 NB Off-Ramp/Shepherd Street
		353	Industry	I-605 NB Ramps/Pellissier Road

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
System Efficiency Program (continued)	Highway TSM Program	136	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
		142	City of Los Angeles	I-10- Corridor-wide Expansion of Freeway Service Patrol
		151	City of Los Angeles	I-10- Corridor-wide – Coordinate construction schedules to avoid additional traffic conflicts
		155		SR-60- Expand FSP throughout San Gabriel Valley
		354	Caltrans	EB I-210-PM R44.38/R49.01: Restripe to add MFL from San Dimas Ave. to Fruit St. (Remove drop lane & restriping only. No ROW required. Remove Mainline Bottleneck. )
	I-10 hotspots	383	SGVCOG	Eliminate lane drops, extend auxiliary lanes and correct ramp geometrics at various locations
	I-10 Improvement: I-605 to Durfee Avenue	387	El Monte, Baldwin Park	Westbound I-10 from I-605 to Durfee Avenue. Braid the southbound I-605 to westbound I-10 connector ramp with the westbound I-10 Durfee Ave off ramp to improve traffic operations.
	I-10/I-605 Interchange Improvements	125	SGVCOG	Highway - Interchange Improvements; I-10/I-605 Interchange Improvements
	SR-60 hotspots	384	SGVCOG	Eliminate lane drops, extend auxiliary lanes and correct ramp geometrics at various locations
	SR-60/I-605 Interchange Improvements	30	SGVCOG	Highway - Interchange Improvements; SR-60/I-605 Mixed Flow and HOV Direct Connectors
	SR-60/SR-57 Interchange Improvements	31	SGVCOG, Diamond Bar, Industry	Highway - Interchange Improvements; SR-57/SR-60 Interchange (Future improvements include direct freeway connectors, HOV to HOV connectors, mainline improvements, and/or a westbound SR-60 bypass to Grand Avenue.)
	SR-71 Highway to Freeway Project	25	Pomona/ SGVCOG	SR-71 Highway to Freeway Regional w/ Transit - (Phase I - Mission Boulevard to Rio Rancho Road/State Route 60)
		223	Pomona/ SGVCOG	SR-71 Highway to Freeway Regional w/ Transit (Phase II - Interstate 10 to Mission Boulevard)
SR-710 North Gap Closure Project	27	SGVCOG/ Caltrans	SR-710 North Gap Closure Project - mode/alignment depending on results of the alternatives analysis	
		15	La Canada Flintridge	Metro Line 177- Provide funding to increase headways on Metro Line 177 connecting the Metro Gold Line to Jet Propulsion Laboratory

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Transit Program (continued)	Bus Expansion Program (continued)	38	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. Bus transit priority – Foothill Transit
		216	County of Los Angeles, San Gabriel Valley	I-10- Additional bus service along I-10 corridor Corridor-wide
		217		SR-60- Increase bus service/Metro Rapid/Bus Signal Prioritization I-5 to County Line
		461	Pasadena	Increased Local Transit Capacity for Improved Jobs Access in Pasadena: Funding to provide critical local transit services to increase access to job opportunities in the City's business, commercial, retail, medical and other core employment areas, as well as providing the local transit connection to and from the regional transit network. Increase hours of operations to include nights and weekends and provide real-time bus information (Annual cost plus 3% increase per year)
		467	La Canada Flintridge	Provide east-west transit service on Foothill Blvd to provide one-seat ride from Sunland to La Canada Flintridge (annual cost)
		468	Pasadena	Tier 2 and Municipal Bus Operators - Add late night and weekend bus service
		469	Pasadena	Tier 2 and Municipal Bus Operators - Operating dollars for expanded service
		470	Pasadena	Tier 2 and Municipal Bus Operators – Real-time transit info
	Bus Rapid Transit Program	36	El Monte	Bus-Only Lane- Develop dedicated bus-only lane between El Monte Busway Transit Station and Flair Business Park
		37	Alhambra, El Monte, San Gabriel	Expand bus service along El Monte Busway by increasing route and line capacity with high-occupancy buses
		132	County of Los Angeles, San Gabriel Valley	I-10- Redesign on-ramp shoulders to accommodate Express Bus service Corridor-wide
		219	Covina, Baldwin Park, El Monte	Mid-Valley Rapid Bus Transportation Corridor- Ramona Bl and Badillo Av alignment, terminating at El Monte Busway Transit Station
		273	San Gabriel	Bus Rapid Transit (BRT) on Valley Blvd as identified in Metro's Countywide BRT study
		311	Rosemead	Garvey Avenue - peak hour bus lanes in Rosemead city limits
		364		El Monte Busway Improvements, including bike lockers, ticket vending machines at El Monte Busway stations and up to 30 bus bays
	Metro Gold Line Eastside Extension	32		Metro Gold Line Eastside Transit Corridor Phase 2 - If the selected alignment is SR-60, unfunded scope is \$15M \$0 for low LRT estimate, \$15M for high LRT estimate.
	Metro Gold Line Foothill Extension – Phase 2B	39		Metro Gold Line Foothill LRT Extension - Extension from Azusa to Claremont
	Metrolink Enhancement Program	254	Pomona	Commuter Rail (Transit)
		393	Metrolink	Barranca to Lone Hill Double Track: Construct 3.98 miles of main track, signal upgrade, grade crossing enhancements, bridge work, etc.
		394	Metrolink	EMF Additional Storage Tracks: Increase storage capacity at EMF by extending the length of the existing storage tracks and adding a middle crossover.

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Transit Program (continued)	Metrolink Enhancement Program (continued)	395	Metrolink	EMF S&I Tracks: Add 2 S&I tracks at EMF. Install dump stations and potable water.
		396	Metrolink	Irwin/Amar Double Track : Construct 19,800 ft of maintrack, signal upgrade, 8 grade crossings, 3 private crossings 2 bridges, I-10 fwy box/bridge (Double track and 1 DBL crossover = \$32,100)
		397	Metrolink	Locomotives (for base case growth of locomotives and cars: This is the amount needed for the "organic" growth (irrespective of 30-min. service) and is not counted as part of the 30-min. growth scenario
		398	Metrolink	Lone Hill to White Double Track: Construct 3.1 miles of main track, signal upgrade, grade crossing enhancements, bridge work, etc.
		399	Metrolink	Parking spaces expansion: Work with station city to expand parking spaces at lot nearing capacity. Downtown Pomona >80% full.
		400	Metrolink	Platform Extensions (Claremont, Covina & Baldwin Park Stations): Extend platforms at Claremont, Covina & Baldwin Park stations to allow for operation of 8-car trains and improve station design.
		401	Metrolink	Platform Extension at Industry & Montebello Stations: Extend platforms at Industry & Montebello stations to allow for operation of 8-car trains and improve station design.
		402	Metrolink	Station Parking Lot Expansion: Work with station cities to expand parking spaces at lots nearing capacity. COV, CMT and BWP >80% full.
		403	Metrolink	Station Signage and Ped Gates: Install signage at Covina & El Monte stations on the San Gabriel line
		404	Metrolink	Another CMF level facility for heavy maintenance (for 30-min. service expansion): Need 100% size of CMF in approximately 2017. Will include the administrative offices from existing CMF, a run-through progressive car and loco shop, S&I, storage tracks, fuel system, train wash, shop machinery, and expanded warehouse capacity
		405	Metrolink	LAUS to Claremont Improvements (for 30 min expansion): Track work, increased signal spacing, additional crossover capability and improvements at certain stations. The unit cost for track and signals is \$6000/foot
406	Metrolink	Locomotives (for 30-min. service Expansion): To get to a 30-minute headway, 26 additional locomotives will be needed. The cost of rail cars is assumed to be \$7 M/unit. For the "base case" (i.e., non 30-min. service), another 26 locomotives would be needed. The costs for the base case are shown separately.		

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Transit Program (continued)	Metrolink Enhancement Program (continued)	407	Metrolink	New EMF (30 min service): Located in San Bernardino County on property owned by SANBAG
		408	Metrolink	Rail Cars (for 30-min. service expansion): To get to a 30-min. headway, 90 additional rail cars will be needed. The cost of passenger car is assumed to be #3M/unit. For the "base case" (i.e., non 30-min. service), another 90 passenger cars would be needed. The costs for the base case are shown separately.
		409	Metrolink	Reconfiguration of existing CMF: Relocate admin office to new CMF location and improve capacity by building a run-through progressive car and loco shop at existing CMF
		410	Metrolink	Rehab -Short Term: Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		411	Metrolink	Rehab -Mid Term: Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		412	Metrolink	Rehab -Long Term: Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		413	Metrolink	Rehab - Expansion (for 30-min. service on all Metrolink lines): Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		414	Metrolink	Amar Road Crossing Improvements: Enhance at-grade crossing
		415	Metrolink	Arrow Hwy Crossing Improvements: Enhance at-grade crossing
		416	Metrolink	Azusa Avenue Crossing Improvements: Enhance at-grade crossing
		417	Metrolink	Azusa Canyon Road Crossing Improvements: Enhance at-grade crossing
		418	Metrolink	Barranca Avenue Crossing Improvements: Enhance at-grade crossing
		419	Metrolink	Bonnie Cove Avenue Crossing Improvements: Enhance at-grade crossing
		420	Metrolink	Cambridge Avenue Crossing Improvements: Enhance at-grade crossing
		421	Metrolink	Cameras at Grade Crossings: Install cameras at grade crossings
		422	Metrolink	Cataract Avenue Crossing Improvements: Enhance at-grade crossing
		423	Metrolink	Citrus Avenue Crossing Improvements: Enhance at-grade crossing
		424	Metrolink	Claremont Blvd Crossing Improvements: Enhance at-grade crossing
		425	Metrolink	Claremont Station Pedestrian Crossing Improvements: Enhance at-grade crossing
		426	Metrolink	Cogswell Road Crossing Improvements: Enhance at-grade crossing
		427	Metrolink	College Avenue Crossing Improvements: Enhance at-grade crossing
		428	Metrolink	Covina Blvd Crossing Improvements: Enhance at-grade crossing
		429	Metrolink	Cypress St/Banna Avenue Crossing Improvements: Enhance at-grade crossing
		431	Metrolink	Fairplex Drive Crossing Improvements: Enhance at-grade crossing
		432	Metrolink	Francisquito Avenue Crossing Improvements: Enhance at-grade crossing

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description	
Transit Program (continued)	Metrolink Enhancement Program (continued)	433	Metrolink	Fulton Road Crossing Improvements: Enhance at-grade crossing	
		434	Metrolink	Glendora Avenue Crossing Improvements: Enhance at-grade crossing	
		435	Metrolink	Grand Ave Crossing Improvements: Enhance at-grade crossing	
		436	Metrolink	Hamburger Lane (Virginia) Crossing Improvements: Enhance at-grade crossing	
		437	Metrolink	Hollenbeck Avenue Crossing Improvements: Enhance at-grade crossing	
		438	Metrolink	Indian Hill Blvd Crossing Improvements: Enhance at-grade crossing	
		439	Metrolink	Indian Hill Blvd Grade Separation: Grade separation	
		440	Metrolink	Irwindale Avenue Crossing Improvements: Enhance at-grade crossing	
		441	Metrolink	Lark Ellen Avenue Crossing Improvements : Enhance at-grade crossing	
		442	Metrolink	Lone Hill Avenue Crossing Improvements: Enhance at-grade crossing	
		443	Metrolink	MacDevitt Street Crossing Improvements: Enhance at-grade crossing	
		444	Metrolink	Merced Avenue Crossing Improvements: Enhance at-grade crossing	
		445	Metrolink	N. Garey Avenue Crossing Improvements: Enhance at-grade crossing	
		446	Metrolink	N. Garey Avenue Grade Separation: Grade separation	
		447	Metrolink	N. Towne Avenue Crossing Improvements: Enhance at-grade crossing	
		448	Metrolink	Pacific Avenue Crossing Improvements: Enhance at-grade crossing	
		449	Metrolink	Ramona Avenue Crossing Improvements: Enhance at-grade crossing	
		450	Metrolink	San Dimas Avenue Crossing Improvements: Enhance at-grade crossing	
		451	Metrolink	San Dimas Canyon Road Crossing Improvements: Enhance at-grade crossing	
		452	Metrolink	Sunflower Avenue Crossing Improvements: Enhance at-grade crossing	
		453	Metrolink	Temple Avenue Crossing Improvements: Enhance at-grade crossing	
		455	Metrolink	Tyler Street Crossing Improvements: Enhance at-grade crossing	
		456	Metrolink	Valley Center Avenue Crossing Improvements: Enhance at-grade crossing	
		457	Metrolink	Vincent Avenue Crossing Improvements: Enhance at-grade crossing	
		458	Metrolink	Walnut Avenue Crossing Improvements: Enhance at-grade crossing	
		459	Metrolink	Wheeler Avenue Crossing Improvements: Enhance at-grade crossing	
	460	Metrolink	White Avenue Crossing Improvements: Enhance at-grade crossing		
		SR 134 High Capacity Transit Corridor	2	La Canada Flintridge	SR-134 Transit Corridor between Metro Red Line North Hollywood Station and Metro Gold Line Del Mar Station
		Transit Operations Program	208	Pomona	Bus Stops Improvements and Maintenance (per year)
			209	Pomona	Intersection Signals (Transit)
			212	Pomona	Fare Subsidy (per year)
			213	Pomona	Public Transit Services (per year)
			214	Pomona	Transportation Administration (per year)
	218		Pomona	Transportation Planning	
	221		Pomona	Transit Operations, Prop A and Prop C Funding Needs	
		244	Pasadena	Construction of Transit Maintenance Facility	

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

Program	Subprogram	MM Project ID	Jurisdiction*	Description
Transit Program (continued)	Transit Operations Program (continued)	257	Arcadia	Arcadia Bus Stop Improvement Program (bus stop amenities, curb addition and ADA ramps, and bus pads)
		320	La Verne	Bus Stops Maintenance (Annually)
		356	Claremont	Metrolink parking lot rehabilitation, First and College (every seven years)
		462	Pasadena	Pasadena Bus State of Good Repair: Funding to replace paratransit and fixed route transit vehicles that have met or exceeded their useful life in order to maintain current revenue operating levels (10 year cost)
		471	Pasadena	Tier 2 Operators – Dedicated operations and capital funding to match formula equivalency of Included and Eligible Operators (Annual cost for Tier 2 operators countywide)

\*Jurisdiction” may refer to the lead project sponsor, the jurisdiction where the project exists, or the agency that proposed the addition of the project. Projects without specified jurisdictions were sourced from other planning documents (e.g., Metro Long Range Transportation Plan and others) where no lead or proposing agency was listed.

**APPENDIX D    BASELINE CONDITIONS  
REPORT**

Separate Attachment



# SUBREGIONAL MOBILITY MATRIX San Gabriel Valley

Project No. PS-4010-3041-F-01-TO2

Baseline Conditions - Final Report

*Prepared for:*



*Prepared by:*

**Cambridge Systematics, Inc.**  
445 S. Figueroa Street, Suite 3100  
Los Angeles, CA 90071

January 2015

# Baseline Conditions – Final Report

## Subregional Mobility Matrix San Gabriel Valley PS-4010-3041-F-01-TO2

*Prepared for:*



**Metro**

Los Angeles County

Metropolitan Transportation Authority

*Prepared by:*

Cambridge Systematics, Inc.

