SUBREGIONAL MOBILITY MATRIX
SOUTH BAY CITIES

Project No. PS-4010-3041-F-01-TO3

Final Report

Prepared for:

Metro

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Subregional Mobility Matrix
South Bay Cities
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Prepared for:

Los Angeles County
Metropolitan Transportation Authority

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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
CalEnvironScreen	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
LAX	Los Angeles International Airport
LOS	Level-of-Service
LRTP	Long Range Transportation Plan
LUV	Local Use Vehicle

Acronyms	Definitions
LVMCOG	Las Virgenes/Malibu Council of Governments
MAP-21	Moving Ahead for Progress in the 21st Century Act
Metro	Los Angeles County Metropolitan Transportation Authority
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.

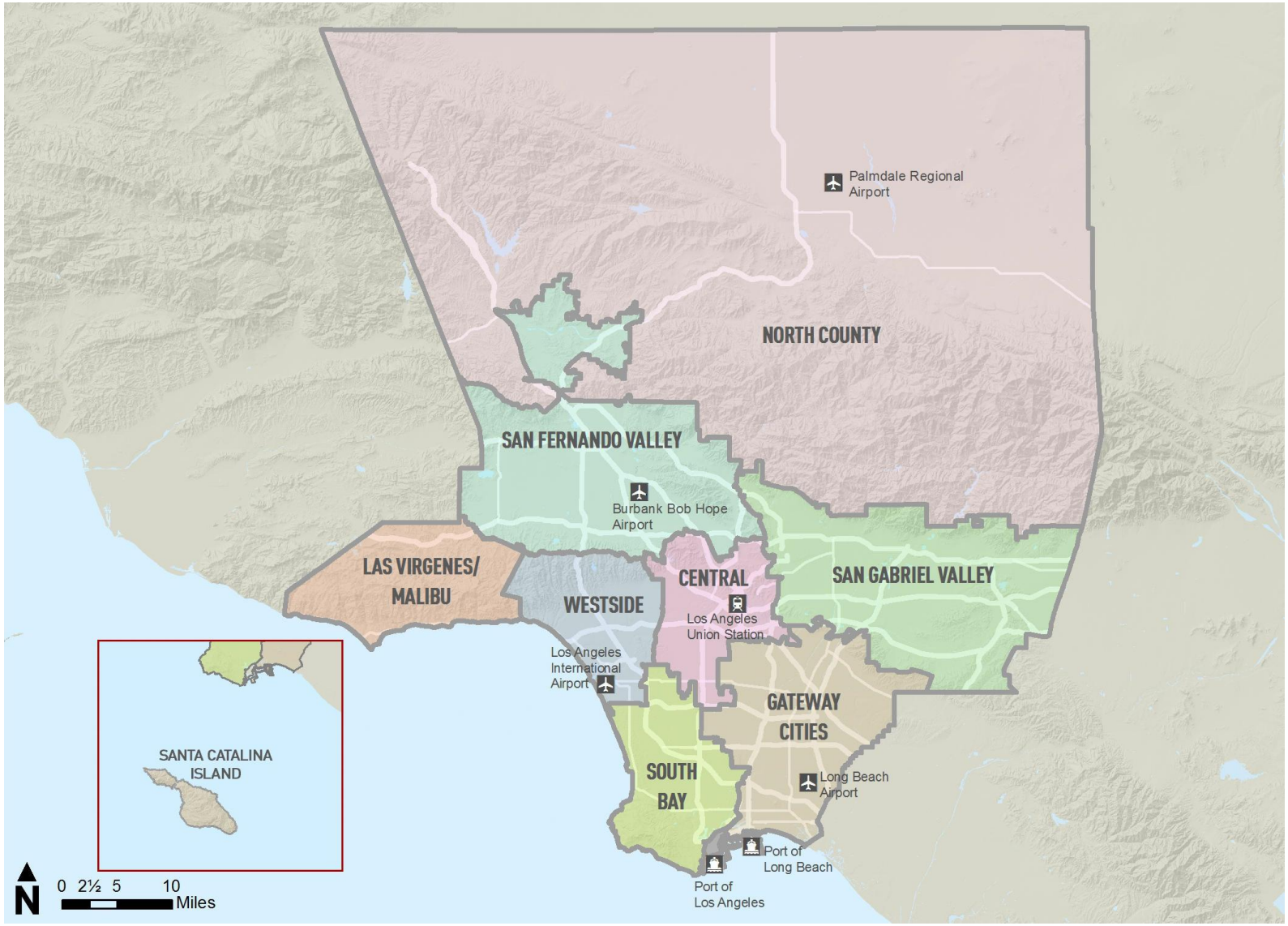
For the purposes of the Mobility Matrix, cities with membership in two subregions selected one subregion in which to participate. The Arroyo Verdugo subregion decided to include the cities of La Cañada Flintridge, Pasadena, and South Pasadena in the SGVCOG, and Burbank and Glendale in the SFVCOG. The 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. This involved changing Metro's South Bay Cities subregional planning area boundaries to conform to the current SBCCOG boundaries. This restored the boundary between the Westside Cities and South Bay Cities subregional planning areas as it was in the 2001 LRTP and shifted the northeastern area of the South Bay subregional planning area, which is all within the City of Los Angeles but outside of the South Bay COG boundaries, from the South Bay Cities subregional planning area to the Central Los Angeles subregional planning area.

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 either been removed from the subregional Mobility Matrices or a Regional Facilities category created at the request of the subregion.

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 South Bay Cities 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.

Figure ES-1. Los Angeles County Mobility Matrix Subregions



SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES

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.

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 South Bay Cities Mobility Matrix Subregion PDT consisted of representatives from the following jurisdictions and stakeholder agencies:

- SBCCOG
- City of El Segundo
- City of Inglewood
- City of Los Angeles
- City of Redondo Beach
- City of Torrance
- Beach Cities Transit
- Gardena Transit
- Palos Verdes Transit Authority
- Torrance Transit
- Los Angeles County Department of Public Works
- Southern California Association of Governments (SCAG)
- California Department of Transportation (Caltrans)

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 South Bay Association formally became a Council of Governments (SBCCOG) in 1994. Its members are the cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Los Angeles (Harbor Gateway/San Pedro areas), Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance, and unincorporated areas of Los Angeles County. The SBCCOG mission is to provide a leadership forum for South Bay local governments to act collaboratively and advocate for subregional issues with a focus on improving transportation and the environment, and strengthening economic development. The South Bay Cities are striving to be a subregion that is environmentally sustainable, has reduced congestion, and a healthy economy. The Baseline Conditions Report, included as Appendix D, identified several key findings regarding the transportation system for the South Bay Cities Mobility Matrix Subregion, including but not limited to:

- Population and employment are expected to rise in the South Bay Cities study area by seven and five percent increases, respectively, over the next decade. This growth is on par with the average growth forecast for all of Los Angeles County.
- Over 65 percent of the study area's vehicle trips occur within the South Bay and average less than seven minutes in driving time. The largest subregion travel markets are Gateway Cities, Central Los Angeles, and Westside, and average travel times for these range from 21 to 26 minutes, respectively. Total vehicle trips are forecasted to grow by 3.4 percent by 2024.
- There are approximately 75 bus routes that serve the South Bay study area, but transit ridership is still below county average at 5.3 percent. This is likely due to the limited rail network and bus level of service (low frequency, limited weekend service, etc.).
- Overall vehicle collisions have steadily decreased over the last several years. Collisions involving pedestrians have fallen, while collisions involving trucks and bicyclists have risen.

Goals and Objectives

Members of the PDT helped define the goals and objectives for the South Bay Cities 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 the subregion's priorities, and are based on relevant city, county, and regional planning documents, such as the South Bay Cities Strategic Plan and the Sustainable South Bay Land Use and Transportation Strategy; as well as discussions with subregional stakeholders. The South Bay Cities 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 South Bay Cities Mobility Matrix.

Subregional Projects and Programs

An initial project and program list for the South Bay Cities 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 377 transportation improvement projects and programs were identified for the South Bay Cities Mobility Matrix Subregion. Many of the 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.

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

The list includes projects and programs that manage system demand through the appropriate use of existing and emerging technology applications and multimodal improvements. These include high-occupancy vehicle (HOV) and managed lanes, transportation system management (TSM)/ intelligent transportation systems (ITS), bicycle and pedestrian improvements, transit, local use vehicles (LUVs), mixed-use and slow-speed lanes, and parking management. Arterial improvements and programs compose about one-quarter of the project list, and freeway projects make up nearly another quarter. Active transportation, state of good repair, and transit projects comprise a significant portion of the remaining project list. In addition, the list includes a large variety of projects and programs that support the Sustainable South Bay Strategy and long-term subregional investments in TSM/ITS.