### Quality Review Tracking

Version #	Date	Reviewer Signature	Description/Comments
Internal Draft	12/14/2014	Jolene Hayes	
Final Draft	1/21/2015	Jolene Hayes, Jon Overman	



## Table of Contents

<b>1.0</b>	<b>INTRODUCTION AND SUMMARY.....</b>	<b>1-1</b>
1.1	Study Background .....	1-1
1.2	Report Purpose and Structure .....	1-1
1.3	Land Use and Demographics.....	1-2
1.4	Multimodal Transportation System .....	1-2
<b>2.0</b>	<b>EXISTING PROJECTS AND STUDIES.....</b>	<b>2-1</b>
<b>3.0</b>	<b>STUDY AREA DEMOGRAPHICS.....</b>	<b>3-2</b>
3.1	Land Use .....	3-2
3.2	Population and Employment.....	3-3
3.3	Environmental Justice Communities.....	3-7
<b>4.0</b>	<b>TRAVEL PATTERNS AND PREFERENCES.....</b>	<b>4-1</b>
4.1	Interregional Travel Patterns .....	4-1
4.2	Commute Travel Modes.....	4-2
4.3	Passenger Vehicle Travel Demands .....	4-4
4.4	Passenger Vehicle Trips.....	4-4
4.5	System Safety .....	4-5
<b>5.0</b>	<b>VEHICLE TRAVEL .....</b>	<b>5-1</b>
5.1	Vehicle Travel Facilities.....	5-1
5.2	Driving Conditions .....	5-1
5.3	Goods Movement Vehicle Travel.....	5-3
5.4	Vehicle Safety.....	5-3
<b>6.0</b>	<b>TRANSIT.....</b>	<b>6-1</b>
6.1	Commuter Rail .....	6-1
6.2	Bus Service.....	6-2
<b>7.0</b>	<b>ACTIVE TRANSPORTATION .....</b>	<b>7-1</b>
7.1	Commute Mode Share .....	7-1
7.2	Bicycle/Pedestrian Facilities .....	7-1
7.3	Safety .....	7-3
<b>8.0</b>	<b>CONCLUSIONS AND NEXT STEPS.....</b>	<b>8-1</b>

### List of Tables

Table 2-1. Funded, In Construction, and Completed Projects in San Gabriel Valley .....	2-1
Table 3-1. Forecasted Population and Employment Growth by Jurisdiction (2014 to 2024) .....	3-4
Table 3-2. Summary of Ethnic and Economic Characteristics.....	3-8
Table 4-1. San Gabriel Valley Daily Trip Productions and Attractions (2014).....	4-1
Table 4-2. 2012 Commute Travel Mode Share.....	4-2
Table 4-3. Subregional Vehicle Travel Volumes to/from San Gabriel Valley (2014 to 2024) .....	4-4
Table 5-1. Peak-Period Vehicle Hours of Travel and Average Trip Time, 2014 .....	5-1
Table 6-1. Transit Commute Mode Share, 2010 - 2012.....	6-1
Table 6-2. Metrolink Train Service by Station.....	6-1
Table 7-1. Commute Mode Share in Subregion .....	7-1

### List of Figures

Figure 1-1. Los Angeles County Mobility Matrix Subregions.....	1-4
Figure 1-2. San Gabriel Valley Mobility Matrix Study Area .....	1-5
Figure 3-1. Land Use in Study Area, 2008.....	3-2
Figure 3-2. 2014 Population and Employment in Study Area .....	3-5
Figure 3-3. Population and Employment Change in Study Area, 2014 to 2024 .....	3-6
Figure 3-4. Transit-Dependent Communities in Study Area.....	3-9
Figure 3-5. CalEnviroScreen Environmental Justice Scores .....	3-10
Figure 4-1. 2014 Average Weekday Person Trips to/from San Gabriel Valley (All Modes).....	4-3
Figure 4-2. San Gabriel Valley Total Collisions, 2007 to 2011 .....	4-5
Figure 5-1. CSAN/CMP Network of Regionally Significant Arterials.....	5-2
Figure 5-2. Draft Countywide Strategic Truck Arterial Network.....	5-4
Figure 5-3. Motor Vehicle Collision Density, 2009 to 2011.....	5-5
Figure 5-4. Trends in Collisions Involving Trucks (2007 to 2011) .....	5-6
Figure 5-5. Truck Collision Density, 2009 to 2011 .....	5-7
Figure 6-1. Metro Gold Line and Metrolink Average Weekday Boardings (Second Quarter, 2014) .....	6-4
Figure 6-2. San Gabriel Valley Bus Service.....	6-5



---

Figure 7-1. Bikeways in Study Area, 2014..... 7-2  
Figure 7-2. Pedestrian Collisions by Severity (2007 to 2011) ..... 7-3  
Figure 7-3. Bicyclist Collisions by Severity (2007 to 2011) ..... 7-3  
Figure 7-4. Bicycle and Pedestrian Collision Density, 2009 to 2011 ..... 7-1

## List of Terms and Acronyms

Acronyms	Definitions
AB	Assembly Bill
ACS	American Community Survey
ACT	Alhambra Community Transit
ARB	California Air Resources Board
ARTS	Pasadena Area Rapid Transit System
CalEPA	California Environmental Protection Agency
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
CMP	Congestion Management Plan
COG	Council of Governments
CSAN	Countywide Significant Arterial Network
CSTAN	Countywide Significant Truck Arterial Network
GCCOG	Gateway Cities Council of Governments
GHG	Greenhouse Gas
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
ITS	Intelligent Transportation System
LOS	Level of Service
LRT	Light Rail Transit
LRTP	Long Range Transportation Plan
MBL	Montebello Bus Line
Metro	Los Angeles County Metropolitan Transportation Authority
MPO	Metropolitan Planning Organization
OPR	Office of Planning and Research
Person Trip	Person traveling by any mode (bus, bike, car, walking, etc.)
SB	Senate Bill
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SRTP	Short Range Transportation Plan
SGVCOG	San Gabriel Valley Council of Governments
SWITRS	Statewide Integrated Traffic Records System
VHT	Vehicle Hours of Travel
VMT	Vehicle Miles of Travel

## 1.0 INTRODUCTION AND SUMMARY

### 1.1 Study Background

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 (COG), San Fernando Valley COG (SFVCOG), Las Virgenes/Malibu COG, North County Transportation Coalition, and South Bay Cities COG. For the purposes of the Mobility Matrix work effort, cities with membership in two COGs were given the opportunity by the Board to select one COG in which to participate. Specifically, the Arroyo Verdugo Cities' local jurisdictions are included in both the SGVCOG and SFVCOG and that subregion decided to have the cities of La Cañada Flintridge, Pasadena and South Pasadena included in the SGVCOG, while Burbank and Glendale are included in the SFVCOG. The City of Santa Clarita opted to be included in the San Fernando Valley COG instead of North County. The Gateway Cities COG is developing its own Strategic Transportation Plan which will serve as their Mobility Matrix. These subregional boundaries, as defined for the Mobility Matrices, will be used in the analysis of existing conditions. Figure 1-1 presents the Mobility Matrix subregions

Metro initiated the development of seven subregional mobility matrices to provide consistent countywide corridor performance criteria to be used to identify and evaluate projects, programs, and policies that address subregional needs. These matrices will provide a performance evaluation methodology to identify short-, mid-, and long-term projects through a subregional collaborative process. It is envisioned that these matrices will assist the subregions in identifying projects for future transportation funding, as well as future updates to the Metro Long Range Transportation Plan (LRTP).

The San Gabriel Valley Council of Governments (SGVCOG) is a joint powers authority made up of representatives from 31 cities, three Los Angeles County Supervisorial Districts, and the three Municipal Water Districts located in the San Gabriel Valley. The SGVCOG serves as a regional voice for its member agencies and works to improve the quality of life for the more than two million residents living in the San Gabriel Valley (SGV). The SGVCOG works on issues of importance to its member agencies, including transportation, housing, economic development, the environment, and water, and seeks to address these regionally. For the purposes of the Metro mobility matrix projects, the City of Industry has elected to conduct this study with SGVCOG rather than Gateway Cities Council of Governments (GCCOG), whereas Montebello and Whittier have opted to participate in the GCCOG process. The unincorporated community of La Crescenta-Montrose will be included in the San Fernando Valley Mobility Matrix. An overview of the SGV Mobility Matrix subregion borders, also referred to as the “study area” for purposes of this document, is shown in Figure 1-2.

This document establishes baseline transportation conditions in the study area, including high-level assessments of land use, demographics, travel patterns, and transportation system and facility conditions in the study area and neighboring regions. It also contains a draft map of proposed Mobility Matrix improvements proposed for consideration in the Metro LRTP.

### 1.2 Report Purpose and Structure

This document establishes baseline transportation conditions in the San Gabriel Valley Mobility Matrix subregion. It includes a list of projects recently completed, under construction, or funded, gives an overview of the study area's demographics, and presents a high-level inventory of the transportation facilities being

evaluated, including highways, arterials, transit, bike/pedestrian, and goods movement.

Section 2.0 describes the projects removed from consideration in the SGV Mobility Matrix. The land uses and demographics of the study area are covered in Section 3.0. Section 4.0 contains an overview of existing travel patterns. Sections 5.0, 6.0, and 7.0 analyze the freeways and arterials, transit, and the bicycle and pedestrian facilities in the subregion, respectively. Finally, Section 8.0 provides a summary and discussion of next steps.

### 1.3 Land Use and Demographics

Section 3.0 describes study area land use and demographic conditions.

The San Gabriel Valley, one of the first areas to develop in the County, features a diversity of land uses, including a significant density of industrial and warehouse uses to the south, transit-oriented and mixed use development along the Gold Line corridor, and low-density residential along the foothills. Equally as diverse, San Gabriel Valley residents include significant percentages of persons from Asian, Hispanic and Armenian descent. This study area is home to approximately 1.4 million residents with growth of 130,000 people anticipated over the next 10 years. Employment in the region is expected to grow by four percent over the same period with 25,000 new jobs anticipated.

The transportation issues raised by stakeholders at the Project Development Team meetings identified growing congestion on freeways and roadways, as well as bus and rail transit lines. The San Gabriel Valley understands the importance of planning for growth and ensuring timely implementation of transportation investments to avoid future problems before they arise.

## 1.4 Multimodal Transportation System

This report provides a high-level analysis of existing conditions of the multimodal transportation system. Section 4.0 outlines subregional travel markets in the study area.

Commuters in the study area are somewhat more dependent upon vehicle travel than the county average. About 75.5 percent of area residents commuted by single-occupant vehicle in 2012, followed by carpooling (11.8 percent), telework (4.2 percent), transit (4.1 percent), active transportation (3.3 percent), and 1.1 percent unspecified. Subsequent sections address mode-specific facility performance, including safety and state of good repair.

### 1.4.1 Vehicle Travel

Section 5.0 provides an overview of vehicle travel in the study area, including passenger vehicles and heavy duty trucks. The San Gabriel Valley is served by several major freeways, described as follows:

#### East-West Freeways

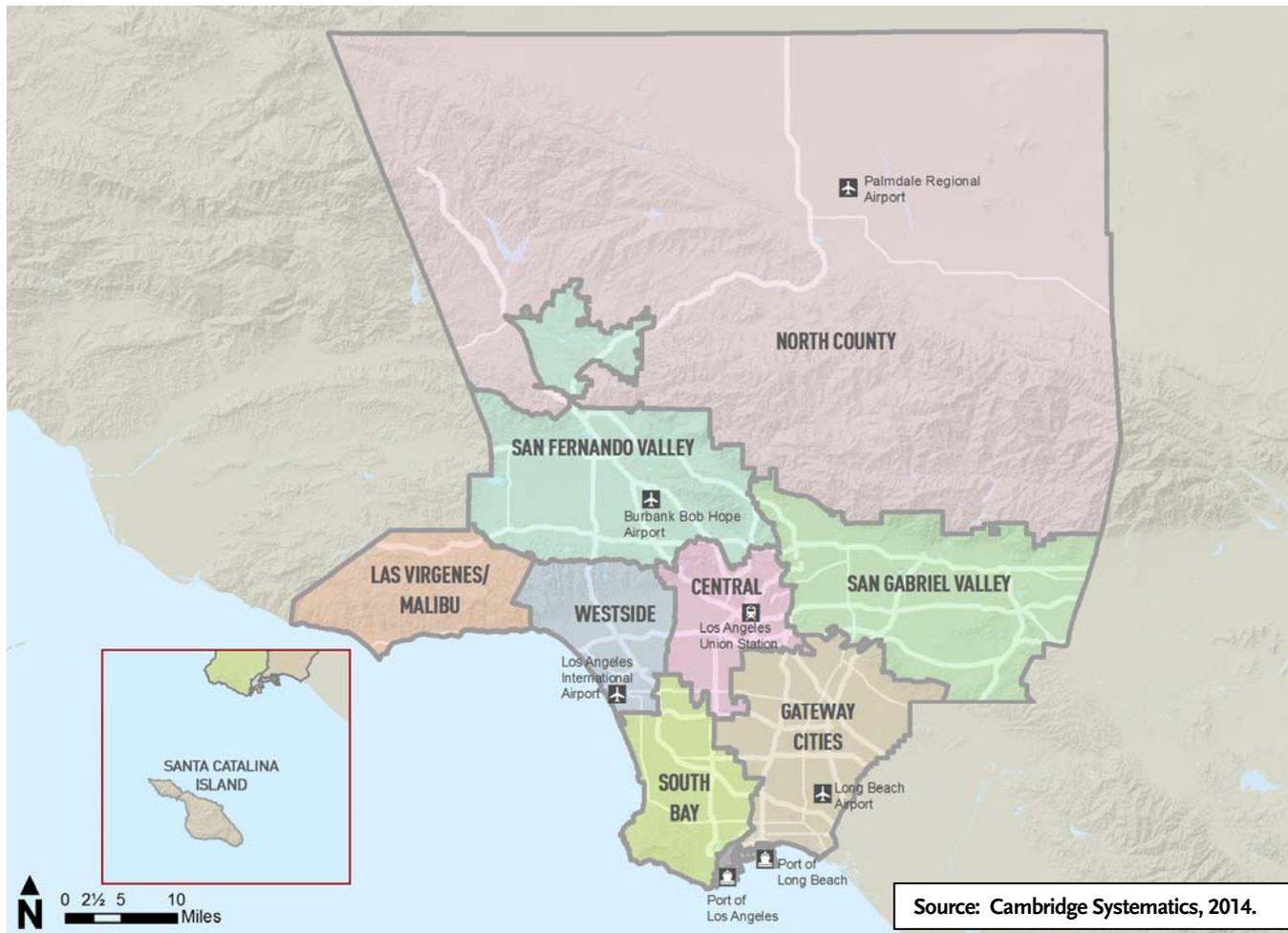
- **I-10.** Major east-west, coast-to-coast interstate highway between Santa Monica, California and Jacksonville, Florida. It provides 10-12 lanes with east-west connections between the San Gabriel Valley cities of Alhambra and Claremont, and it provides high-occupancy toll (HOT) lanes from Alameda Street in downtown Los Angeles to I-605.
- **I-210.** Located north of and parallel to I-10, this freeway is a primary connector along the foothills from Claremont to Pasadena. It provides 8-12 lanes, including HOV lanes, from I-5 to I-15. The easterly expansion from SR-57 to I-15 in San Bernardino County opened in 2002.

- **SR-134.** Provides eight lanes with east-west connection between the San Gabriel Valley and Ventura County via the San Fernando Valley. Only a small section of SR-134 between Pasadena and Glendale resides in the San Gabriel Valley.
- **SR-60.** Provides the southernmost east-west connection through the San Gabriel Valley south of and parallel to I-10 from I-10 in Los Angeles County to I-15 in Riverside County. This 8-10 lane corridor, adjacent to expansive warehouse and industrial development and the City Industry Union Pacific Rail Yard, experiences high truck volumes.

#### North-South Freeways

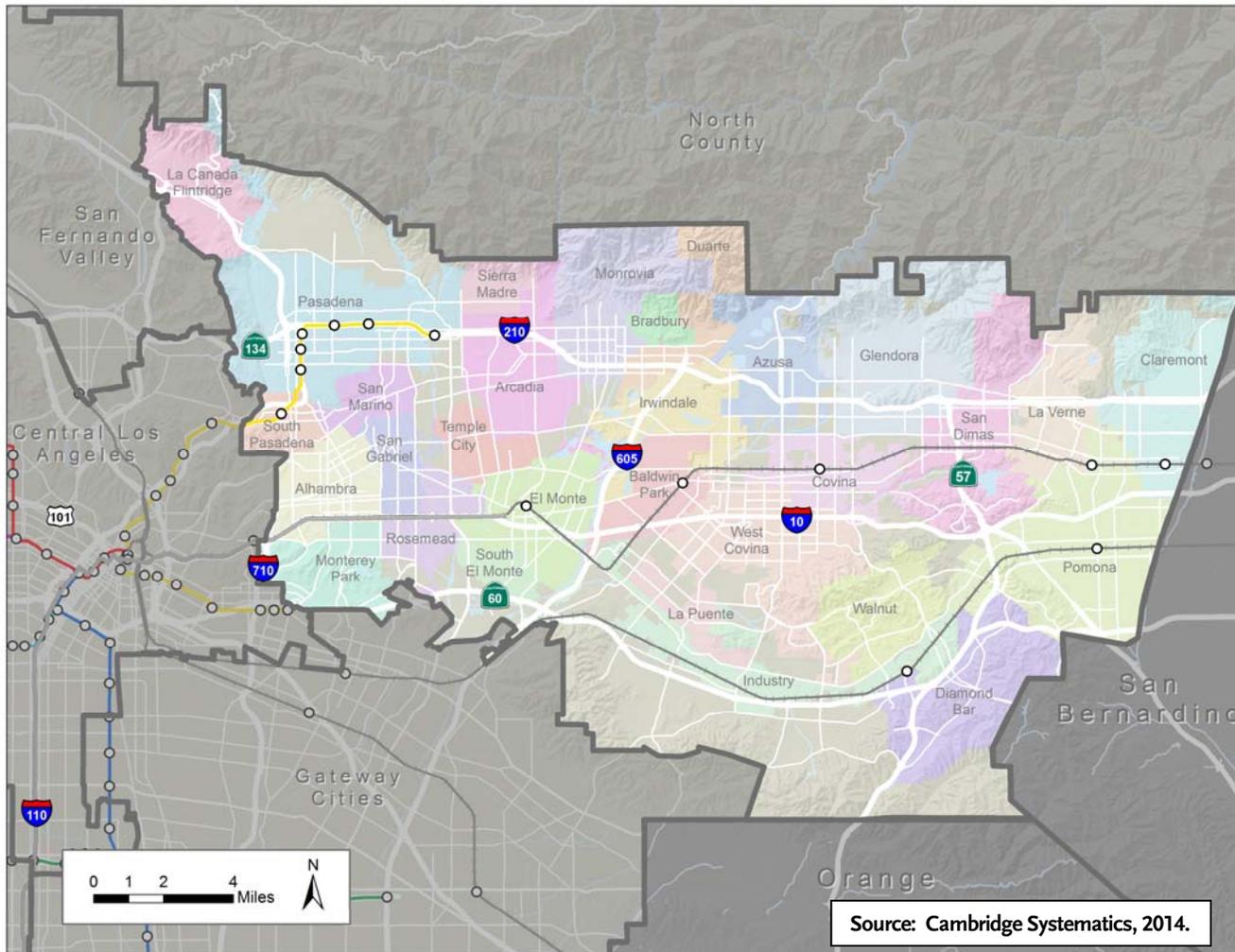
- **SR-110.** The first freeway in the Los Angeles region, SR-110 is a six-lane facility connecting Pasadena to downtown Los Angeles, where it becomes I-110 and continues south to San Pedro. Trucks over 3 tons are prohibited on SR-110.
- **I-710.** Parallel and east of SR-110, this is a major north-south connector between Long Beach and I-10 consisting of 6 to 12 lanes. The corridor experiences heavy truck traffic between Long Beach and SR-60 (up to 30 percent) and heavy commuter traffic between I-105 and I-10.
- **I-605.** To the east of I-710, this 8 to 10 lane freeway generally follows the San Gabriel River and extends from I-210 in Irwindale to I-405 in Los Alamitos adjacent to the Los Angeles County line.
- **SR-57.** The easternmost north-south freeway north of I-10 in the San Gabriel Valley with limits from I-210 near San Dimas to I-5 in Orange. It generally provides 10-12 lanes with HOV lanes.
- **SR-71.** North-south connector that merges with SR-57 near Pomona and extends south to SR-91 near Corona. SR-71 is the only north-south route in the study area that has a south/east rather than a south/west orientation.

Figure 1-1. Los Angeles County Mobility Matrix Subregions



SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

Figure 1-2. San Gabriel Valley Mobility Matrix Study Area



SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

The region is also served by several subregional arterial roadways, including routes of importance to regional goods movement, as designated by jurisdictions and identified through the draft Countywide Strategic Truck Arterial Network (CSTAN). A subset of 108 local goods movement routes, including two state routes, provides truck access throughout the study area.

#### 1.4.2 Transit and Passenger Rail

Section 6.0 provides an overview of study area transit and passenger rail opportunities. San Gabriel Valley is served by the following regional and local transit and commuter infrastructure:

- **Gold Line Light Rail Transit (LRT).** Currently operates between Sierra Madre station in East Pasadena and Union Station with an extension to Azusa scheduled to open in the next year.
- **Metrolink.** Commuter rail connects the San Gabriel Valley with the Los Angeles Basin via the San Bernardino and Riverside lines. Stations in the study area are located in the cities of Walnut and Pomona along the Riverside Line, and the cities of Monterey Park (Cal State Los Angeles Station), El Monte, Baldwin Park, Covina, Pomona, and Claremont served by the San Bernardino Line.
- **Bus Services.** The study area is served by several regional and municipal bus and shuttle services that provide multimodal connections and access to key destinations. Additional information about the following transit systems is provided in Section 5.0:
  - ▶ Foothill Transit
  - ▶ LADOT Commuter Express Service
  - ▶ Metro Bus Service
  - ▶ Alhambra Community Transit (ACT)
  - ▶ Arcadia Transit

- ▶ Baldwin Park
- ▶ Children’s Court Shuttle
- ▶ Duarte Transit
- ▶ East LA Shuttle
- ▶ Glendale Beeline
- ▶ La Puente LINK
- ▶ Monrovia Transit
- ▶ Montebello Bus Lines (MBL)
- ▶ Monterey Park Spirit Bus
- ▶ Pasadena Area Rapid Transit System (ARTS)
- ▶ Rosemead Explorer and Commuter Express

#### 1.4.3 Active Transportation

The study area is home to a significant number of bike lanes, routes and off-road facilities, including the San Gabriel River path that provides safe access along the river near I-605 from Irwindale to Long Beach. Section 7.0 addresses active transportation facilities and performance in the subregion, with a focus on safety.

## 2.0 EXISTING PROJECTS AND STUDIES

Through a detailed literature review and targeted outreach to stakeholder jurisdictions in late 2014, the consultant team has identified hundreds of San Gabriel Valley projects and programs to evaluate in the mobility matrix.

The initial set of projects consisted of Metro's December 2013 subregional project lists, which included: unfunded Long Range Transportation Plan (LRTP) projects; unfunded Measure R scope elements; and subregional needs submitted in response to a request by Directors Dubois and Antonovich.

Through the stakeholder outreach process a number of projects on the initial project list were removed because they were identified as completed, in construction, fully funded, redundant with another project in the subregion, or no longer desired by the San Gabriel Valley subregion. Table 2-1 contains a list of projects removed from the initial list because they are funded, in construction, or completed.

**Table 2-1. Funded, In Construction, and Completed Projects in San Gabriel Valley**

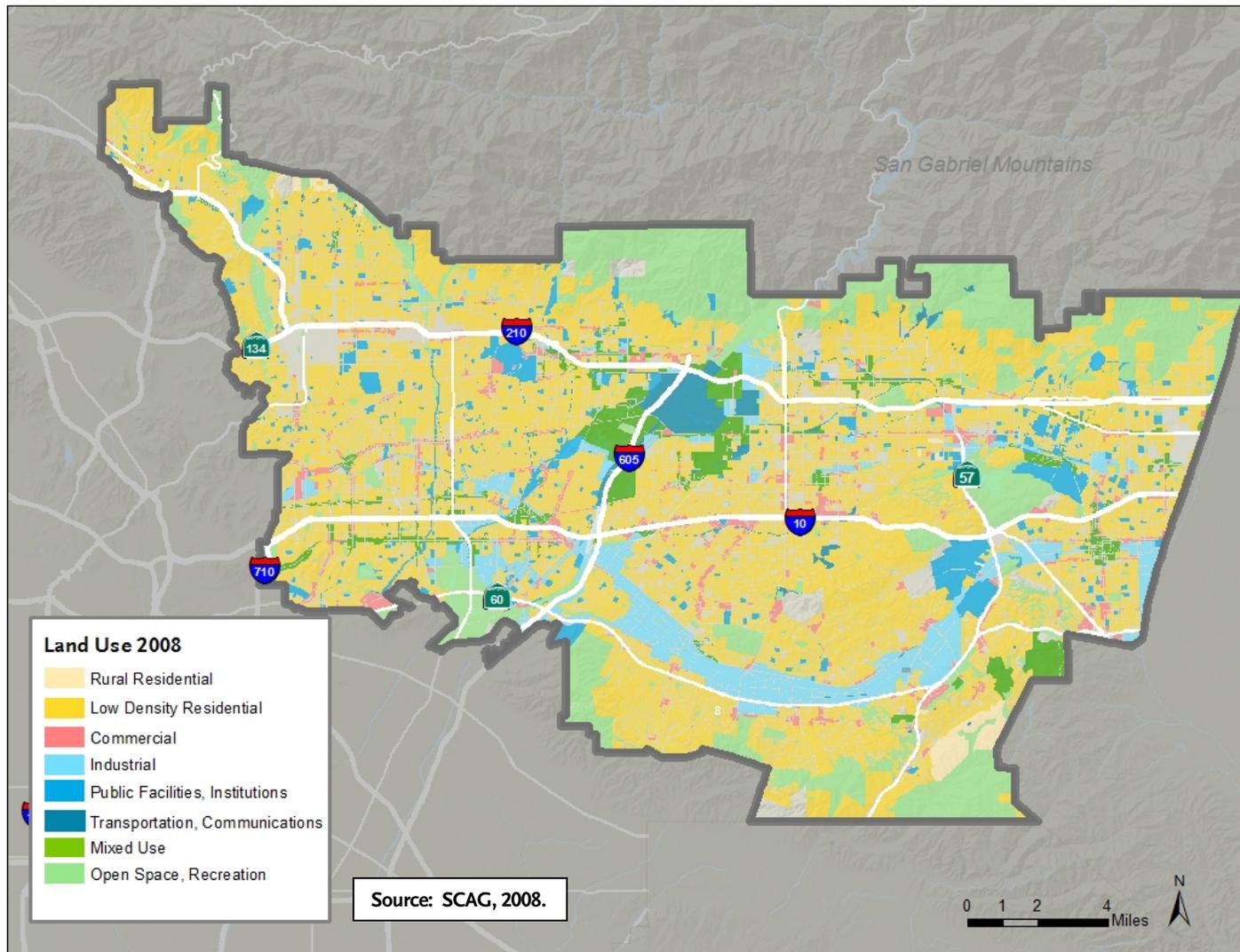
Status	Project Type	Description	Project ID
Fully funded	Arterial	Myrtle Av/Peck Rd/Workman Mill Rd/Norwalk Bl/San Antonio Bl/Pioneer Bl- Huntington Dr to Carson St	96
		Lower Azusa Road/Los Angeles Street TSSP; Traffic Signal Synchronization. Revised limits: Rosemead Boulevard to American Avenue	72
		Main Street/Las Tunas Drive/Live Oak Avenue/Arrow Highway TSSP; Traffic Signal Synchronization. Revised limits: Huntington Drive to Claremont Boulevard	73
		Olympic Boulevard; Traffic Signal Synchronization. Revised limits: Indiana Street to Montebello Boulevard	75
		Ramona Boulevard/Badillo St/Covina Boulevard TSSP and BSP; Traffic Signal Synchronization. Revised limits: Santa Anita Avenue to 210 Freeway	77
		Valley Boulevard/Holt Avenue TSSP; Traffic Signal Synchronization. Revised limits: 605 Freeway to Mills Avenue	78
		Fullerton Rd at Pathfinder Rd, Et Al.- Intersection Improvements	86
		Peck Road TSSP; Traffic Signal Synchronization - Revised limits: Hemlock Street to Workman Mill Road	76
		Myrtle Avenue/Peck Road; Traffic Signal Synchronization - Revised limits: Huntington Drive to Clark Street	74
	Colima Road - Whittier City Boundary to Fullerton Rd; Widen to add E/B/ and W/B through lanes	84	
	Goods Movement	Fullerton Rd under UPRR (at Gale Av)	121
	Highway	Highway - Carpool Lane Completion; I-10 Carpool Lanes (Citrus Avenue to SR-57)	18
In Construction	Highway	Highway - Carpool Lane Completion; I-10 Carpool Lanes (Puente Avenue to Citrus Avenue)	20
Construction complete	Arterial	Rosemead Bl - San Gabriel Bl to Huntington Dr	83
		Garvey Av - Rosemead Bl to Durfee Av	101
		Irwindale Av- Badillo St to Cameron Av	103
		Ramona Bl/Badillo St/Covina Bl- Santa Anita Av to 210 Fwy	117
		I-10/SR-60- Review signal timing for synchronization on Valley to Colima	49
		I-10/SR-60- Upgrade signals on Valley and Colima	50
		Project Route: SR-71 Mission Bl Overpass project-	128
	SR-60 HOV Lane - I-605 to Brea Canyon	351	
	Highway	Highway - Carpool Lane Completion; I-10 Carpool Lanes (I-605 to Puente Avenue)	19
	Transit	I-10 - I-10 Busway	222

## 3.0 STUDY AREA DEMOGRAPHICS

### 3.1 Land Use

Figure 3-1 indicates estimated land use throughout San Gabriel Valley according to 2008 SCAG figures. The study area features large concentrations of low-density residential and industrial uses, as well as mixed use and rural residential areas making it a very diverse region in Los Angeles County. The majority of the region is zoned residential, while the SR 60 corridor features pockets of significant industrial, warehouse, and commercial activity. Areas along the existing and planned Gold Line to Azusa feature concentrations of mixed-use development, including high-density residential near stations.

Figure 3-1. Land Use in Study Area, 2008



### 3.2 Population and Employment

According to SCAG population and employment estimates and forecasts used in the 2014 Metro Short Range Transportation Plan (S RTP), the San Gabriel Valley Mobility Matrix subregion will experience eight percent and four percent growth in population and employment, respectively, over the next 10 years. This equates to approximately 130,000 new residents and 25,000 new jobs. These growth rates reflect the overall anticipated County growth rates of eight and five percent growth in population and employment, respectively.

Table 3-1 summarizes the changes in population and employment in the cities and in the Mobility Matrix subregion. Although population in the study area as a whole is projected to grow at a rate of eight percent, five of the cities are projected to experience double-digit growth, including Irwindale (17 percent), Pomona (16 percent), La Puente (15 percent), Monterey Park (14 percent), and El Monte (11 percent). Conversely, the Cities of San Marino, Sierra Madre, South Pasadena, and La Canada Flintridge will experience very little or no growth (0-1 percent).

Figure 3-2 shows existing population and employment in 2014. Commensurate with land use, the highest employment densities generally occur near the freeways with the highest concentrated cluster occurring in Pasadena. Similarly, population densities are lowest closer to the foothills and further east, and higher near the freeway corridors and to the west near downtown Los Angeles.