Table ES-1. South Bay Cities Mobility Matrix Subregion Transportation Programs

Mobility Matrix Program	Total Projects
Highway/Arterial Operational Improvement Program	67
Freeway Operational Improvement Program	40
Managed Lanes – HOV Lanes/Express Lanes	7
Freeway Capacity Expansion Improvements	4
ITS/Communications with Motorists Program	15
Local Streets State of Good Repair	33
Bikeways Program	54
Pedestrian Program	15
Complete Streets/Slow Speed Lanes Program	9
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management)	42
Goods Movement	5
Grade Separation and Crossing Projects	16
Paratransit (Dial-a-Ride, Senior/Disabled)	1
Metro/Municipal Transit Capacity Expansion	22
Metro/Municipal Transit Incremental Operational Costs from Capacity Expansion	6
Metro/Municipal Transit Maintenance and Rehab	7
Transit Centers/Park and Ride	12
Car Sharing/Ridesharing/Telecommuting/Vanpool Programs	2
Sustainability South Bay Plan (Neighborhood-Oriented Development, 1st/Last Mile)	11
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle)	5
Transportation Enhancement/Beautification Programs	4

The South Bay Cities Mobility Matrix includes improvements that address both existing deficiencies in the transportation system as well as anticipated future needs. The South Bay Cities Mobility Matrix:

1. Supports the goal of reducing traffic congestion and improving local and regional mobility by including freeway and arterial widening and operational improvements and rail and bus service expansions.

2. Includes projects, programs, and strategies that link transportation, land use, and economic development in a way that addresses existing livability/ sustainability goals, fosters innovation, incentives and partnerships, and positions the region for future economic opportunities (e.g., sustainability plans and programs, goods movement projects, car and bicycle sharing programs, first/last mile improvements, and complete streets).

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 through preserving existing transportation investments and extending the life of transportation assets.

Evaluation

Each project or program was evaluated through an initial, high-level screening based on its potential to contribute to the subregional goals and objectives under each of the six countywide Mobility Matrix themes identified in Figure ES-2. Due to the 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 **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

The preliminary performance evaluation shown in Table ES-3 represents a collaborative effort spanning many months, and incorporates input from Metro, consultants and the South Bay Cities Mobility Matrix Subregion PDT.

Table ES-3. South Bay Cities Mobility Matrix Subregion Performance Evaluation – Summary by Subprogram

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Highway/Arterial Operational Improvement Program	**67**						
Highway/Arterial Capacity Enhancement Program	26	●	◑	◔	◔	◑	○
Highway/Arterial Intersection Improvement Program	19	◑	◔	○	◔	◔	○
Highway/Arterial School-Related Safety Improvements	2	○	●	◔	○	○	◔
Highway/Arterial TSM Program	15	◑	◔	◔	◔	◔	○
Parking Restrictions Program	2	◑	◔	○	○	○	○
Regional Facilities Arterial Improvements[a]	3	◑	◑	◔	◑	○	◔
Freeway Operational Improvement Program	**40**						
I-105 Freeway Operational Improvements	2	◑	◑	○	◑	○	○
I-110 Freeway Operational Improvements	3	◑	◑	○	◑	○	○

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I-105 Freeway Operational Improvements; I-405 Freeway Operational Improvements	1	◑	◑	○	◑	○	○
I-405 Freeway Operational Improvements	10	◑	◑	○	◑	○	○
Freeway Interchange and Ramp Program	21	◑	◑	○	◑	◑	◔
Regional Facilities Freeway Improvements[a]	3	◑	◑	○	◑	◑	◔
Managed Lanes – HOV Lanes/ Express Lanes	**7**						
Express Lane Improvements	3	●	◑	◔	◑	◔	○
HOV Connectors Improvements	4	●	◑	◑	◑	◑	○
Freeway Capacity Expansion Improvements	**4**						
I-405 Freeway Capacity Improvements	3	◑	◔	○	◑	○	◔
I-710 Freeway Capacity Improvements	1	◑	◔	○	◑	○	◔

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
ITS/Communications with Motorists Program	**15**						
Freeway ITS Program	1	●	◑	◔	◑	○	○
Arterial ITS Program	10	●	◑	◔	◔	○	○
Other ITS Improvements	4	●	◑	◔	◔	○	○
Local Streets State of Good Repair	**33**						
Local Streets State of Good Repair Program	33	◑	◑	◑	◑	○	●
Bikeways Program	**54**						
Bikeways Program	54	◑	●	●	◔	◑	○
Pedestrian Program	**15**						
Pedestrian Program	15	◑	●	●	◔	◑	○
Complete Streets/ Slow Speed Lanes Program	**9**						
Complete Streets Program	8	◑	●	●	◑	●	◔
Slow Speed Implementation Program	1	●	◑	●	◔	●	○

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Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management)	**42**						
Freeway TMS Program	7	●	◑	◔	◑	○	○
Subregional Traffic Management Center	1	◑	◑	○	◔	○	○
Arterial Messaging System	1	◔	◔	○	○	○	○
Event/Emergency Management System Program	5	◔	◑	○	○	○	○
Traffic Signal Synchronization Projects	28	●	◔	◔	◔	◔	◑
Goods Movement	**5**						
Regional Goods Movement Program[a]	5	◑	◑	◔	●	○	◔
Grade Separation and Crossing Projects	**16**						
Subregional Grade Separation Program	6	●	●	◑	◑	○	◑
Grade Crossing Improvement Projects	10	●	●	◑	◑	○	◔

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Paratransit (Dial-a-Ride, Senior/Disabled)	**1**						
Paratransit Program	1	◔	○	◔	○	●	○
Metro/Municipal Transit Capacity Expansion	**22**						
Metro Harbor Subdivision/Green Line Southern Extension to Torrance and Maintenance Facility	1	●	◔	◑	◑	●	◔
Metro Harbor Subdivision/Green Line Extension from Torrance to Long Beach Blue Line	1	●	◔	◑	◑	●	○
Metro Harbor Subdivision/Green Line Extension from Torrance to San Pedro	1	●	◔	◑	◑	●	○
Automated Transit Network Program	1	NA	NA	NA	NA	NA	NA
Bus Rapid Transit Program	2	◑	○	◑	◔	●	○
Bus Expansion Program	16	◑	○	◑	◔	●	○

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Metro/ Municipal Transit Incremental Operational Costs from Capacity Expansion	**6**						
Transit Operations Program	6	◑	○	◑	◔	●	○
Metro/Municipal Transit Maintenance and Rehab	**7**						
Green Line: Miscellaneous capital and operational improvements to existing line	1	◑	○	◔	◔	○	◑
Transit Maintenance and Rehab Program	6	◑	○	◔	◔	○	●
Transit Centers/Park and Ride	**12**						
Transit Center/Park and Ride/ Multimodal Center Program	12	●	○	●	◔	●	◔
Car Sharing/Ridesharing/ Telecommuting/Vanpool Programs	**2**						
Car Sharing/Ridesharing/ Telecommuting/Vanpool Program	2	●	○	●	◔	●	○

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Sustainability SB Plan (Neighborhood-Oriented Development, 1st/Last Mile)	**11**						
First/Last Mile Program	8	●	●	●	◑	●	○
Mobility/Sustainability Education and Incentive Program	1	◔	◔	◔	○	◔	○
Neighborhood-Oriented Development Program	1	◔	◔	●	◔	◑	○
Subregional Sustainability Transportation Program	1	◑	○	●	◑	◑	○
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle)	**5**						
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle) Program	5	◑	◔	●	◑	●	○
Transportation Enhancement/ Beautification Programs	**4**						
Transportation Enhancement/ Beautification Program	4	○	◔	◔	○	○	○

[a] These projects and programs are part of the Regional Facilities list.

●High Benefit ◑Medium Benefit ◔Low Benefit ○Neutral/No Benefit – Negative Impact

Findings

The South Bay Cities Mobility Matrix addresses each of the six countywide themes:

- **Mobility.** Under the Mobility theme, high performers include: the arterial capacity improvement program, managed lanes improvements, TSM/ITS programs, slow-speed implementation program, grade separation and crossings program, Green Line extension projects, transit center/park and ride/multimodal center program, car sharing/ridesharing/telecommuting/vanpool program, and first/last mile programs. These projects and programs focus on improving local and regional mobility through the use of multimodal strategies and technology to manage system demand and reduce VMT.
- **Safety.** Projects and programs that result in the elimination or separation of traffic conflicts were given credit for helping to improve safety on a localized or corridor-specific scale; particularly those improving high-collision areas. Examples include: grade separation and crossing programs, arterial school-related safety improvements, active transportation programs, complete streets programs, and first/last mile programs.
- **Sustainability.** Due to a lack of detailed traffic and emissions modeling, roadway projects often received a neutral rating under the sustainability theme. Since the goals and objectives under the sustainability theme are based in large part on the Sustainable South Bay Strategy, programs and projects included or compatible with this plan scored well. These included: active transportation programs, complete streets/slow speed lanes program, transit center/ park and ride/multimodal center program, car sharing/ridesharing/telecommuting/vanpool programs, Sustainability South Bay Plan (neighborhood-oriented development, first/last mile) programs, and the vehicle conversion (electric vehicle, slow speed vehicle) program.
- **Economy.** The regional goods movement program scored a high (subregional) benefit for the economy theme due to its focus on improving goods movement efficiency throughout the subregion.
- **Accessibility.** The accessibility theme goals for the South Bay included increased access and connectivity to all travel modes and particularly for aging and transit-dependent populations. High performers included: complete streets/slow speed lanes program, paratransit program, Metro/municipal transit capacity expansion projects and programs, transit center/park and ride/multimodal center program, car sharing/ ridesharing/ telecommuting/ vanpool program, first/last mile program, and the vehicle conversion (electric vehicle, slow speed vehicle) program.
- **State of Good Repair.** Only two programs that focused on maintenance and preservation scored a high benefit for the State of Good Repair theme: the local state of good repair program and the transit maintenance and rehab program. However, most of the projects score Neutral/No Benefit for State of Good Repair since the majority of projects involve new infrastructure or have no need for or impact on maintenance or rehabilitation.