Figure 3-3 shows the location of forecasted growth in jobs and residents from 2014 to 2024 with the highest growth in both occurring in the Pasadena area, significant job growth occurring along SR-60 and significant population growth occurring closer to I-10.



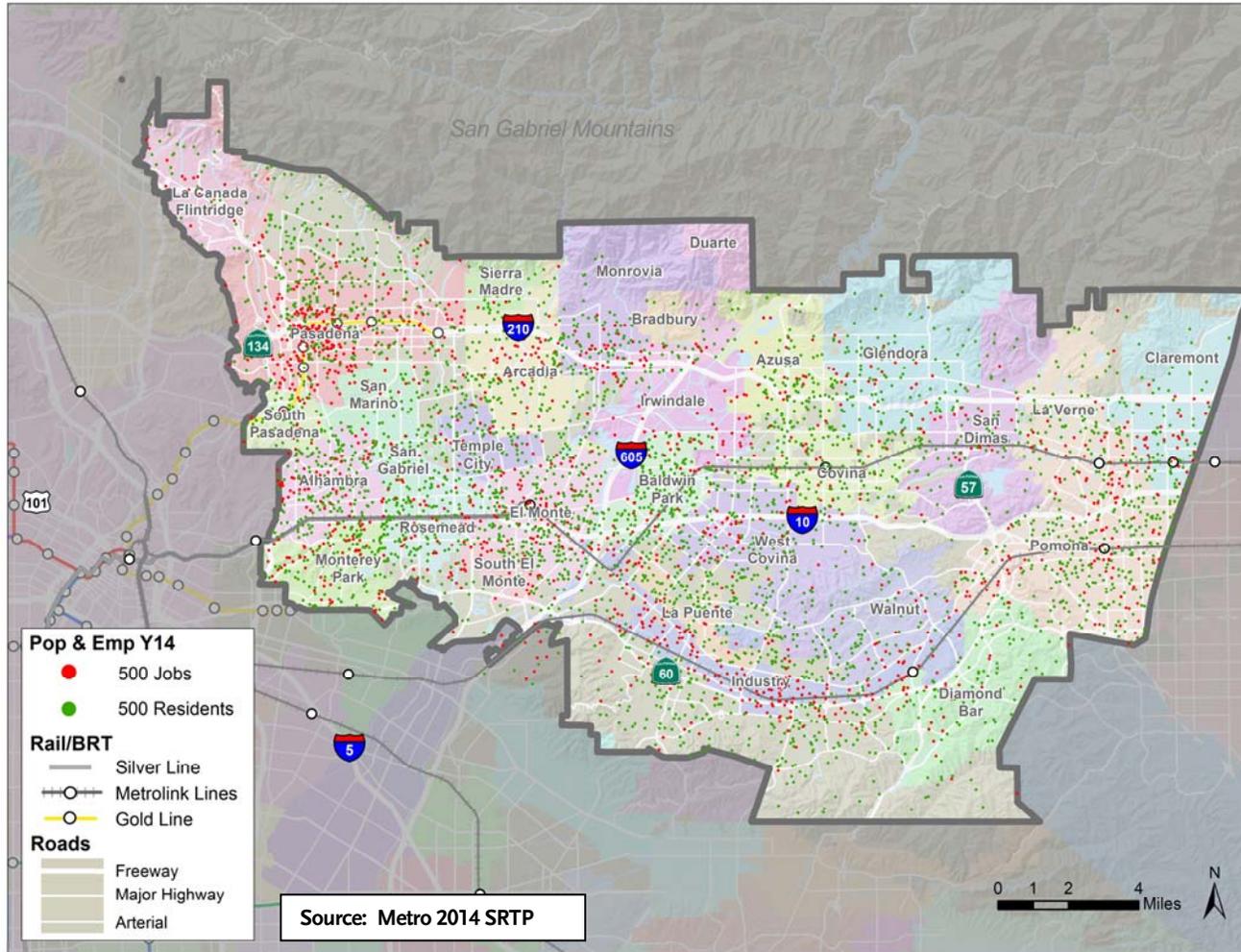
Table 3-1. Forecasted Population and Employment Growth by Jurisdiction (2014 to 2024)

SGV Cities	2014 Residents	2024 Residents	% Change in Population	2014 Employment	2024 Employment	% Change in Employment
Alhambra	83,708	88,362	6%	29,627	30,997	5%
Arcadia	52,731	56,522	7%	22,706	23,943	5%
Azusa	52,331	55,719	6%	15,358	15,820	3%
Baldwin Park	74,519	77,842	4%	16,718	17,402	4%
Bradbury	1,027	1,071	4%	464	468	1%
Claremont	37,500	39,550	5%	18,756	19,923	6%
Covina	50,702	52,513	4%	13,978	14,477	4%
Diamond Bar	46,488	49,315	6%	11,409	11,854	4%
Duarte	21,253	22,382	5%	6,828	7,084	4%
El Monte	104,488	116,330	11%	35,865	36,824	3%
Glendora	49,956	53,897	8%	13,000	13,625	5%
Industry	25,090	26,027	4%	86,342	87,224	1%
Irwindale	1,262	1,479	17%	14,099	13,585	-4%
La Cañada Flintridge	19,298	19,528	1%	8,723	9,108	4%
La Puente	37,292	43,024	15%	5,195	5,431	5%
La Verne	33,223	35,640	7%	9,598	10,268	7%
Monrovia	35,748	37,222	4%	15,487	16,075	4%
Monterey Park	61,316	69,985	14%	32,107	33,694	5%
Pasadena	132,620	140,910	6%	114,942	121,497	6%
Pomona	147,496	170,571	16%	53,998	57,071	6%
Rosemead	47,968	49,996	4%	13,220	13,698	4%
San Dimas	34,269	35,584	4%	15,335	15,767	3%
San Gabriel	43,906	46,955	7%	13,782	14,472	5%
San Marino	13,163	13,252	1%	4,794	5,031	5%
Sierra Madre	10,930	10,968	0%	3,383	3,411	1%
South El Monte	19,269	20,467	6%	14,421	14,343	-1%
South Pasadena	25,598	25,971	1%	9,030	9,504	5%
Temple City	29,568	31,066	5%	6,372	6,676	5%
Walnut	23,641	25,419	8%	7,929	8,312	5%
West Covina	107,464	114,457	7%	25,879	27,269	5%
<b>Total SGV</b>	<b>1,423,824</b>	<b>1,532,024</b>	<b>8%</b>	<b>639,345</b>	<b>664,853</b>	<b>4%</b>
<b>Total LA County</b>	<b>9,771,300</b>	<b>10,522,100</b>	<b>8%</b>	<b>4,336,000</b>	<b>4,567,500</b>	<b>5%</b>

Source: Metro SRTP 2014.

Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long Range Transportation Plan (LRTP) subregional boundaries. Total values rounded to nearest hundred

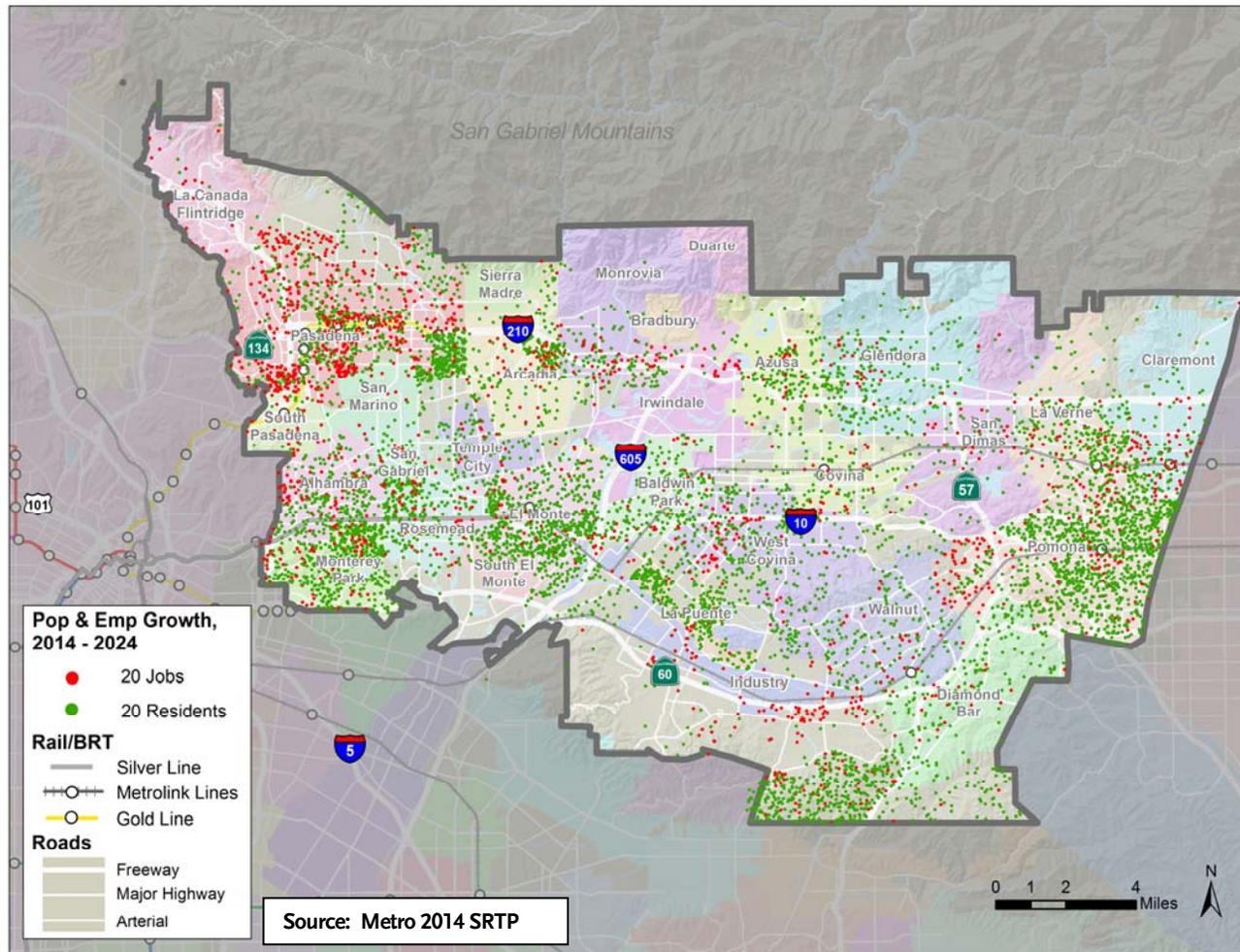
Figure 3-2. 2014 Population and Employment in Study Area



Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long Range Transportation Plan (LRTP) subregional boundaries

SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

Figure 3-3. Population and Employment Change in Study Area, 2014 to 2024



Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long Range Transportation Plan (LRTP) subregional boundaries

### 3.3 Environmental Justice Communities

Concentrations of minority and low-income communities were identified using U.S. Census Bureau American Community Survey (ACS) data (2012).

Table 3-2 provides an overview of the minority and economic characteristics for San Gabriel Valley compared to the Los Angeles County average.

San Gabriel Valley is both ethnically and economically diverse. In 2012, minority populations, defined as nonwhite (including Hispanic), exceeded the Countywide average of 72.2 percent in 16 San Gabriel Valley cities. Minority populations make up more than 94 percent of the residents in South El Monte, La Puente, El Monte, Rosemead, Monterey Park, Baldwin Park and Irwindale.

In 2012, Azusa, Baldwin Park, El Monte, Pomona, Rosemead, and South El Monte exceeded the countywide average (17.1 percent) of residents living below the poverty line. Cities with the most and least persons living in poverty included El Monte at 22.8 percent and La Canada Flintridge at 2.1 percent, respectively.

Figure 3-4 shows the location of transit-dependent communities in the study area based on data from Metro's SRTP. Transit dependent zones have been defined as those where one or more of the following criteria are met:

- At least 11 percent of the population is aged 65 or older and median household income is less than \$53,762;
- About 26.7 percent or more of households have an annual income of less than \$25,000; and
- About 10 percent or more of households are zero vehicle households.

The California Communities Environmental Health Screening Tool (CalEnviroScreen) was developed by CalEPA to identify disadvantaged communities in California that are eligible for designated state funding. The tool gives a combined score by census tract based on two factors:

1. Pollution burden, based on 25 pollution characteristics, including particulate matter, drinking water quality, and hazardous waste; and
2. A series of 14 at-risk population characteristics, including poverty, asthma, and rates of education.

The maximum score, denoting the highest possible at-risk communities, is 100. Figure 3-5 indicates CalEnviroScreen scores for the study area. In the San Gabriel Valley, higher risk areas include the areas near I-605, the westerly segments of I-10 and SR-60, as well as Pomona. The study area is home to many at-risk population factors. These same areas contain high transit-dependent populations.

**Table 3-2. Summary of Ethnic and Economic Characteristics**

City	Percentage Total Minority*	Median Household Income <sup>^</sup>	Percentage Population Living Below Poverty Level
Alhambra	89.4%	\$53,917	13.4%
Arcadia	72.8%	\$77,342	9.9%
Azusa	80.1%	\$53,063	19.2%
Baldwin Park	95.3%	\$51,244	17.4%
Bradbury	44.2%	\$117,500	9.2%
Claremont	42.4%	\$80,754	8.6%
Covina	70.6%	\$66,818	11.4%
Diamond Bar	78.4%	\$90,181	5.2%
Duarte	71.2%	\$63,160	11.0%
El Monte	94.9%	\$41,861	22.8%
Glendora	41.4%	\$74,619	7.9%
Industry	55.9%	\$49,419	3.4%
Irwindale	94.3%	\$61,719	11.6%
La Cañada Flintridge	36.2%	\$154,947	2.1%
La Puente	96.0%	\$52,886	11.8%
La Verne	46.5%	\$76,519	7.3%
Monrovia	57.7%	\$69,449	9.6%
Monterey Park	95.6%	\$55,800	14.5%
Pasadena	60.0%	\$68,310	12.9%
Pomona	87.6%	\$48,864	20.4%
Rosemead	95.1%	\$46,781	17.2%
San Dimas	47.4%	\$76,454	7.0%
San Gabriel	88.3%	\$56,260	12.4%
San Marino	61.3%	\$139,122	4.6%
Sierra Madre	30.2%	\$90,321	9.6%
South El Monte	96.6%	\$48,056	20.6%
South Pasadena	58.6%	\$84,185	7.6%
Temple City	76.3%	\$64,148	9.1%
Walnut	87.2%	\$102,093	5.0%
West Covina	85.9%	\$68,677	9.3%
LA County Average	72.2%	\$56,241	17.1%

Source: 2008-2012 American Community Survey 5-Year Estimates

\* Minority Population calculated as: Total Population - Population that is White Alone, not Not Hispanic or Latino.

<sup>^</sup>In 2012 Inflation-adjusted dollars.