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 South Bay Cities Mobility Matrix Subregion cost estimate ranges by project type and implementation timeframe. For the most part, these are capital cost estimates and do not include vehicles, operating, maintenance and financing costs.

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. 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 the 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 South Bay Cities 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:

- **South Bay Cities 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.
- **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 subregions 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. South Bay Cities Mobility Matrix Summary Rough Order of Magnitude Cost Estimates and Categorizations

Type/ Category	Arterial	Goods Movement	Highway	Active Transportation	Transit	Other	Regional Facilities	Total
Short-Term (0-10 yrs)	$666M – $999M	$226M – $325M	$1.7B – $2.5B	$95M – $157M	$735M – $853M	$145M – $212M	$343M – $514M	$3.9B – $5.6B
Mid-Term (11-20 yrs)	$608M – $897M	$140M – $180M	$1.3B – $1.9B	$95M – $157M	$68M – $88M	$109M – $171M	$457M – $685M	$2.7B – $4.1B
Long-Term (>20 yrs)	$614M – $922M	NA	$1.8B – $2.7B	$95M – $157M	$2.8B – $2.9B	$55M – $82M	Under Development	$5.4B – $6.8B
Total	**Estimates for 134 out of 146 Projects $1.9B – $2.8B**	**Estimates for 6 out of 6 Projects $366M – $505M**	**Estimates for 53 out of 56 Projects $4.8B – $7.2B**	**Estimates for 65 out of 69 Projects $285M – $471M**	**Estimates for 35 out of 48 Projects $3.6B – $3.9B**	**Estimates for 27 out of 41 Projects $309M – $465M**	**Estimates for 10 out of 11 Projects $800M – $1.2B**	**Estimates for 333 out of 377 Projects $12.0B – $16.5B**

Estimated costs in 2015 dollars.

NA – Not applicable.

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. Any subregional cost sharing agreements will be determined through future planning efforts. One exception to this in South Bay Cities is the I-710 Widening and Freight Improvement Project where the cost is only being included in the Gateway Cities.

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.

1.0 INTRODUCTION

1.1 Mobility Matrix Overview

In February 2014, the Los Angeles County Metropolitan Transportation Authority (Metro) Board approved the holistic, countywide approach for preparing Mobility Matrices for the San Gabriel Valley Council of Governments (SGVCOG), Central Los Angeles, Westside Cities Council of Governments (WCCOG), San Fernando Valley Council of Governments (SFVCOG), Las Virgenes/ Malibu Council of Governments (LVMCOG), North County Transportation Coalition (NCTC), and South Bay Cities Council of Governments (SBCCOG) (see Figure 1-1). The Gateway Cities Council of Governments (GCCOG) is developing its own Strategic Transportation Plan which will serve as their Mobility Matrix. This report contains the Mobility Matrix for the South Bay Cities Mobility Matrix Subregion presented in Figure 1-2.

For the purposes of the Mobility Matrix work, 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 and City of Industry in SGVCOG rather than GCCOG.

In response to the 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.

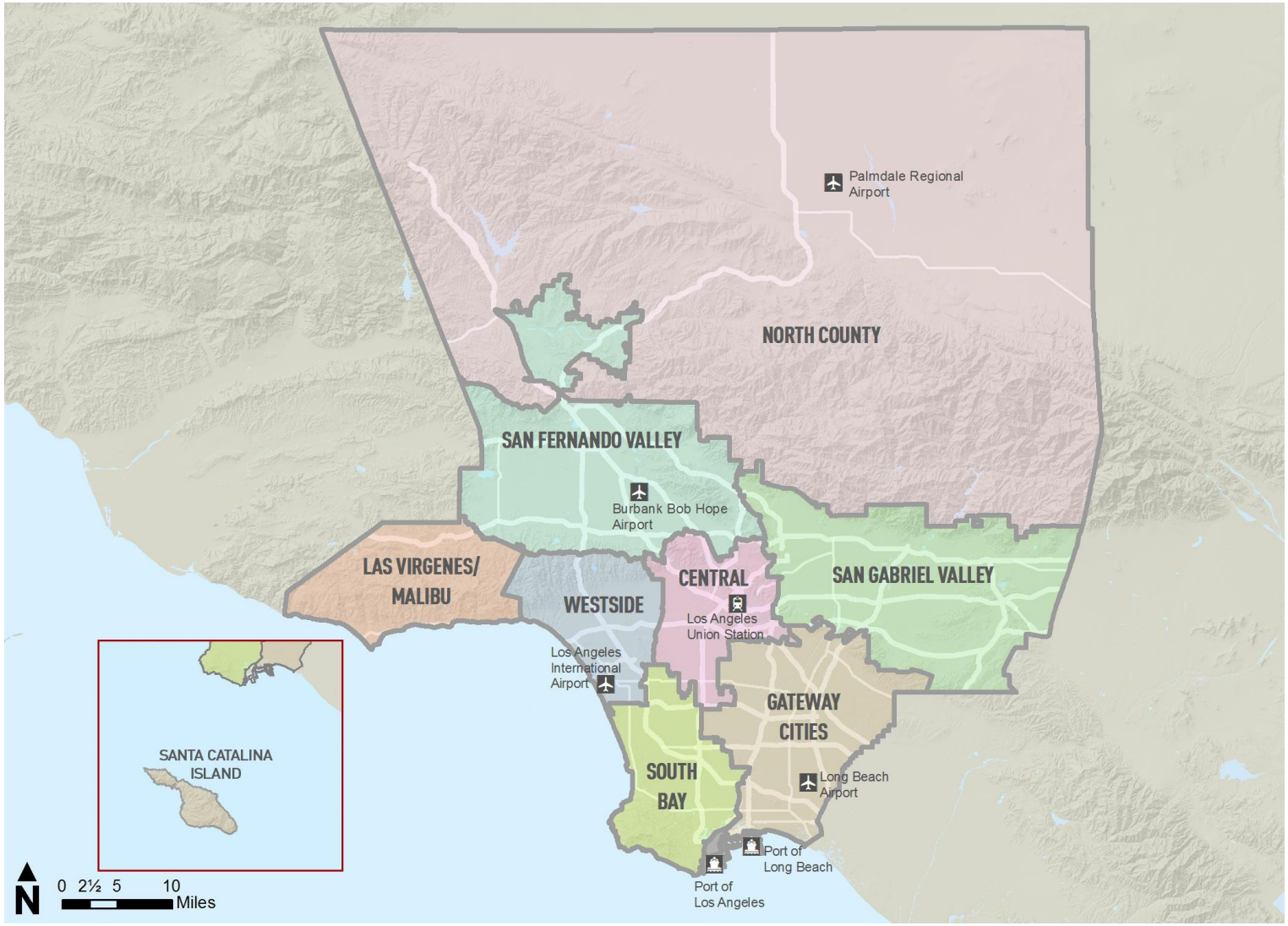
Also in January 2015, the Metro Board created the Regional Facilities category. Regional Facilities include projects and programs related to Los Angeles County's four commercial airports (Los Angeles International Airport, Burbank Bob Hope Airport, Long Beach Airport, and Palmdale Regional Airport), 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 South Bay Cities Subregional Mobility Matrix is to establish subregional transportation goals and objectives, and to identify and evaluate projects and programs that meet these goals and objectives. 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.