Figure 3-4. Transit-Dependent Communities in Study Area

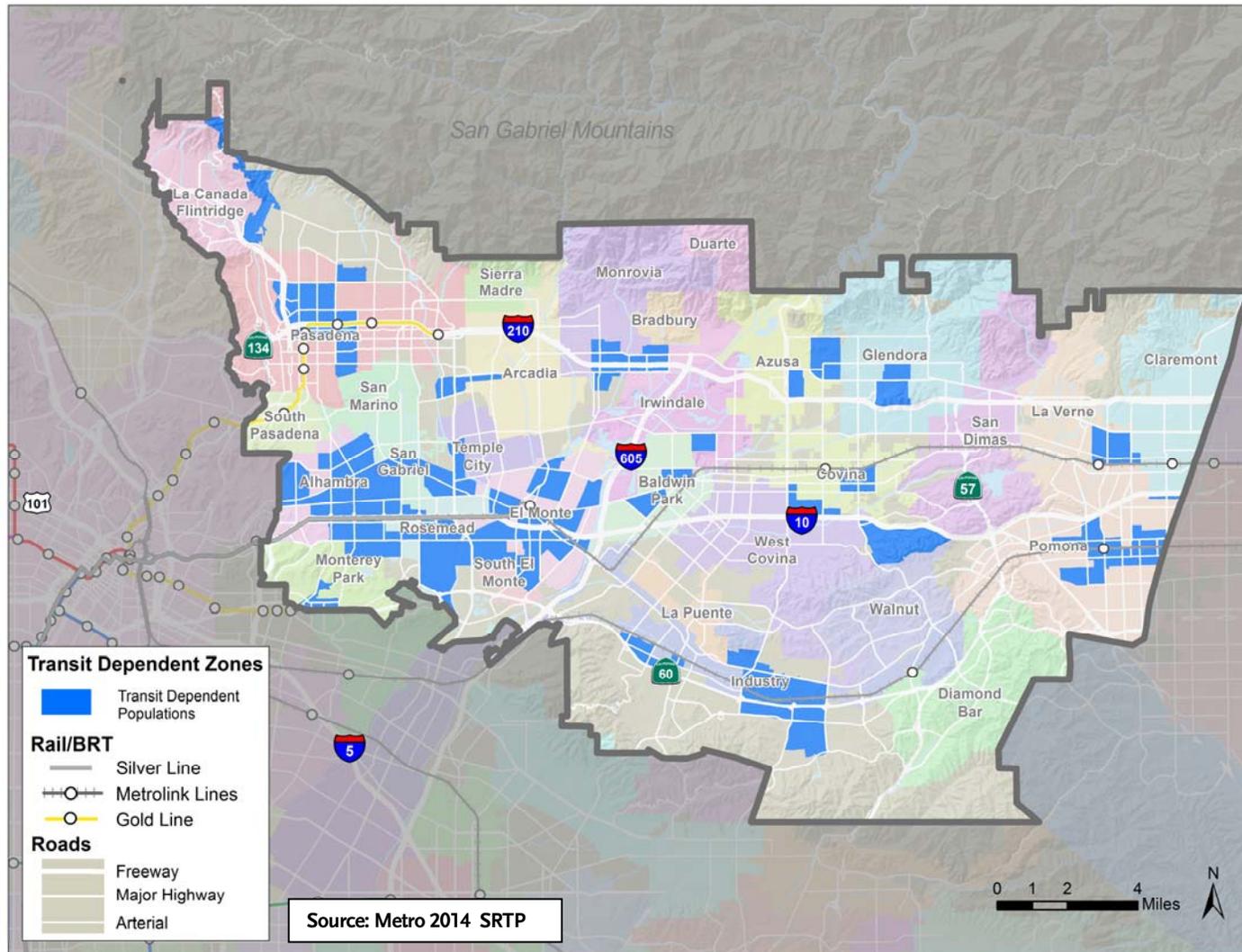
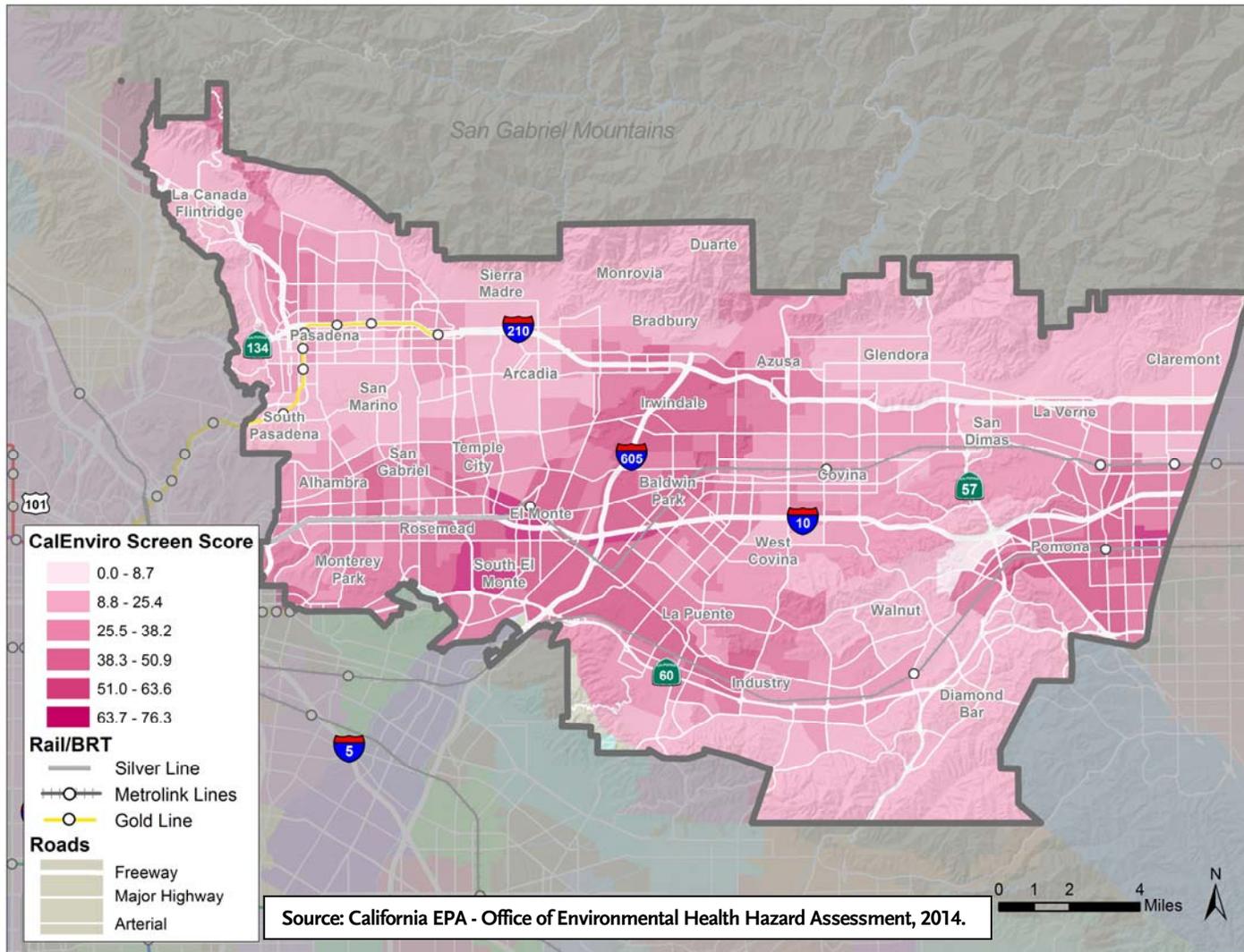


Figure 3-5. CalEnviroScreen Environmental Justice Scores



SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

## 4.0 TRAVEL PATTERNS AND PREFERENCES

This section describes general travel patterns within the study area and between neighboring subregions.

### 4.1 Interregional Travel Patterns

Figure 4-1 indicates estimated year 2014 average weekday person trips produced and attracted (all modes) between the study area and neighboring Mobility Matrix subregions based on Metro Travel Demand Model results. Trip productions are defined as the home end (origin or destination) of a home-based trip, or origin of a non-home based trip. Trip attractions are defined as the non-home end (origin or destination) of a home-based trip, or destination of a non-home based trip. The San Gabriel Valley's largest external travel market is Central Los Angeles (870,200 trips) followed by the Gateway Cities (801,000). Growth in trips to and from these two areas will outpace other travel markets in total numbers, with the exception of San Bernardino County, which is anticipated to add the most trips outside of the SVG behind Central Los Angeles.

As shown in Table 4-1 and illustrated in Figure 4-1, the San Gabriel Valley produces about 6.1 million trips and attracts about 5.7 million person trips each weekday. About 70 percent of weekday person trips consist of trips occurring entirely within the San Gabriel Valley. Central Los Angeles is the most popular trip origin, followed by the Gateway Cities, while the Gateway Cities represent the most popular trip destination for San Gabriel Valley residents, followed by Central Los Angeles. San Bernardino County and San Fernando Valley represent the next most popular travel markets for the San Gabriel Valley Mobility Matrix subregion.

**Table 4-1. San Gabriel Valley Daily Trip Productions and Attractions (2014)**

To/From Subregion	Trips Produced	% of Produced Trips	Trips Attracted	% of Attracted Trips
<b>San Gabriel Valley</b>	<b>4,120,503</b>	<b>67%</b>	<b>4,120,503</b>	<b>73%</b>
Central LA	474,211	8%	396,008	7%
Gateway Cities	502,690	8%	298,260	5%
North County	12,195	0%	16,388	0%
San Fernando Valley	217,581	4%	220,115	4%
Las Virgenes / Malibu	16,840	0%	3,213	0%
South Bay Cities	213,773	3%	60,915	1%
Westside Cities	154,883	3%	50,019	1%
Ventura Co.	14,463	0%	16,787	0%
Orange Co.	188,484	3%	118,171	2%
Riverside Co.	40,466	1%	60,983	1%
San Bernardino Co.	178,317	3%	318,298	6%
<b>Total</b>	<b>6,134,406</b>	<b>100%</b>	<b>5,679,660</b>	<b>100%</b>

Source: Metro 2014 SRTP

Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 Short Range Transportation Plan (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 Long Range Transportation Plan (LRTP) subregional boundaries.

## 4.2 Commute Travel Modes

Table 4-2 presents subregional commute travel modes by jurisdiction alongside County average.

Table 4-2. 2012 Commute Travel Mode Share

Commute Mode	San Gabriel Valley Study Area			LA County Total	
	2000	2012	% Change	2012	% LA County
Drove alone	73.4%	75.5%	2.8%	72.4%	104.3%
Carpooled	16.1%	11.8%	-36.3%	10.5%	112.4%
Bus	3.1%	3.3%	4.3%	6.5%	50.5%
Rail transit	0.1%	0.4%	75.7%	0.7%	53.0%
Railroad	0.4%	0.4%	14.3%	0.2%	198.3%
Bicycle	0.7%	0.8%	15.0%	0.9%	91.4%
Walked	2.6%	2.5%	-1.6%	2.9%	86.7%
Worked at home	2.8%	4.2%	34.2%	5.0%	84.6%

Source: U.S. Census, ACS 3-year estimate, 2012.

Motor vehicle is the travel mode of choice for more than 75 percent of study area commuters. While the region commutes via auto somewhat more than the county average, it features a higher rate of carpooling (11.8 percent) and more commuter rail (0.4 percent).

Figure 4-1. 2014 Average Weekday Person Trips to/from San Gabriel Valley (All Modes)



Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 Short Range Transportation Plan (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 Long Range Transportation Plan (LRTP) subregional boundaries. Values rounded to nearest hundred

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

### 4.3 Passenger Vehicle Travel Demands

Table 4-3 provides an estimate of average weekday vehicle travel both to and from the study area and neighboring regions in 2014 and forecasted growth by 2024. Key findings include:

- Of nearly one million vehicle trips either originating or terminating in the study area in 2014, about 69 percent are trips entirely within San Gabriel Valley
- Between 2014 and 2024, vehicle trips in the region are expected to grow by about five percent (an additional 382,266 trips each weekday)
- Three travel markets are projected to add more than 20,000 trips over the next 10 years, including Central Los Angeles (26,977), San Bernardino County (26,012) and Gateway Cities (20,758).

**Table 4-3. Subregional Vehicle Travel Volumes to/from San Gabriel Valley (2014 to 2024)**

Subregion Trip Origins/Destinations	2014 Vehicle Trips	2024 Vehicle Trips	Δ Trips (2014-2024)	% Growth
Central LA	521,521	548,498	26,977	5%
Gateway Cities	538,480	559,238	20,758	4%
North County	19,687	21,858	2,171	11%
San Fernando Valley	281,192	295,209	14,017	5%
Within San Gabriel Valley	5,112,942	5,379,010	266,068	5%
Las Virgenes/ Malibu	10,169	11,115	946	9%
South Bay	152,268	158,316	6,048	4%
Westside	119,140	121,970	2,830	2%
Ventura County	15,760	16,456	696	4%
Orange County	203,022	212,343	9,321	5%
Riverside County	58,392	64,814	6,422	11%
San Bernardino County	331,695	357,707	26,012	8%
<b>Total</b>	<b>7,364,268</b>	<b>7,746,534</b>	<b>382,266</b>	<b>5%</b>

Source: Metro 2014 SRTP

Note: Trip patterns are based on aggregation of trip table data from the Travel Demand Model utilized for the Metro 2014 Short Range Transportation Plan (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 Long Range Transportation Plan (LRTP) subregional boundaries.

### 4.4 Passenger Vehicle Trips

Under existing conditions, the Metro Travel Demand Model estimates about 7.3 million vehicle trips either originate or end in the San Gabriel Valley. By 2024, the Model forecasts five percent growth in vehicle trips, or about 382,266 vehicle trips traveling to and/or from the region each weekday.

The San Gabriel Valley supports more through trips than other Los Angeles County Mobility Matrix subregions with the east/west week day through trips totaling an estimated 265,900 per day due to connections provided by three major east-west

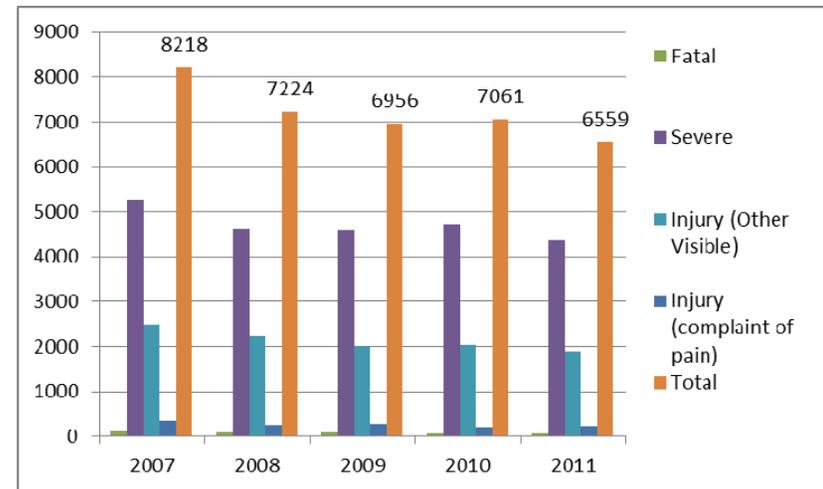
freeways and its location between downtown Los Angeles and high growth areas to the east. Although the North County will experience a higher growth rate, in terms of real values, San Gabriel Valley is anticipated to accommodate an additional 22,000 through trips in the next 10 years. This has significant implications to residents of these communities, particularly as freeway congestion grows and motorists seek out alternatives on local streets.

### 4.5 System Safety

A timeline of reported collisions across all travel modes by severity in the study area can be viewed in Figure 4-3. Collision statistics are provided by the California Highway Patrol’s Statewide Integrated Traffic Record System (SWITRS). Generally speaking, collisions of all severities consistently declined from 2007 to 2011, reflecting broader countywide and national trends in improvements to vehicle safety. Key findings include:

- Total collisions fell 25 percent, from 2,692 in 2007 to 6,559 in 2011;
- Fatal crashes fell 78 percent, from 116 in 2007 to 65 in 2011;
- Severe injury crashes fell 48 percent, from 353 in 2007 to 237 in 2011.

**Figure 4-2. San Gabriel Valley Total Collisions, 2007 to 2011**



Source: SWITRS, 2014.

## 5.0 VEHICLE TRAVEL

### 5.1 Vehicle Travel Facilities

Regional travel is provided on nine major highway corridors, including the north-south corridors SR-110, SR-134, I-605, I-710, SR-57 and SR-71, and east-west corridors I-210, I-10, SR-60:

Figure 5-1 shows primary arterials in the study area as captured in the Countywide Strategic Arterials Network (CSAN), as amended by subregional stakeholders through the Metro Congestion Management Program (CMP).

### 5.2 Driving Conditions

#### 5.2.1 Vehicle Volumes

Due largely to significant regional population growth over the coming 10 years, vehicle trips originating and/or terminating in the study area are forecasted to grow by more than 380,000 over the next 10 years, from 7.4 million in 2014 to 7.8 million in 2024.

#### 5.2.2 Driving Times

San Gabriel Valley freeways and roadways experience a consistent level of severe congestion, however, the average commute travel times between the San Gabriel Valley’s two largest travel markets average about 35 minutes, and trips within the study area average only 10 minutes (see Table 5-1). The vehicle hours of travel reflects the total number of hours that vehicles are traveling within, to and from the San Gabriel Valley, whereas the average trip time is derived by dividing the number of vehicle trips by the number of vehicle hours of travel.

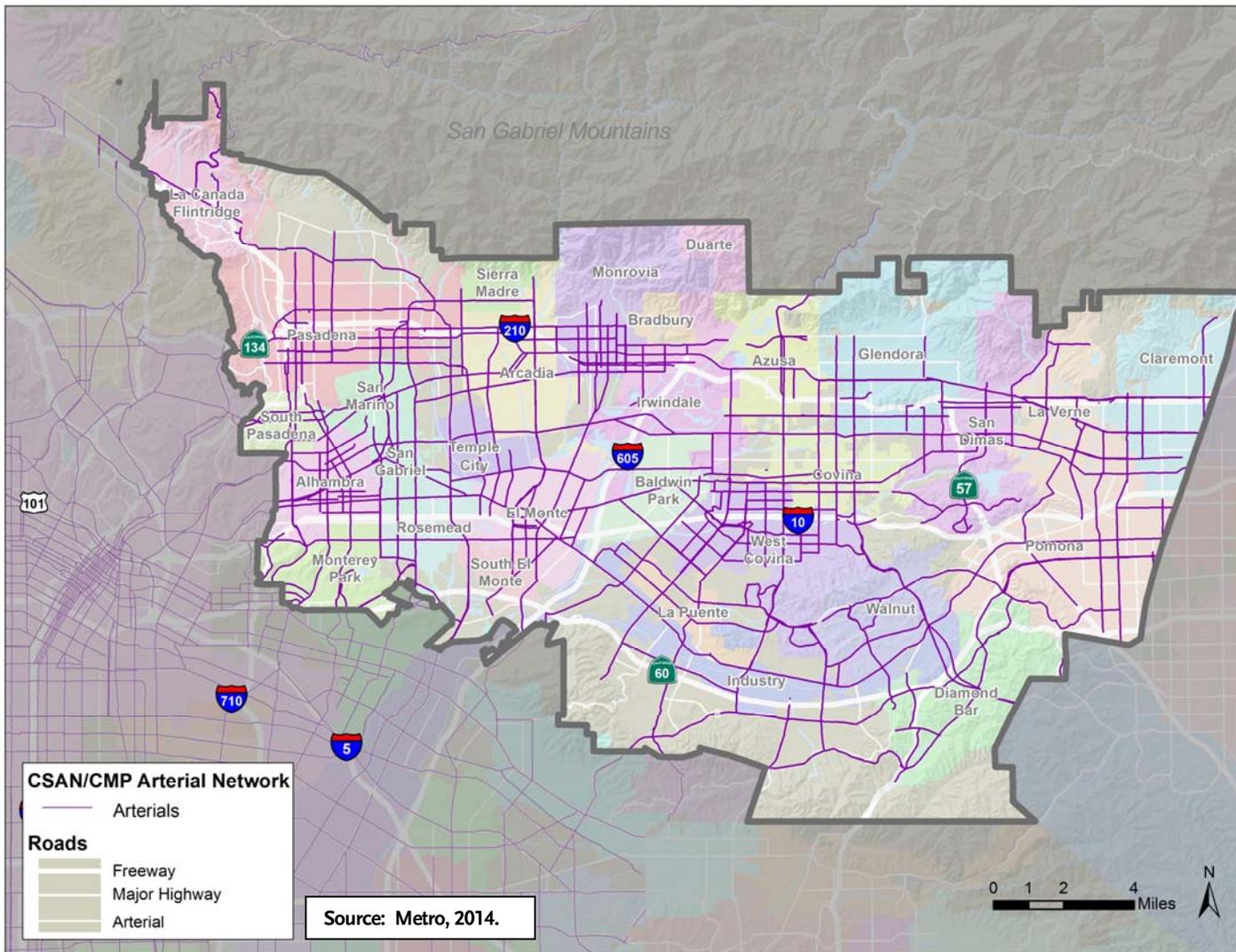
**Table 5-1. Peak-Period Vehicle Hours of Travel and Average Trip Time, 2014**

	<b>Vehicle Hours of Travel</b>	<b>Average Trip Time (Minutes)</b>
Central LA	188,632	39
Gateway Cities	182,788	32
North County	10,753	87
San Fernando Valley	102,123	43
Within San Gabriel Valley	414,409	10
Las Virgenes / Malibu	12,568	93
South Bay	133,299	70
Westside	114,151	77
Ventura County	9,537	88
Orange County	135,446	65
Riverside County	20,749	56
San Bernardino County	50,868	25
<b>Total</b>	<b>1,375,323</b>	<b>22</b>

Source: Metro 2014 SRTP.

Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long Range Transportation Plan (LRTP) subregional boundaries

Figure 5-1. CSAN/CMP Network of Regionally Significant Arterials



SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

### 5.3 Goods Movement Vehicle Travel

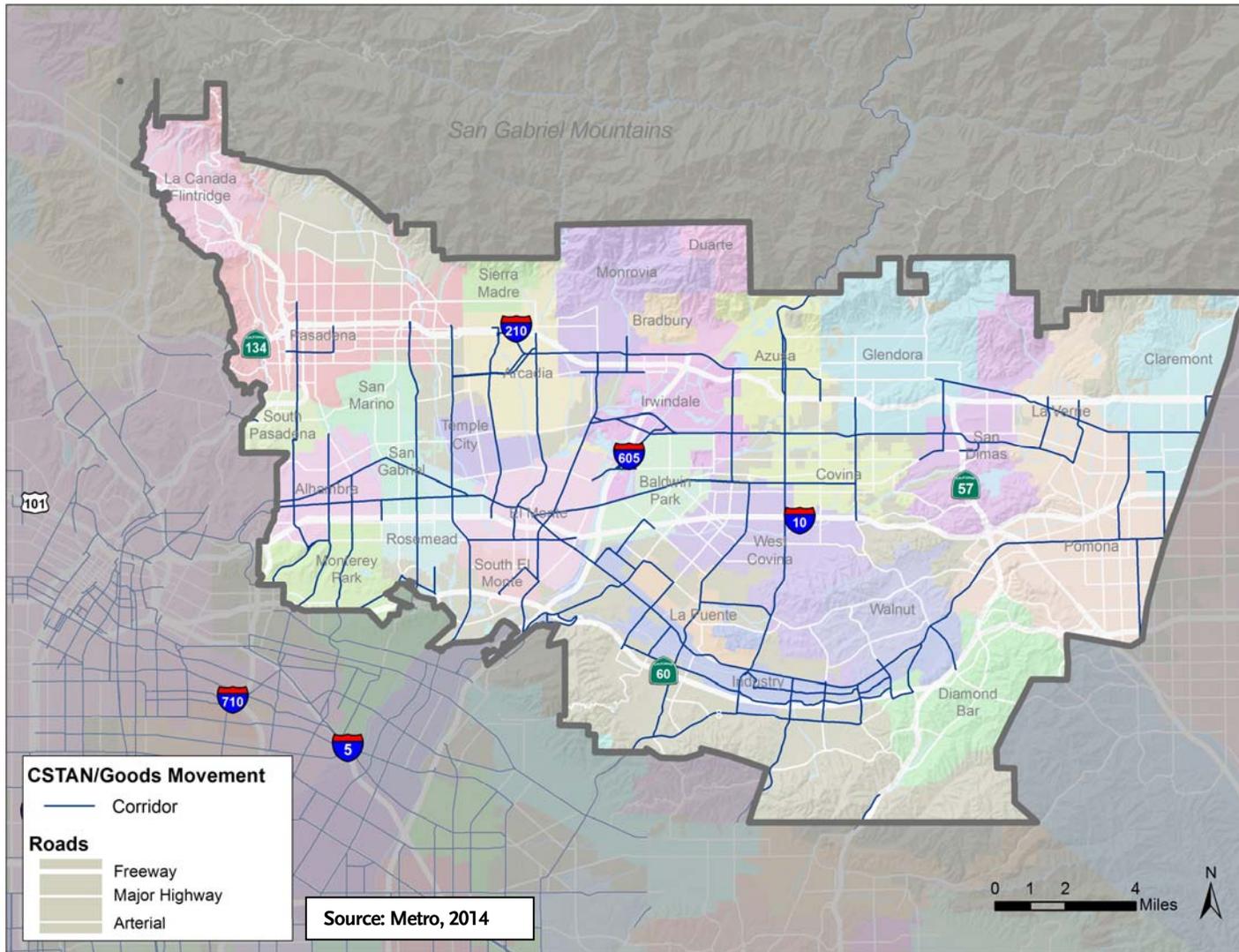
The study area contains several routes of critical importance to regional goods movement, as designated by jurisdictions and identified through the draft Countywide Strategic Truck Arterial Network (CSTAN). One primary example is Valley Boulevard, which spans the entire San Gabriel Valley providing critical access to multiple intermodal freight rail yards, warehouses, and industrial facilities. Figure 5-2 indicates the draft subregional CSTAN truck route network.

### 5.4 Vehicle Safety

#### 5.4.1 Motor Vehicle Collisions

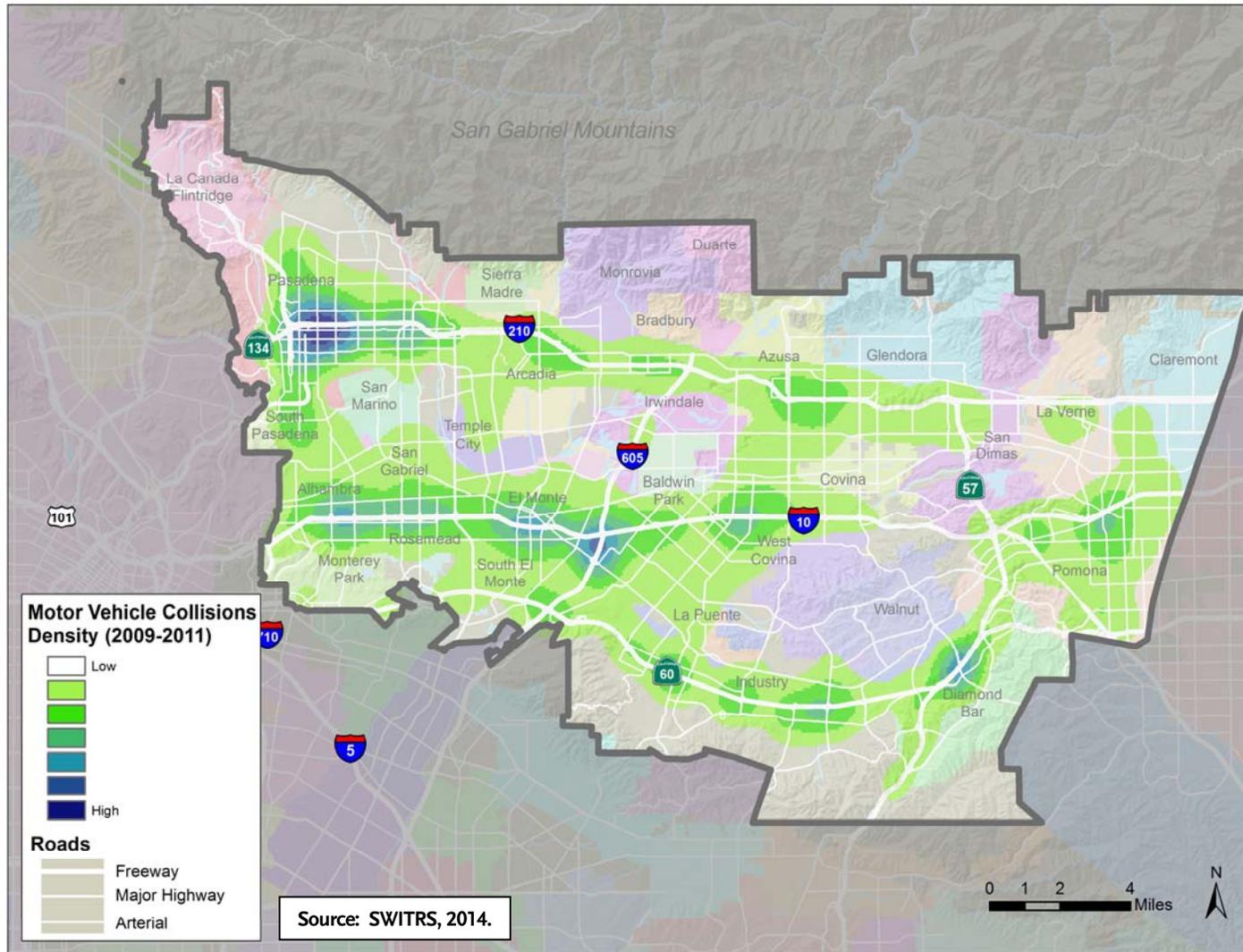
Figure 5-3 shows the location of motor vehicle collisions in the study area from 2009 to 2011. High concentrations of collisions occurred along the most congested freeway corridors, with the highest concentrations occurring at major freeway interchanges.

Figure 5-2. Draft Countywide Strategic Truck Arterial Network



SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

Figure 5-3. Motor Vehicle Collision Density, 2009 to 2011



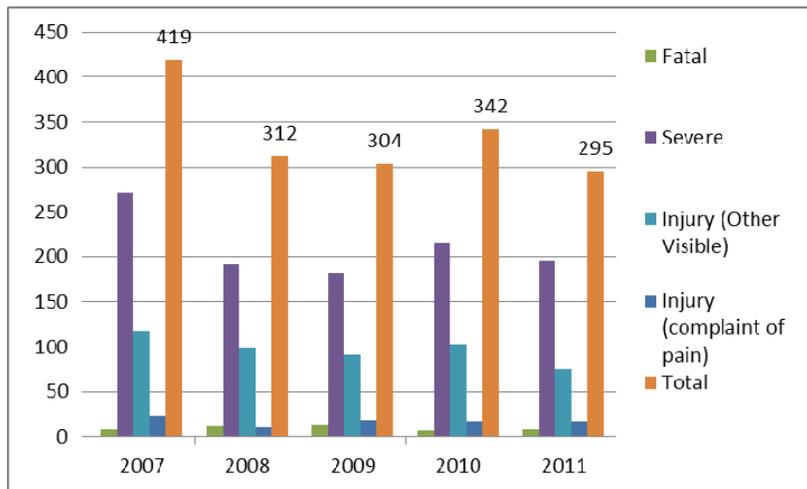
SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

### 5.4.2 Truck Collisions

Figure 5-4 illustrates trends in collisions involving trucks by severity from 2007 to 2011. The region has seen an overall downward trend in truck collisions over the five-year period, but has also seen an overall reduction in truck traffic bottoming out in 2007 and beginning to rise with the recovering economy.