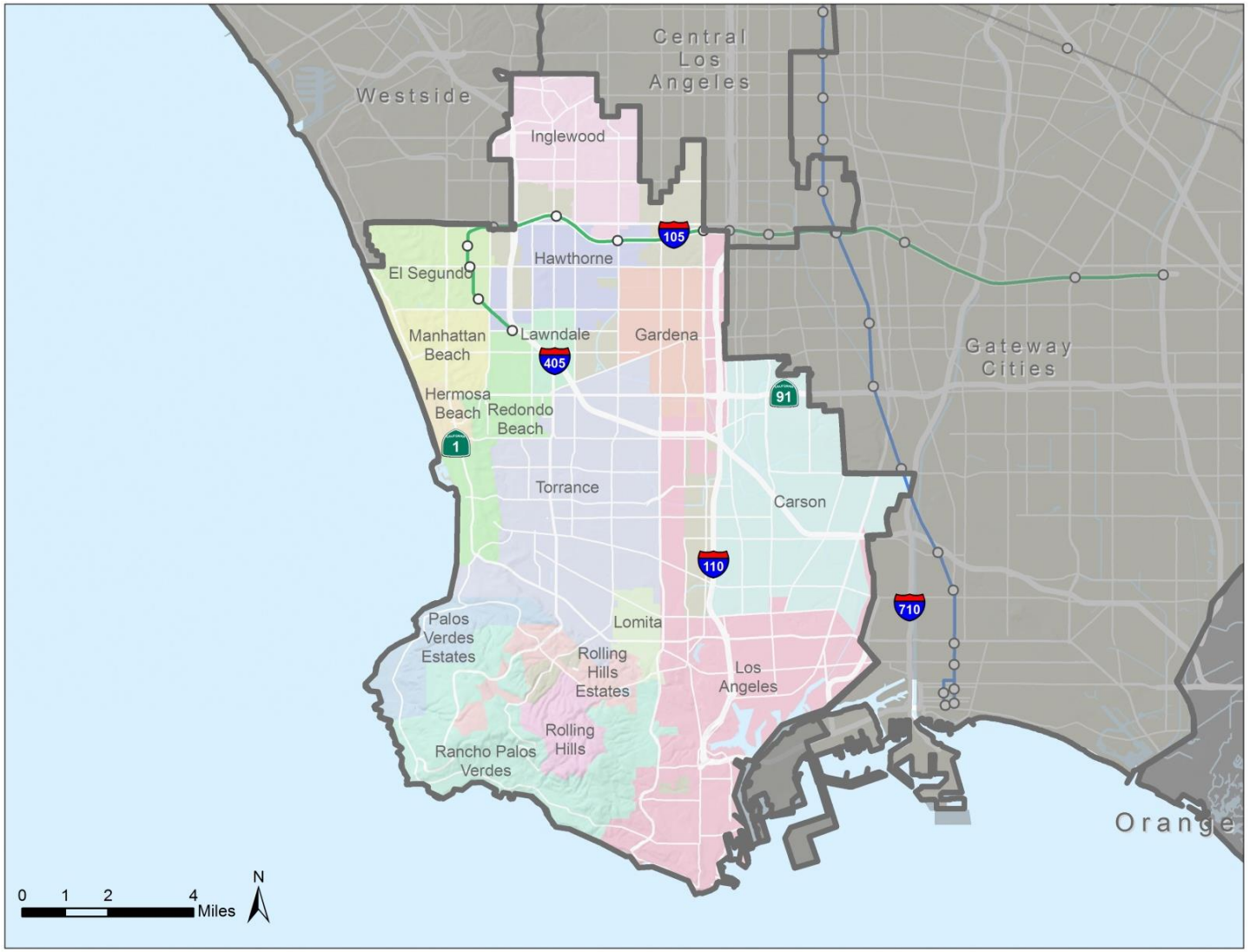
This South Bay Cities Mobility Matrix, along with concurrent efforts in other Metro subregions, includes the development of subregional goals and objectives to guide future transportation investments, an assessment of baseline transportation system conditions to identify critical needs and deficiencies, and an initial screening of projects and programs based on their potential to address subregional objectives and countywide performance themes.

Figure 1-1. Los Angeles County Mobility Matrix Subregions



Source: STV, 2015.

Figure 1-2. South Bay Cities Mobility Matrix Subregion



Source: Cambridge Systematics, 2015.

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

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 South Bay Cities PDT consisted of representatives from the following jurisdictions and stakeholder agencies:

- SBCCOG
- City of El Segundo
- City of Inglewood
- City of Los Angeles
- City of Redondo Beach
- City of Torrance
- Beach Cities Transit
- Gardena Transit
- Palos Verdes Transit Authority
- Torrance Transit
- Los Angeles County Department of Public Works
- Southern California Association of Governments (SCAG)
- California Department of Transportation (Caltrans)

The South Bay Cities PDT met six times over the eight-month study period to guide the creation of strategic goals and objectives, determine 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. 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 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 time frames.** 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 21st 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 South Bay Cities 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 South Bay Cities.
- Chapter 4.0 – Subregional Mobility Matrix. An initial evaluation of subregional priority projects and programs.
- Chapter 5.0 – Implementation Timeframes and Cost Estimates. An initial categorization of project and program implementation, including short-, mid- and long-term investment needs, as well as what the subregion foresees as its next steps.
- Appendices – Includes a log of the PDT and outreach process; methodology memorandums; a full project list; the Baseline Conditions Report; and funding and finance.

2.0 SUBREGIONAL OVERVIEW

The South Bay Association formally became a Council of Governments (SBCCOG) in 1994. Its members are the cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Los Angeles (Harbor Gateway/San Pedro areas), Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance, and unincorporated areas of Los Angeles County. The SBCCOG mission is to provide a leadership forum for South Bay local governments to act collaboratively and advocate for subregional issues with a focus on improving transportation and the environment, and strengthening economic development. The South Bay Cities are 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 South Bay Cities. 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), Local Use Vehicle (LUV) travel, and motor vehicle and truck collisions;
- **Transit.** Transit mode share, rail transit including weekday boardings, and bus routes; and
- **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 South Bay Cities study area, including but not limited to:

- Population and employment are expected to rise in the South Bay Cities study area by seven and five percent increases, respectively, over the next decade. This growth is on par with the average growth forecast for all of Los Angeles County.
- Over 65 percent of the study area's vehicle trips occur within the South Bay and average less than seven minutes in driving time. The largest subregion travel markets are Gateway Cities, Central Los Angeles, and Westside, and average travel times for these range from 21 to 26 minutes, respectively. Total vehicle trips are forecasted to grow by 3.4 percent by 2024.

- There are approximately 75 bus routes that serve the South Bay study area, but transit ridership is still below county average at 5.3 percent. This is likely due to the limited rail network and bus level of service (low frequency, limited weekend service, etc.).
- Overall vehicle collisions have steadily decreased over the last several years. Collisions involving pedestrians have fallen, while collisions involving trucks and bicyclists have risen.

The following sections summarize the results of the South Bay Cities Mobility Matrix baseline conditions analysis.

2.1 Land Use and Demographics

The South Bay Cities Mobility Matrix Subregion features diverse land use and demographics.

2.1.1 Land Use

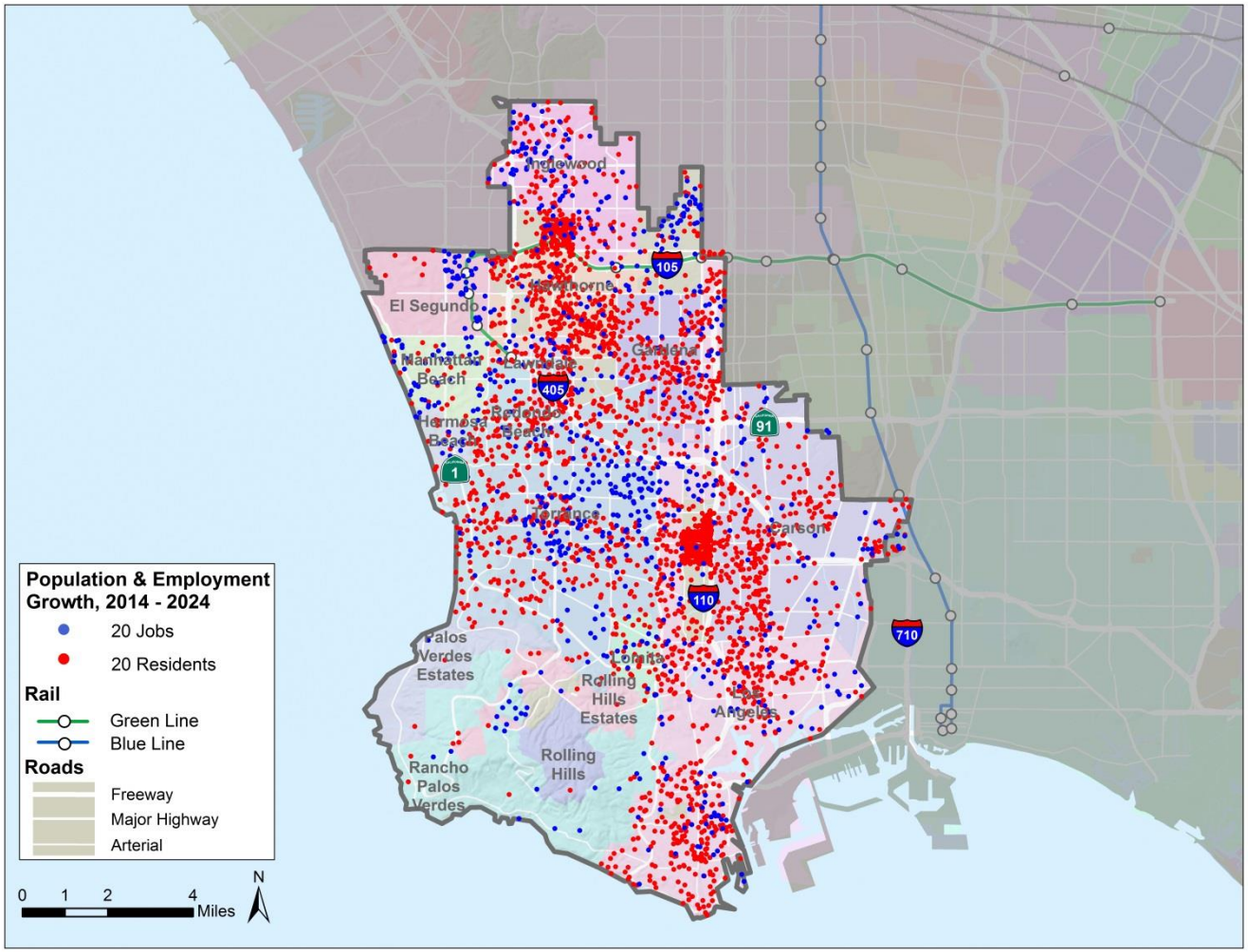
The majority of the study area is zoned residential, followed by significant industrial and some commercial activity. The south and west regions are predominantly residential including Manhattan Beach, Hermosa Beach, Redondo Beach, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates. Industrial uses are found mostly near the Port of Los Angeles and Carson, but there are also large concentrations in El Segundo, Torrance, Gardena, and Hawthorne. Commercial uses are concentrated along primary arterials such as Rosecrans Avenue, Artesia Boulevard, Redondo Beach Boulevard, Hawthorne Boulevard, Western Avenue, and Pacific Coast Highway.

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 South Bay Cities Mobility Matrix Subregion is expected to grow from about one million residents in 2014 to more than 1.1 million by 2024, an increase of seven percent. Employment in the study area is expected to grow by five 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 City of Los Angeles has the largest expected population growth in the subregion at 16 percent, adding an additional 10,000 people. Unincorporated areas (10 percent) and Carson (8 percent) follow, both above the county average of 7 percent. Los Angeles is estimated to add an additional 8,000 jobs (26 percent). Manhattan Beach follows with 7 percent and most other cities are estimated to grow around 5 percent, which is the county average.

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



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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 South Bay, compared to the Los Angeles County average. In 2012, six of the 16 cities were above Los Angeles County's minority average. The cities vary greatly in ethnic make-up with highest minority populations in Carson at 92.9 percent and lowest in Manhattan Beach at 21.3 percent.

Overall, the South Bay Cities Mobility Matrix Subregion has a lower population percentage living under poverty levels than the county average. In 2012, only three of 16 cities, Hawthorne, Inglewood and Los Angeles, were above Los Angeles County's 17.1 percent poverty average.

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 South Bay, higher risk areas are centralized in the north and east, including the cities of Carson, Hawthorne, Inglewood, and Los Angeles. These same areas contain high transit-dependent populations.

Table 2-1. Summary of Ethnic and Economic Characteristics

City	Percentage Total Minority[a]	Median Household Income	Percentage Population Living below Poverty Level
Carson	92.9%	$71,653	8.5%
El Segundo	30.8%	$86,364	4.2%
Gardena	91.0%	$50,148	14.3%
Hawthorne	88.7%	$44,906	18.9%
Hermosa Beach	21.6%	$100,696	3.5%
Inglewood	96.4%	$44,558	20.1%
Lawndale	83.1%	$48,727	16.7%
Lomita	63.4%	$62,899	11.3%
Los Angeles	79.3%	$45,331	20.5%
Manhattan Beach	21.3%	$134,445	2.9%
Palos Verdes Estates	26.6%	$152,068	2.8%
Rancho Palos Verdes	43.5%	$119,778	4.0%
Redondo Beach	36.7%	$98,816	5.9%
Rolling Hills	32.3%	$213,906	1.0%
Rolling Hills Estates	34.9%	$153,986	2.4%
Torrance	59.3%	$76,082	7.4%
Unincorporated	54.8%	$97,269	8.3%
Los Angeles County	72.2%	$56,241	17.1%

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

[a] Minority Population calculated as: Total Population – Population that is White Alone, Not Hispanic or Latino

^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 South Bay Cities 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 South Bay study area produces about 4.5 million trips, while attracting 4.2 million trips. More than 60 percent of the trips stay within the South Bay Cities Subregion. The South Bay's largest subregional travel market is the Gateway Cities featuring 906,800 two-way person-trips on an average weekday, followed by Central Los Angeles (583,730) and Westside (543,700).

2.2.2 Commute Travel Modes

Table 2-2 presents South Bay Cities commute travel mode share by jurisdiction alongside the county average. The motor vehicle is the travel mode of choice for more than 86.4 percent of the study area's commuters. Slightly more drive alone (76.1 percent) and slightly less carpool (10.3 percent) than the Los Angeles County averages. A variety of factors (e.g., transit options, service frequency and hour limitations, land uses, etc.) make transit and active transportation alternatives more difficult for South Bay residents than others in the Los Angeles basin. There is a significant bus mode share at 5.3 percent, although it falls below the countywide average of 6.5 percent.

Table 2-2. 2012 Commute Travel Mode Share

Commute Mode	South Bay Study Area	LA County Average
Drive Alone	76.1%	72.4%
Carpool	10.3%	10.5%
Bus	5.3%	6.5%
Rail Transit (Metro)	0.1%	0.7%
Railroad (Metrolink)	0.1%	0.2%
Bicycle	0.7%	0.9%
Walk	1.9%	2.9%
Work at Home	4.1%	5.0%
Other[a]	1.3%	0.01%

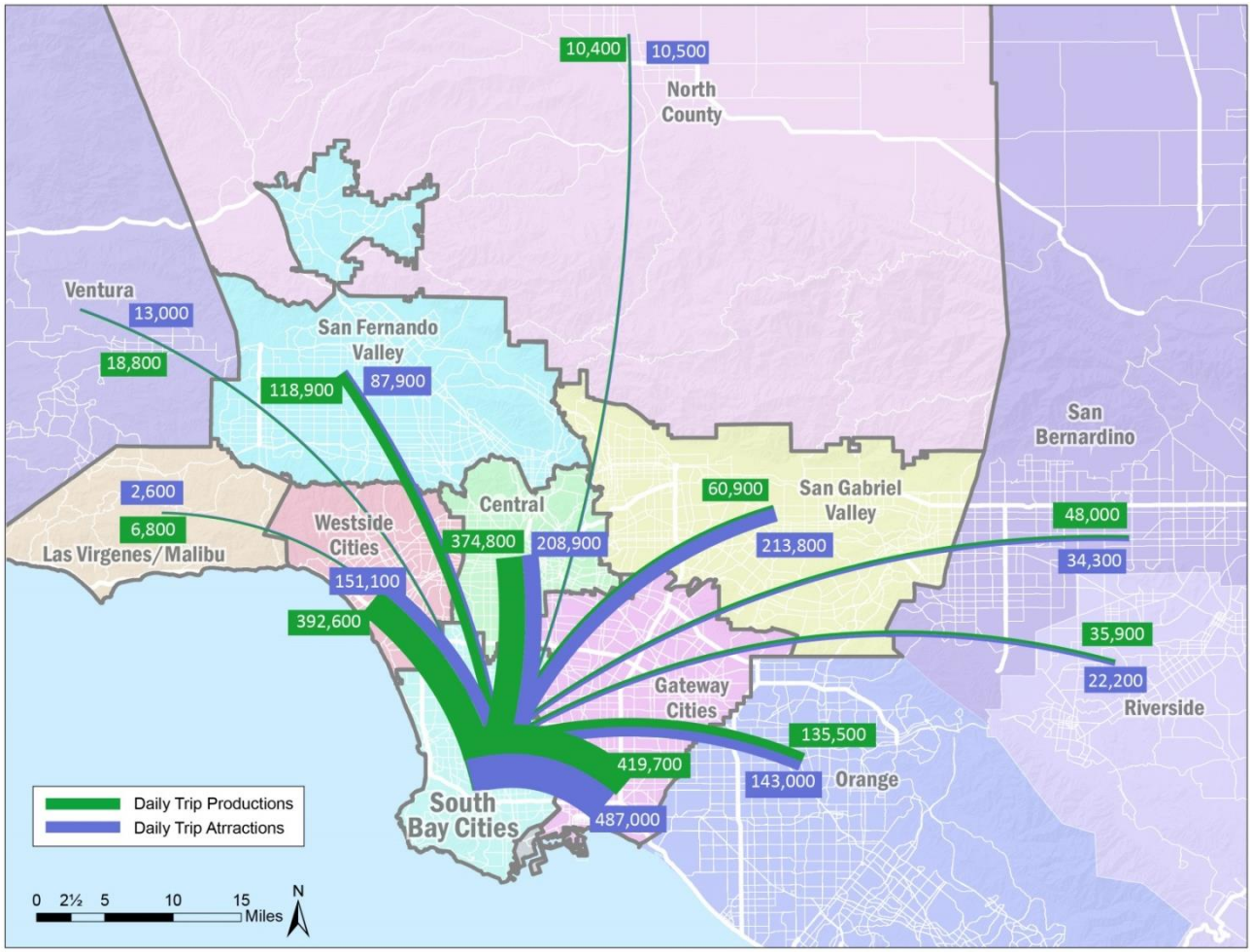
[a] Motorcycle, taxi, and ferry.

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

2.2.3 Passenger Vehicle Travel Demands

Table 2-3 provides an estimate of average weekday vehicle travel both to and from the South Bay Cities study area and neighboring Mobility Matrix subregions in 2014, and forecasted growth by 2024. In 2014, over five million vehicle trips either originate or terminate in the study area and about 65 percent occur entirely within the South Bay Cities. Between 2014 and 2024, vehicle trips in the study area are expected to grow by about 3.4 percent (an additional 180,800 trips each weekday).

Figure 2-2. 2014 Average Daily Trips to/From South Bay Cities 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 South Bay Cities Mobility Matrix Subregion, 2014 to 2024

Subregion	2014 Vehicle Trips	2024 Vehicle Trips	Δ Trips (2014-2024)	% Growth
Within South Bay	3,465,600	3,579,600	114,000	3%
Central Los Angeles	337,600	351,500	13,900	4%
Gateway Cities	582,800	607,500	24,700	4%
North Los Angeles	12,500	13,300	800	6%
San Fernando Valley	120,600	124,800	4,200	3%
San Gabriel Valley	152,300	158,300	6,000	4%
Las Virgenes/Malibu	6,000	6,300	300	5%
Westside Cities	347,100	355,400	8,300	2%
Ventura Co	15,100	15,500	400	3%
Orange	165,300	169,900	4,600	3%
Riverside	26,400	27,800	1,400	5%
San Bernardino	35,900	38,000	2,100	22%
Total	**5,267,200**	**5,448,000**	**180,800**	**3.4%**

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 about 266,000 vehicle trips travel through the study area on an average weekday (origins and destinations are outside of the South Bay study area, but they pass through). By 2024, the Model forecasts an eight percent growth in vehicle through trips, or about 288,000 vehicle trips passing through the study area each weekday.