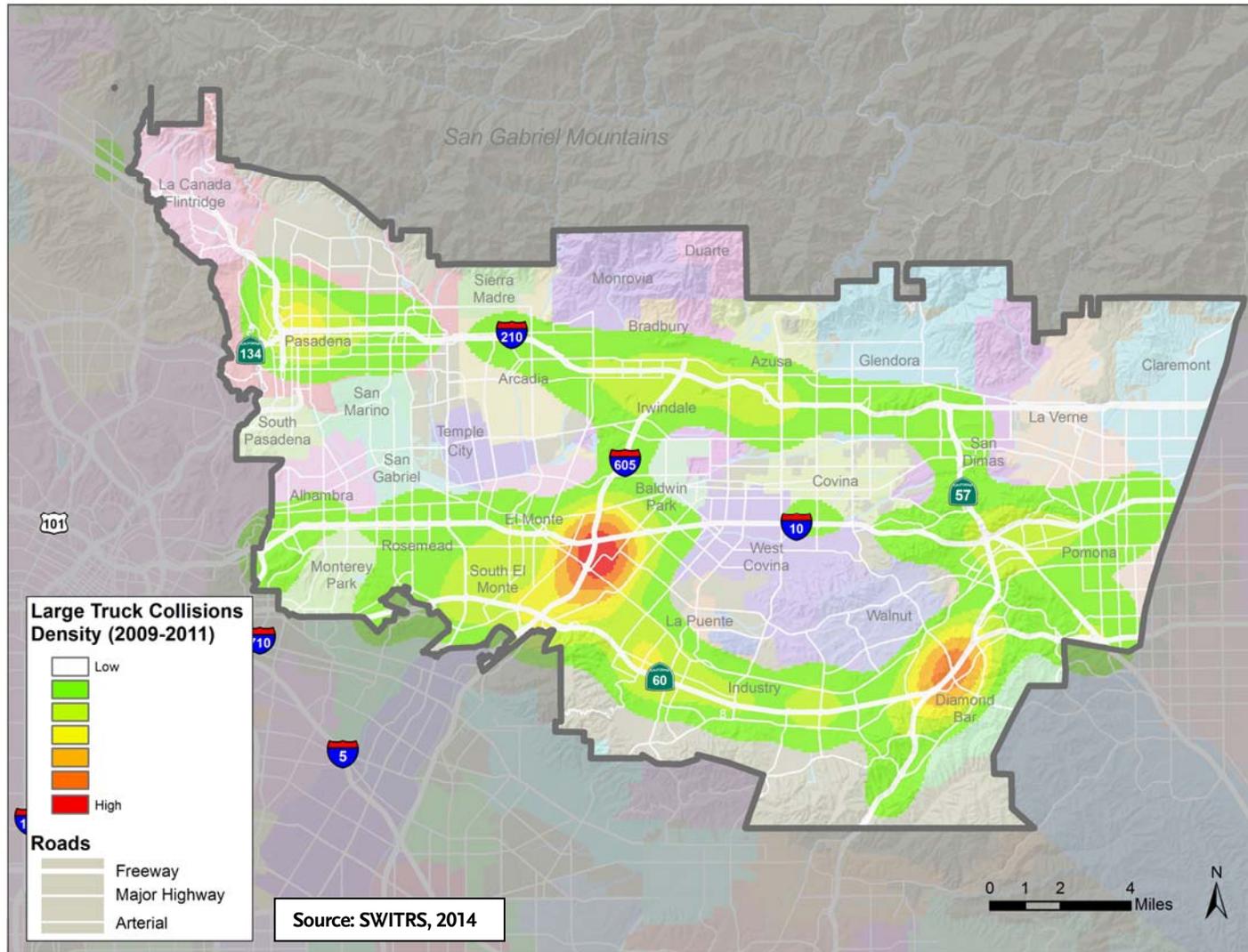
Figure 5-5 shows the density of truck collisions in the study area from 2009 to 2011.

**Figure 5-4. Trends in Collisions Involving Trucks (2007 to 2011)**



Source: SWITRS, 2014.

Figure 5-5. Truck Collision Density, 2009 to 2011



## 6.0 TRANSIT

The study area features Gold Line light rail transit and Metrolink commuter rail service to Los Angeles, and several local bus and commuter services provided by Metro, Foothill Transit, and several San Gabriel Valley cities, most notably, Montello.

Due in part to long commute times and limited existing transit options on the eastern portion of the San Gabriel Valley, transit commute trips account for only 4.6 percent of regional commute trips, compared to a countywide average of 7.4 percent. Table 6-1 indicates transit commute mode share from 2010 to 2012.

**Table 6-1. Transit Commute Mode Share, 2010 - 2012**

Mode for Commute Trips	San Gabriel Valley			Los Angeles County Total	% of LAC
	2000	2012	% change	2012	
Drove alone	73.4%	75.5%	2.8%	72.4%	104.3%
Carpooled	16.1%	11.8%	-36.3%	10.5%	112.4%
Bus	3.1%	3.3%	4.3%	6.5%	50.5%
Rail transit	0.1%	0.4%	75.7%	0.7%	53.0%
Railroad	0.4%	0.4%	14.3%	0.2%	198.3%
Bicycle	0.7%	0.8%	15.0%	0.9%	91.4%
Walked	2.6%	2.5%	-1.6%	2.9%	86.7%
Worked at home	2.8%	4.2%	34.2%	5.0%	84.6%
Other means (taxi, motorcycle, and other)	0.9%	1.1%	16.1%	1.2%	89.7%

Source: ACS, 2014.

### 6.1 Commuter Rail

The Metro Gold Line light rail transit system provides existing service between Sierra Madre Station in East Pasadena to Union

Station with an extension to Azusa scheduled to open shortly. Service is provided seven days a week beginning southbound from Sierra Madre at 4:36 a.m. and northbound out of Union Station at 3:40 a.m. The system operates at 15- to 30-minute headways during non-peak periods, provides six minute headways during peak commute times and provides 7-8 minute headways during the day on weekends and holidays. During the last quarter of 2014, the system averaged 13,305 boardings on weekdays within the subregion.

The Metrolink San Bernardino and Riverside corridors provide commuter rail service between the study area and Los Angeles Union Station. The San Bernardino Line provides service throughout the week and weekend, whereas the Riverside Line operates during peak commute times and does not operate on the weekend. Table 6-2 indicates the number of weekday and weekend trains serving each of the three stations in the study area.

**Table 6-2. Metrolink Train Service by Station**

Station	Metrolink Route	Weekday Trains To/From LA	Saturday Trains To/From LA
Claremont	San Bernardino	18	10
Pomona	San Bernardino	18	10
Covina	San Bernardino	19	10
Baldwin Park	San Bernardino	18	10
El Monte	San Bernardino	18	10
Downtown Pomona	Riverside	6	–
Industry	Riverside	6	–

Source: Metrolink, November 2014.

In the second quarter of 2014, the Metrolink stations within the study area averaged 4,869 daily boardings (see Figure 6-1).

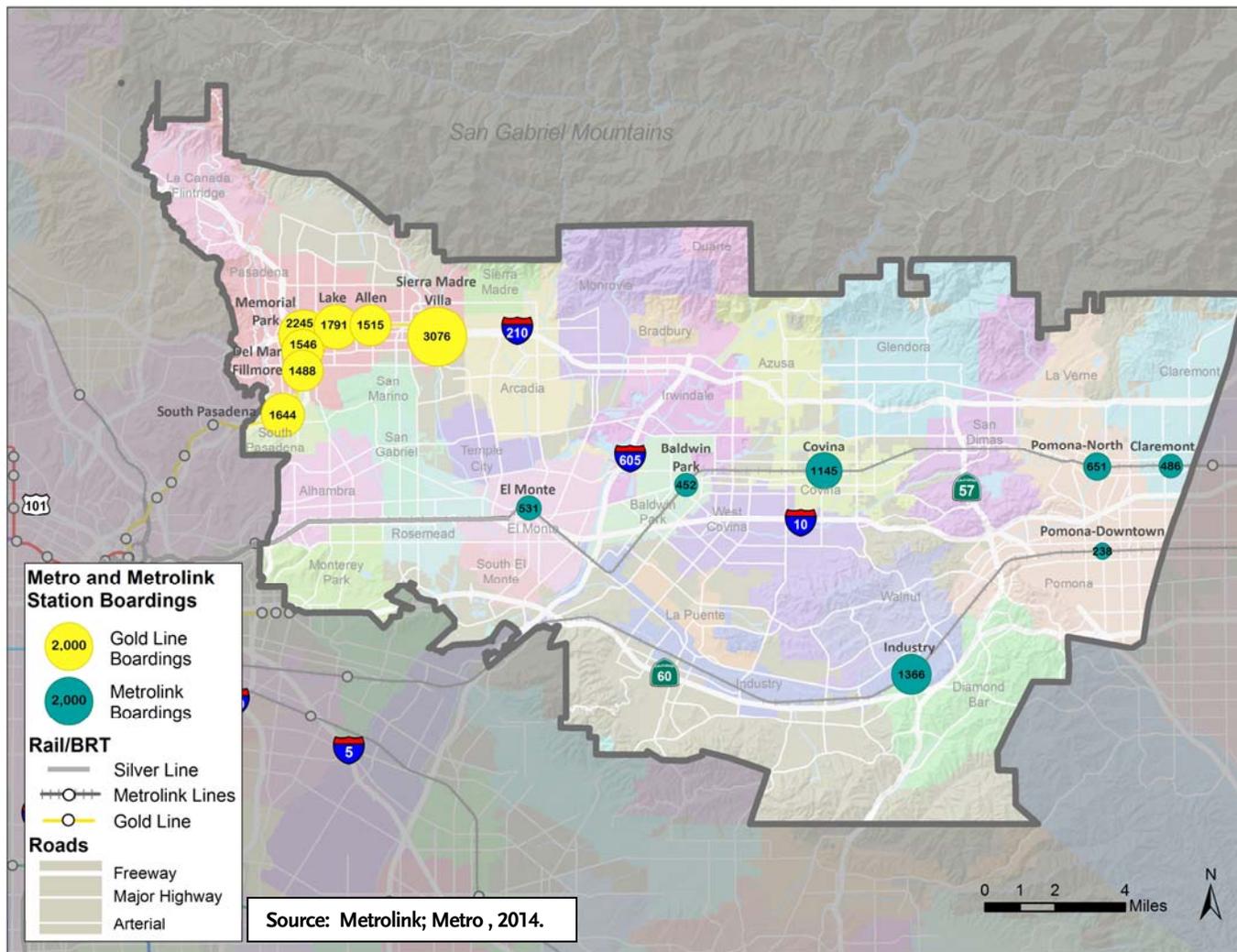
## 6.2 Bus Service

Countywide, regional, and local bus systems provide important connections to other transit systems, such as Metrolink and the Metro Gold Line, as well as access to key activity centers throughout the study area. The following describes the bus services available in the San Gabriel Valley Mobility Matrix subregion. (See Figure 6-2 for local bus service routes within the study area.)

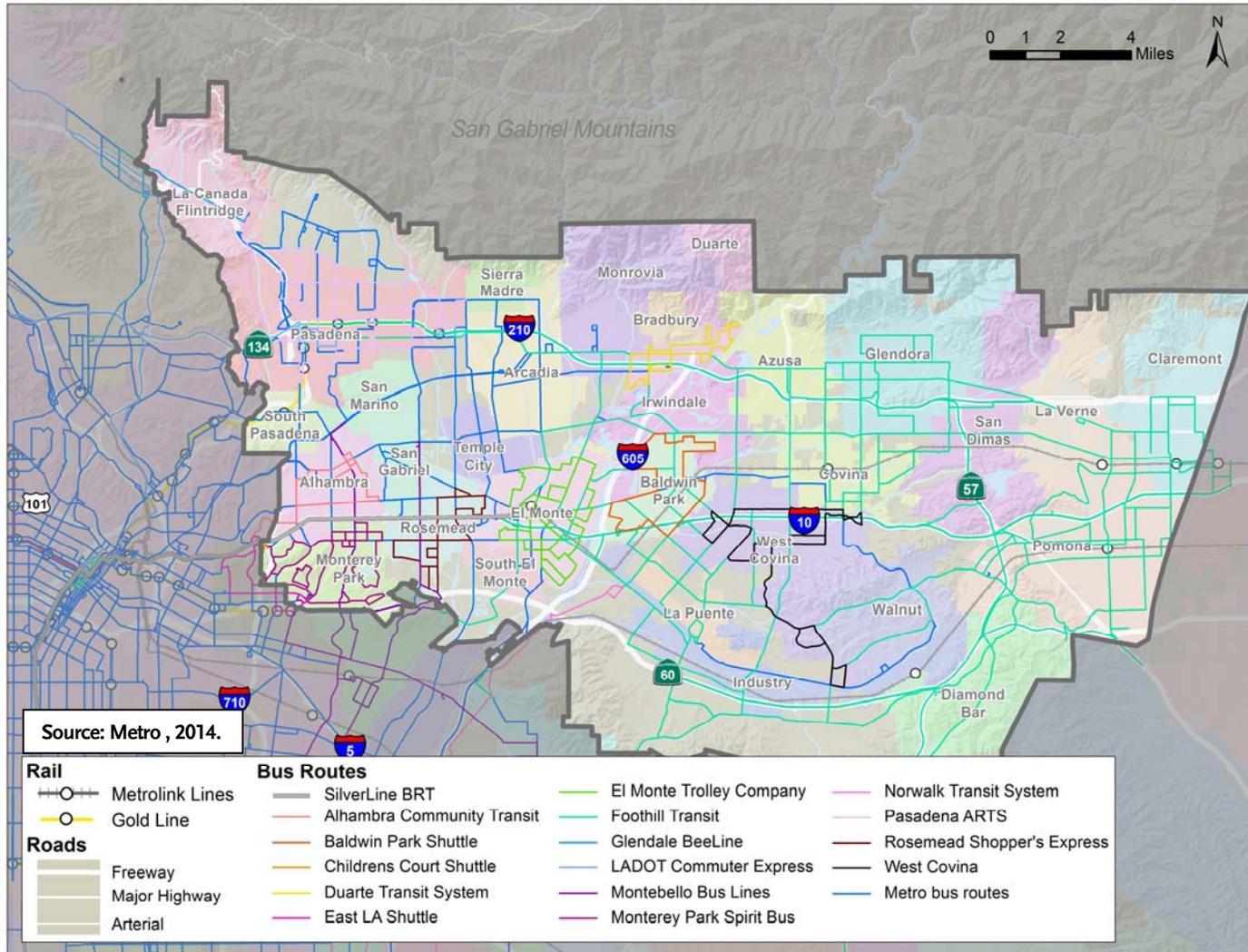
- **Foothill Transit.** Fixed route bus service operated by a joint powers authority consisting of 21 member cities in the San Gabriel and Pomona Valleys. It operates 23 local routes with weekend service and nine express and four school supplementary routes on weekdays. Local routes operate in the San Gabriel Valley cities of: Industry, Pomona, Montebello, Baldwin Park, West Covina, La Habra, Glendora, Azusa and San Dimas. School routes operate in West Covina, Diamond Bar and Pomona. Foothill Transit's Silver Streak bus offers express service from Montclair to downtown Los Angeles on the I-10 express lanes.
- **Metro Bus Service.** Serving the western portion of the subregion with 25 routes, seven days a week, including the Silver Line rapid bus operating on the El Monte Busway.
- **LADOT Commuter Express Service.** Provides several routes and service seven days a week throughout the City of LA with connections to adjacent cities, including Pasadena.
- **Alhambra Community Transit (ACT).** Local fixed route shuttle service operating two bus routes, including one that operates only during the AM and PM commutes.
- **Arcadia Transit.** Curb-to-curb on-demand shuttle service operating within the City.
- **Baldwin Park.** Local fixed route shuttle service operating two routes, seven days a week.
- **Children's Court Shuttle.** Operated by the Children's Court, this system provides one route with connections to Metrolink and Cal State Los Angeles.
- **Duarte Transit.** Operates two fixed routes six days a week and one commuter route on weekdays.
- **East LA Shuttle.** Operated by Los Angeles County with a connection to Monterey Park. The system operates three routes, seven days a week.
- **El Monte Trolley Company.** Provides five routes in the City of El Monte six days a week (Monday – Saturday).
- **Glendale Beeline.** Provides two routes that provide connections between La Canada Flintridge and Glendale, including connections to the Jet Propulsion Laboratory and La Canada High School.
- **La Puente LINK.** Local fixed route shuttle service operating two routes, six days.
- **Monrovia Transit.** Curb-to-curb on-demand shuttle service operating within the City.
- **Montebello Bus Line (MBL).** Fixed route transit serving the communities of Alhambra, Bell Gardens, Boyle Heights, Commerce, Downtown Los Angeles, East Los Angeles, La Mirada, Montebello, Monterey Park, Pico Rivera, Rosemead, South Gate and Whittier. Operates seven regular lines seven days a week and two peak hour lines on weekdays.
- **Monterey Park Spirit Bus.** Operates five fixed routes six days a week in Monterey Park with Route 5 providing connection to Cal State Los Angeles.
- **Norwalk Transit.** Provides five routes, but only one route provides service in the southeast area of the subregion near City of Industry.