2.3 Vehicle Travel

The South Bay Cities Mobility Matrix Subregion contains five primary highways:

- I-405. The central north-south freeway that travels through the heart of the South Bay;
- I-110. This north-south freeway runs down the eastern border of the South Bay. To the north, it connects to Central Los Angeles;
- I-105. An east-west freeway near the northern border of the South Bay and connects to Gateway Cities subregion;
- SR-91. An east-west highway that extends to the eastern edge of Gardena and connects to Gateway Cities; and
- SR-1/Pacific Coast Highway (PCH). A north-south highway near the western edge that also runs east-west into Long Beach.

The study area consists of about 100 linear miles of major arterials, 10 major north-south arterials and 15 major east-west arterials, including critical routes for regional goods movement.

Figure 2-3 shows primary arterials in the region as captured in the Countywide Strategic Arterials Network (CSAN), as amended by subregional stakeholders through the Metro Congestion Management Program (CMP). The South Bay 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. In addition, the

South Bay Cities has been actively involved in the Regional Traffic Signal Forum Program since 1995 which has implemented Traffic Signal Synchronization and Intelligent Transportation Systems (ITS) throughout the subregion.

In addition, as part of the Sustainable South Bay Strategy, the SBCCOG has been working with its member agencies to demonstrate the use of a variety of Local Use Vehicles (LUV) to reduce greenhouse gas emissions, air pollution, and gasoline consumption in the subregion. Since many of the trips taken by South Bay residents and businesses are short, they can be served by using low or zero emission local use vehicles that are small, short range and low speed (e.g., Neighborhood Electric Vehicles (NEV), Battery Electric Vehicles (BEV), Plug-in Hybrid Electric Vehicles (PHEV), etc.). There were six vehicles in Local Use Vehicle program and five in the Battery Electric Vehicle phase. LUVs typically travel at speeds of 25 miles per hour (MPH) or less and can be driven legally on streets with a posted speed limit of 35 MPH or less. They may cross streets with higher speed limits at signalized intersections. Figure 2-5 presents the LUV roadway network in the study area.

2.3.1 Driving Times

Table 2-4 presents vehicle hours traveled and average trip times between the South Bay 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 South Bay Cities 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.

Vehicle trips occurring entirely within South Bay Cities are generally short, averaging below 7 minutes in duration. Average travel times to the three largest travel markets of the South Bay are 21 minutes (Gateway Cities), 25 minutes (Central Los Angeles), and 26 minutes (Westside). Overall, trip lengths within the study area average about 18 minutes.

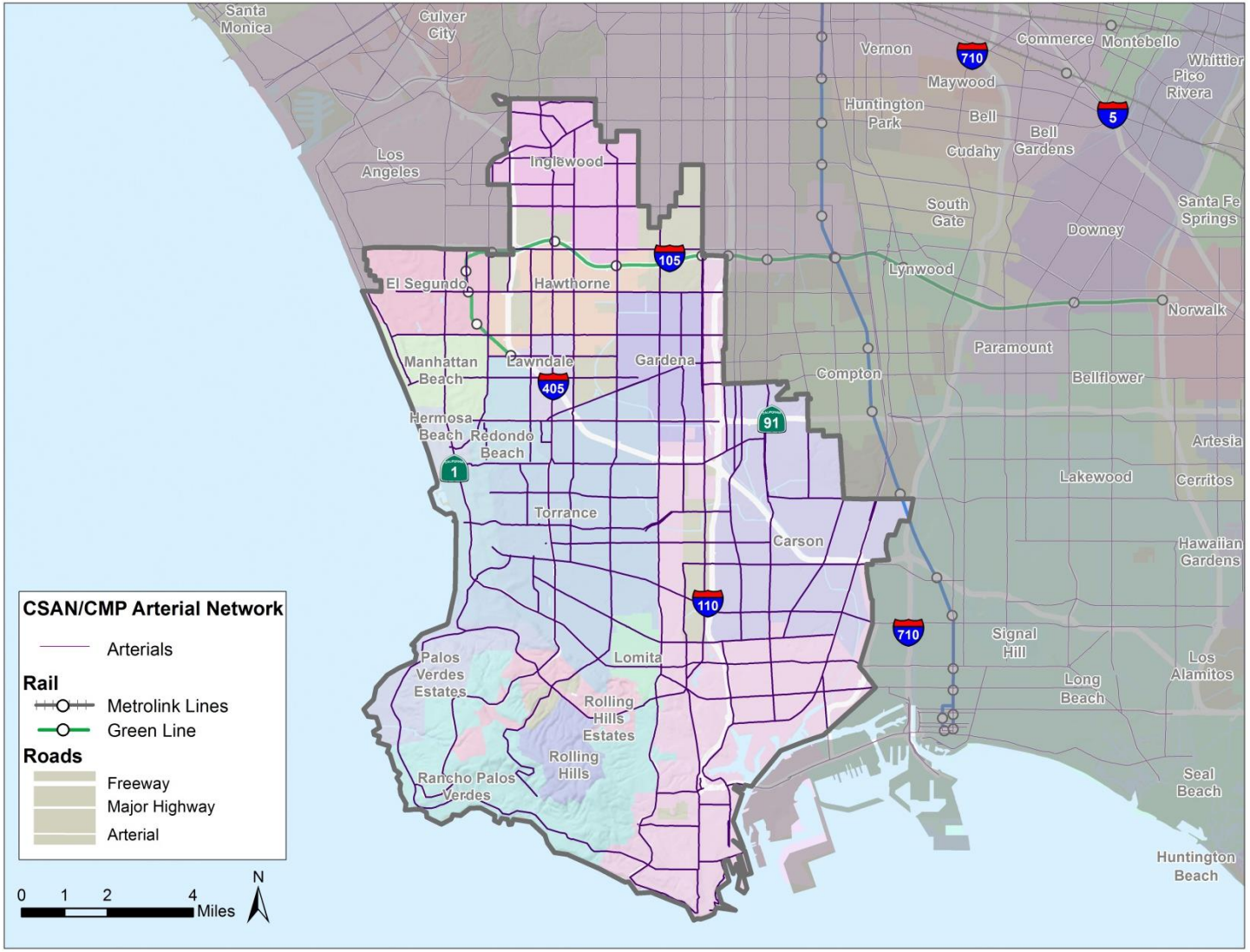
Table 2-4. Peak-Period Vehicle Hours of Travel and Average Trip Time, 2014

Subregion or County	Vehicle Hours of Travel	Average Trip Time (Minutes)
Central Los Angeles	145,670	25
Gateway Cities	200,883	21
North County	29,269	137
San Fernando Valley	145,550	73
San Gabriel Valley	166,928	61
Malibu/Las Virgenes	8,916	93
Within South Bay	190,592	7
Westside	165,719	26
Ventura County	30,271	121
Orange County	158,763	57
Riverside County	57,856	134
San Bernardino County	66,836	113
Total/Average	**1,367,253**	**18**

Source: Metro 2014 SRTP.

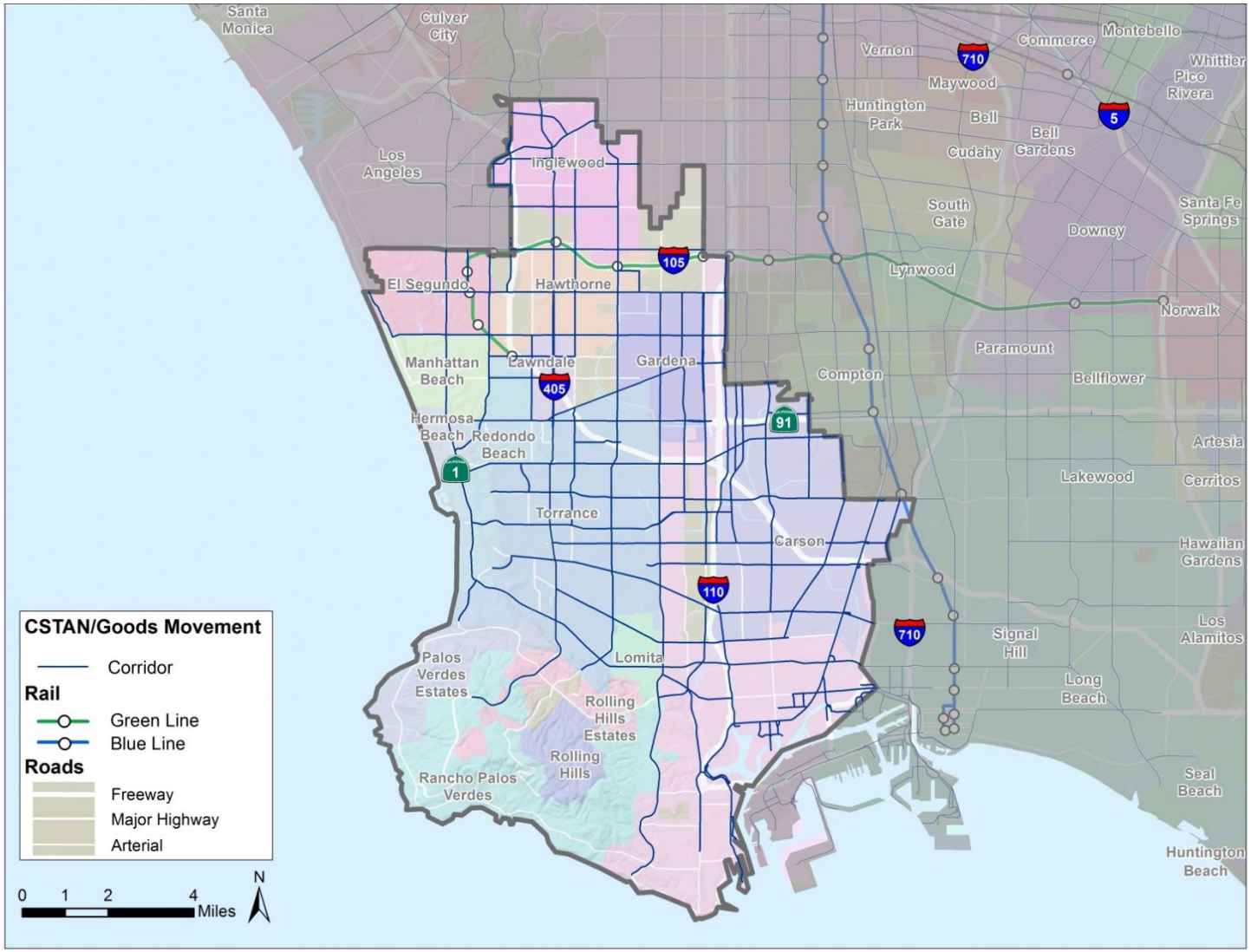
Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009 Metro Long Range Transportation Plan (LRTP) subregional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

Figure 2-3. CSAN/CMP Network of Regionally Significant Arterials in South Bay Cities Mobility Matrix Subregion



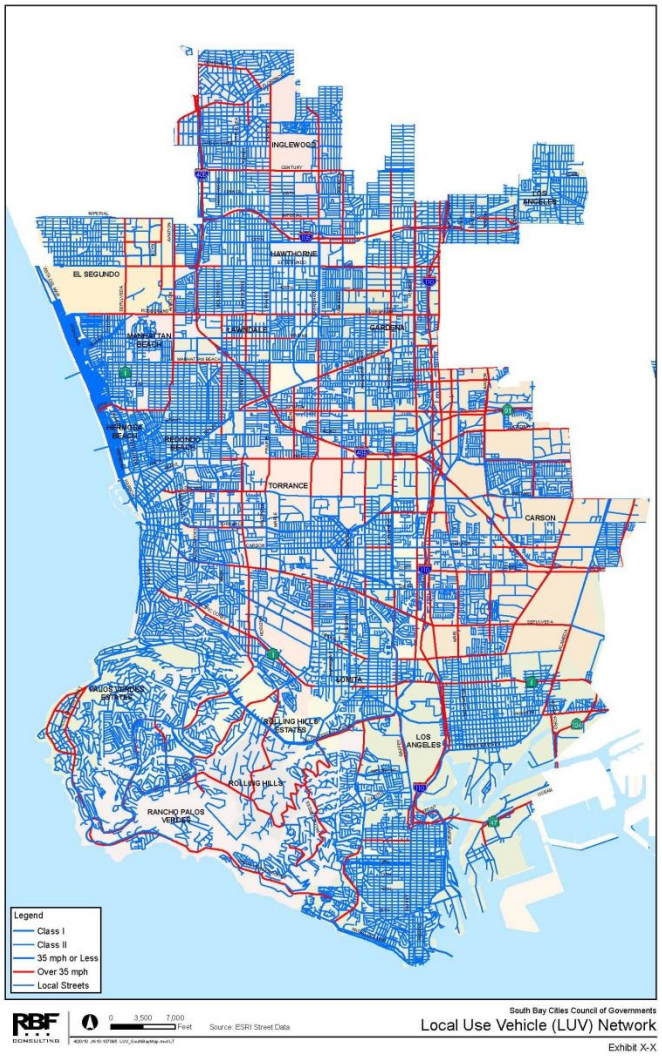
Source: Metro, 2014.

Figure 2-4. Draft Countywide Strategic Truck Arterial Network in South Bay Cities Mobility Matrix Subregion



Source: Metro, 2014.

Figure 2-5. Local Use Vehicle (LUV) Network



Source: SBCCOG, 2011.

2.4 Active Transportation

Bicycle infrastructure in the South Bay Cities Mobility Matrix Subregion includes a range of facilities from shared roads to bike paths. 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 South Bay Cities share a common vision of building upon and expanding active transportation facilities and improving access to transit and activity centers for nonmotorized modes. The overall goal is to encourage residents to walk, bike, or take transit rather than drive. The Sustainable South Bay Strategy involves an increasing reliance on a robust bundle of mobility services plus zero emission private vehicles, including those specialized for inter-neighborhood trips at slow speeds. The strategy also supports active transportation options. In addition, the South Bay Bicycle Coalition advocates to increase cycling access and create a safe environment for kids to bike to school and a comprehensive network that supports bicycle commuters.

Together, bicycling and walking currently represent approximately 2.6 percent of all commute trips in the study area.

2.5 Transit

The South Bay Cities Mobility Matrix Subregion features rail service by Metro and a diverse set of local, rapid, and express bus services from several providers. A variety of factors (e.g., few transit options, long headways, limited hours, land uses, etc.) make transit alternatives more difficult for South Bay residents than other areas in the Los Angeles basin. Transit commute trips account for 5.4 percent of regional commute trips, lower than the county average of 7.2 percent.

The Metro Green Line is the primary rail transit serving the South Bay study area (see Figure 2-6 for passenger rail service within the study area). The rail line has stops in Vermont/Athens (unincorporated area), Hawthorne, El Segundo, and reaches the end of the line in Redondo Beach. Service runs daily with Friday and Saturday service extended until 2:00 a.m. Frequency ranges from six to eight minutes during peak hours and every 20 minutes during off-peak hours.

In addition, a short portion of the Metro Blue Line which runs between Los Angeles and Long Beach travels through the City of Carson.

There are eight primary bus service providers in the study area with approximately 75 routes (see Figure 2-6). The most extensive bus network is provided by Metro, with 36 lines serving the South Bay and connecting the subregion to the rest of the county. These lines include the Silver Line Bus Rapid Transit (BRT) corridor.

The City of Los Angeles Department of Transportation (LADOT) operates the following routes:

- **Commuter Express.** Financial District to Redondo Beach, Hermosa Beach, Manhattan Beach, El Segundo, Rancho Palos Verdes, and Rolling Hills Estates

- **Commuter Express.** Long Beach to Los Angeles (San Pedro)
- **DASH.** Local bus in Los Angeles (San Pedro)

The following list describes key municipal bus transit systems offered in the South Bay study area:

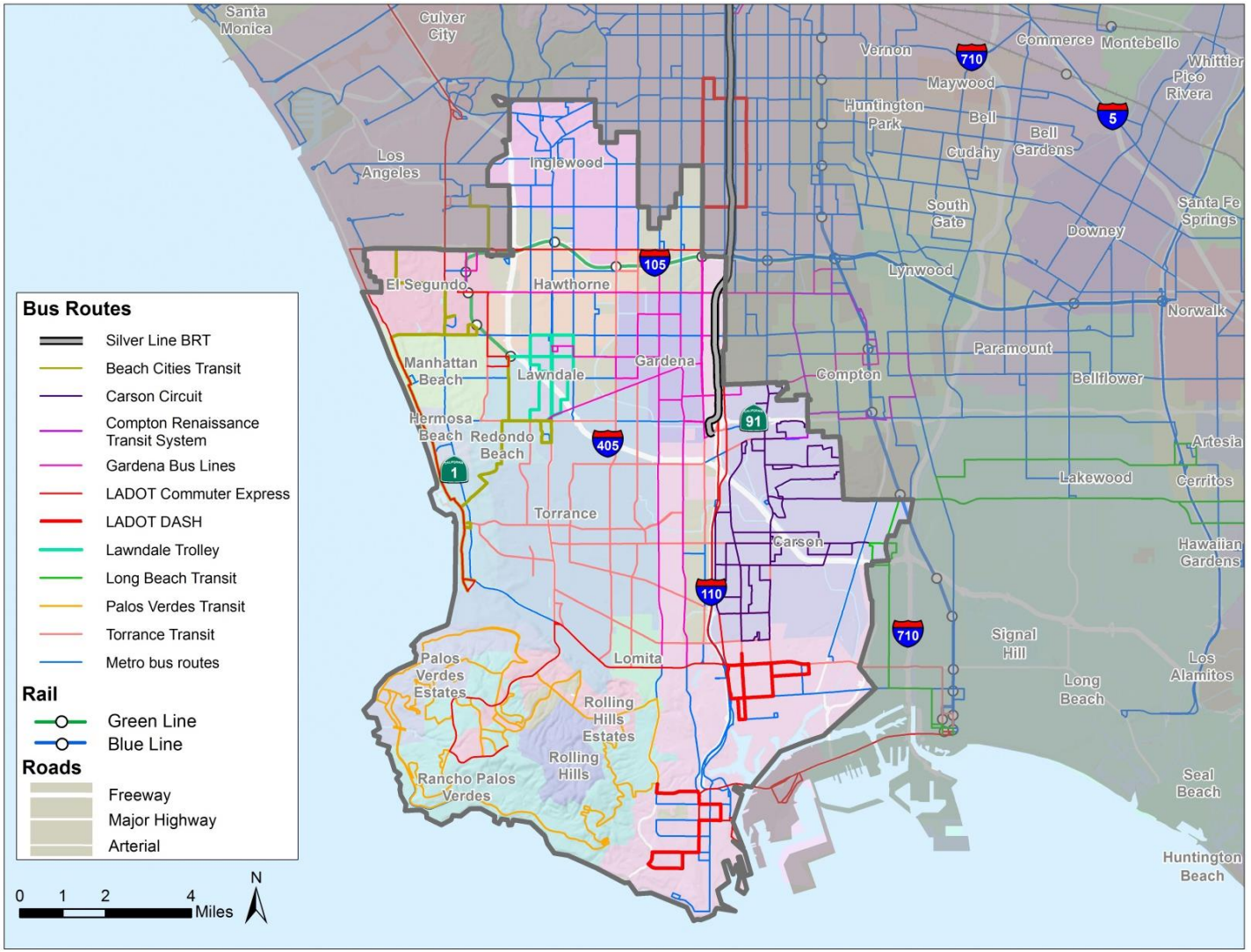
- **Beach Cities Transit.** Two local routes serving Redondo Beach, Hermosa Beach, Manhattan Beach, El Segundo, and Torrance with connections to the Metro Green Line and LAX
- **Carson Circuit Transit.** Eight local routes with connections to Torrance, Gardena, Long Beach and Metro Blue Line
- **Gardena Municipal Bus Lines.** Four local routes with connections to Hawthorne Compton, LAX, and the Metro Green Line. One limited-stop route to downtown Los Angeles.
- **Lawndale Beat.** One residential local route and one express route with connections to Metro Green Line
- **Palos Verdes Peninsula Transit.** Nine local routes serving Palo Verdes Estates, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates
- **Torrance Transit.** Ten lines in South Bay including one limited-stop rapid line with connections to Carson, downtown Los Angeles, Long Beach, the Metro Green Line, and LAX