- **Pasadena Area Rapid Transit System (ARTS).** Operates six fixed routes six days a week including commuter service to Gold Line stations.
- **Rosemead Explorer & Commuter Connection.** Operates two fixed routes seven days a week including commuter service to the El Monte Metrolink and Metro Bus Stations on weekdays.
- **West Covina.** Provides three routes in West Covina on weekdays only.

Figure 6-1. Metro Gold Line and Metrolink Average Weekday Boardings (Second Quarter, 2014)



SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

**Figure 6-2. San Gabriel Valley Bus Service**

**SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY**

## 7.0 ACTIVE TRANSPORTATION

The region offers several major regional off-street bikeways, including a main path located along the San Gabriel River from Irwindale to Long Beach. Several cities in the study area provide Class I, II, and III bicycle facilities with plans for expanding their networks. Many of the cities also provide extensive pedestrian facilities with sidewalks common in many neighborhoods and commercial districts. Local jurisdictions actively participated in the development of the Los Angeles County Bicycle Master Plan (2012) and shares a common vision for completing system gaps and providing access to transit.

### 7.1 Commute Mode Share

Together, bicycling and walking currently represent approximately 3.3 percent of all commute trips in the study area (see Table 7-1). Approximately three-quarters of San Gabriel Valley commuters drive alone to work.

**Table 7-1. Commute Mode Share in Study Area**

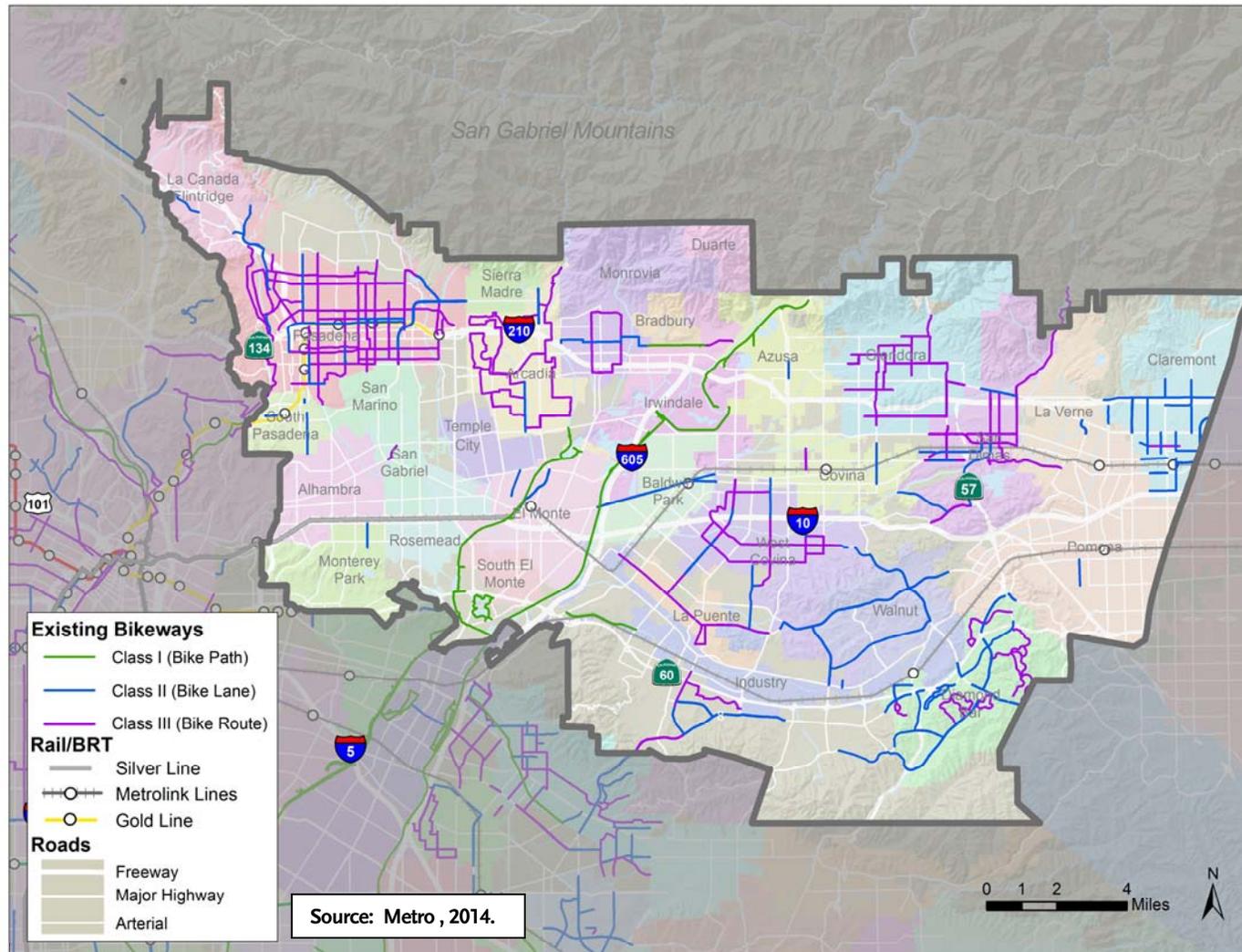
Mode	San Gabriel Valley	LA County
Bicycling	0.8%	0.9%
Walking	2.5%	2.9%

Source: ACS, 2012 (three-year estimate).

### 7.2 Bicycle/Pedestrian Facilities

Existing bicycle and pedestrian facilities in the study area are concentrated most heavily in Pasadena with the cities of Arcadia, Glendora, Diamond Bar, West Covina and Claremont also making significant improvements. Many of the developed cities have had longstanding development codes that require installation of sidewalks as a condition of development. More recently, several cities have also been requiring bicycle parking and transit stop amenities. A more recent challenge for many cities has been the maintenance of sidewalks, bikeways, and multi-use trails, as well as providing access to new transit services. (see Figure 7-1).

Figure 7-1. Bikeways in Study Area, 2014

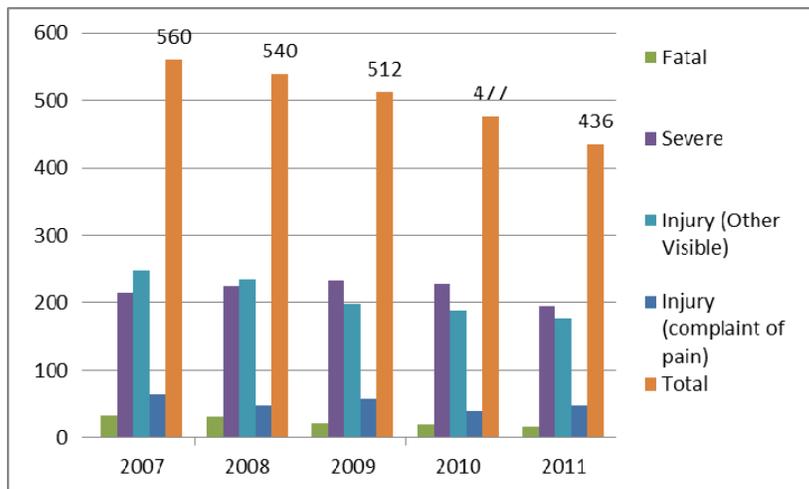


SUBREGIONAL MOBILITY MATRIX – SAN GABRIEL VALLEY

### 7.3 Safety

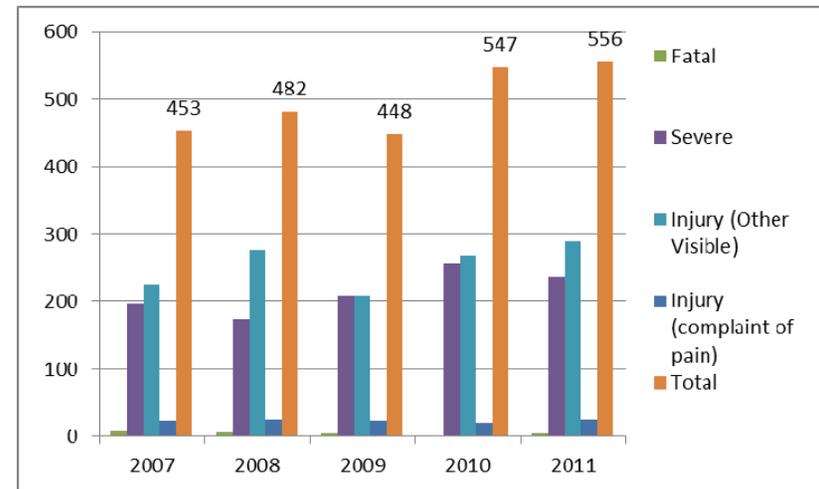
General collisions and collisions involving pedestrians have declined by 28 percent from 2007 to 2011 (see Figure 7-2), however, bicycle collisions have increased by 23 percent over the same period (see Figure 6-3). Bicycle collisions have outnumbered pedestrian collisions in recent years. A majority of collisions result in moderate or minor injuries, but about six percent of total collisions have been fatal.

**Figure 7-2. Pedestrian Collisions by Severity (2007 to 2011)**



Source: SWITRS, 2014.

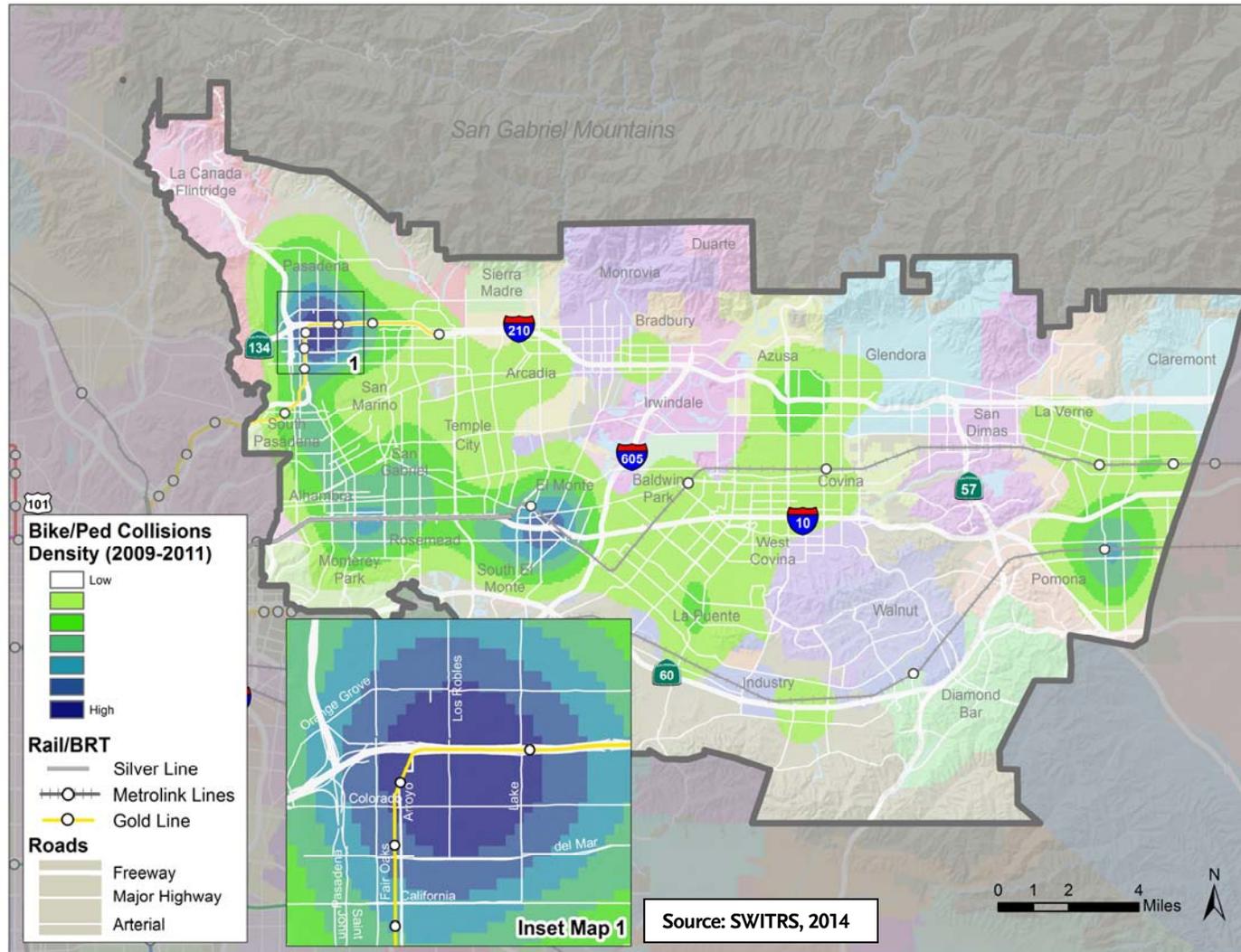
**Figure 7-3. Bicyclist Collisions by Severity (2007 to 2011)**



Source: SWITRS, 2014.

Figure 7-4 indicates the density of bicycle and pedestrian collisions in SGV from 2009 to 2011. Consistent with the highest pedestrian and bicycle activity, the highest concentration of active transportation collisions occurred in Pasadena, with the Cities of Alhambra, El Monte and Pomona also experiencing high concentrations.

Figure 7-4. Bicycle and Pedestrian Collision Density, 2009 to 2011



## 8.0 CONCLUSIONS AND NEXT STEPS

This report identifies several key findings regarding the existing transportation system, including but not limited to:

- Increasing ridership on the Gold Line and more bicycle and pedestrian trips coupled with projected growth in jobs and people are likely to result in more demand for additional transit and active transportation links, particularly to planned Gold Line stations
- Poor air quality will be exacerbated by population growth. Areas with existing air quality concerns, especially areas with large concentrations of low-income residents, need projects, programs and policies that will continue to result in emission reductions. Examples include encouraging green transportation solutions, such as plug-in electric vehicles and cleaner trucks and trains
- Growth in commuters to downtown Los Angeles will continue to add congestion to regional freeways causing additional spill-over traffic on San Gabriel Valley cities' streets. Existing pass-through trips are expected to grow by more than 20,000 per day over the next ten years. The Gold Line extension and freeway improvements along east-west routes will help to address the impacts of the projected through traffic growth
- While overall vehicle collisions have steadily decreased over the last several years, this trend could reverse as the economy continues to recover and grow again. Importantly, collisions involving bicyclists did not decline during the recession, but rather have continued to gradually rise due to increased activity

The final subregional mobility matrix report, expected in February 2015, will include high-level evaluation of the projects and programs proposed in Section 2.0 of this document. This effort is

intended to serve as critical input for the Metro Long Range Transportation Plan process.