There are a few additional routes that briefly enter the edge of the study area. Long Beach Transit connects Long Beach to Los Angeles. Compton Renaissance System connects Compton to Carson. Metro bus routes 102 and 204 also briefly travel through the South Bay study area.

Some other bus transit services in the study area include:

- **Amtrak Bus Service.** Serves San Pedro several times a day from Bakersfield via Union Station in Los Angeles
- **Access Services.** The American with Disabilities Act (ADA) complementary paratransit service for functionally disabled individuals in Los Angeles County
- **Dial-A-Ride.** A variety of dial-a-ride services in the South Bay offer curb-to-curb paratransit service for the disabled and seniors
- **San Pedro Downtown Trolley.** A free rubber tired trolley that serves downtown San Pedro and the San Pedro Waterfront

Figure 2-6. Transit Service in the South Bay Cities Mobility Matrix Subregion



Source: Metro, 2014.

3.0 GOALS AND OBJECTIVES

This chapter describes the goals and objectives of the South Bay Cities Mobility Matrix Subregion. The goals are consistent with the county's overall goals framework, which consists of six broad themes common among all the subregions. The goals also reflect the subregion's priorities, and are based on relevant city, county, and regional planning documents, such as the South Bay Cities Strategic Plan and the Sustainable South Bay Land Use and Transportation Strategy; as well as discussions with subregional stakeholders.

3.1 Mobility Matrix Themes

Six themes guided 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.

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

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

MAP-21 calls for a renewed focus on ensuring transportation infrastructure is maintained in good condition. The federal bill includes national performance measures for interstate highway conditions, and a requirement that state and metropolitan plans indicate how project selection helps achieve 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 it also highlights projects and programs that help Los Angeles County achieve its countywide goal of maintaining a state of good repair on transportation infrastructure.

3.2 Subregional Priorities

The PDT was asked to consider the six Mobility Matrix themes and develop goals and objectives for each theme, which reflected subregional priorities. 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 South Bay Cities Mobility Matrix Subregion goals and performance measures for each goal.

Table 3-1. South Bay Cities Mobility Matrix Subregional Transportation Priorities

Theme	Subregional Transportation Priorities
Mobility	• A primary goal of the South Bay is to reduce traffic congestion and improve overall local and regional mobility and access to destinations. Connecting neighborhoods is a priority, since much of the South Bay travel is short-distance trips within the subregion. • The South Bay transportation investments should establish and implement projects, strategies, and programs that manage system demand through the appropriate use of existing and emerging technology applications and multimodal improvements (e.g., pedestrian, bicycle, transit, local use vehicles (LUV), mixed-use and slow-speed lanes, high-occupancy vehicles (HOV) lanes, system management/intelligent transportation systems (ITS), and parking management). • Reducing vehicle miles traveled (VMT) is a priority for the South Bay to serve the future mobility needs of the subregion.
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. • There is a desire to improve safety for and between all modes of travel, particularly for alternative transportation modes (e.g., slow-speed travel corridors/lanes).
Sustainability	• State law requires and the South Bay strongly supports plans to reduce toxic emissions and decrease VMT. This can be accomplished through the development of programs, projects, and policies, which provide infrastructure and incentives that lead to a higher percentage of travel that is zero or low emissions. • There is a desire to foster the development of neighborhoods where walking, bicycling, and non-polluting local use vehicles (LUV) are the primary modes of travel. This needs to be coupled with incentives and partnerships that encourage investment in facilities and services (e.g., car sharing/bike sharing) to meet residents' needs to drive out of the neighborhood or to access other transportation facilities and services. • An objective of the South Bay Cities is to invest in innovative transportation improvements to meet current and emerging sustainability needs. • The South Bay supports livable communities and complete streets, where appropriate.
Economy	• The South Bay is interested in projects, programs, and strategies that link transportation, land use, and economic development in a way that addresses existing livability/sustainability goals, fosters innovation, incentives and partnerships, and positions the region for future economic opportunities. • It is important to the South Bay that transportation projects, programs, and strategies address existing and future needs and funding, and is flexible to accommodate changes to transportation needs and priorities. • It is a priority to make every effort to ensure that transportation projects, programs, and strategies are managed and delivered efficiently and cost-effectively to yield maximum benefits and return on investments. • There is a need to improve and maintain the infrastructure that serves the subregion's facilities and the region's role in global logistics.

Theme	Subregional Transportation Priorities
Accessibility	• Transportation options, access, and connectivity is a priority for the subregion (e.g., first/last mile connections, slow-speed facilities, etc.). • Safe, personal transportation such as slow speed lanes for neighborhood use vehicles for the transit-dependent and growing population of seniors in the South Bay is a priority.
State of Good Repair	• There is a high priority in the subregion to preserve the existing transportation investments and maintain the transportation system in overall good condition. The coordination of repairs and improvements with other agencies is critical to ensure the value of investments. • The South Bay wants to implement projects and programs that extend the life of existing and future transportation assets.

Table 3-2. Goals and Performance Measures for the South Bay Cities Mobility Matrix Subregion

Theme	Goals	Performance Metrics
Mobility	• Improve local (neighborhood) and regional mobility and access • Manage system demand through multimodal strategies and technology • Reduce VMT	• Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit & active modes • Improve reliability • Reduce VMT
Safety	• Improve travel reliability and reduce traffic conflicts • Reduce serious injury accidents and fatalities	• Reduce incidents • Improve personal safety
Sustainability	• Provide infrastructure and incentives to support low and zero emissions mobility modes • Promote neighborhood-serving development, integrated with emerging technology and private sector services • Advance innovative public and private sustainable transportation projects, programs, and strategies • Improve quality of life	• Reduce GHG • Reduce VMT • Improve quality of life • Increase plug-in vehicle density • Innovative sustainable private improvements • Neighborhood serving development
Economy	• Foster innovation and promote sustainable economic development and job growth • Ensure transportation investments serve changing mobility and sustainability priorities • Deliver projects efficiently and cost-effectively • Improve goods movement efficiency	• Increase economic output • Job creation & retention • Foster innovation • Goods movement efficiency

Theme	Goals	Performance Metrics
Accessibility	• Promote increased access and connectivity to all travel modes • Provide access for aging and transit-dependent populations	• Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections
State of Good Repair	• Maintain transportation facilities and assets in overall good condition • Extend useful life of transportation facility or equipment	• Extend life of facility or equipment • Maintain in good condition

4.0 SUBREGIONAL MOBILITY MATRIX

An initial South Bay Cities 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. The project and program list was then updated through the outreach process to incorporate input from the PDT members and other subregion stakeholders. In addition, there was coordination among adjacent subregions in the development of the project/program list. 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 with wider subregional and regional impacts.

This chapter summarizes the transportation needs of the South Bay Cities 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 377 projects and programs were identified for the South Bay Cities Subregion. The projects and programs are divided into 21 transportation improvement types identified by the SBCCOG. 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 21 transportation improvement types include:

- Highway/Arterial Operational Improvement Program;
- Freeway Operational Improvement Program;
- Managed Lanes – HOV Lanes/ Express Lanes;
- Freeway Capacity Expansion Improvements;
- ITS/ Communications with Motorists Program;
- Local Streets State of Good Repair;
- Bikeways Program;
- Pedestrian Program;
- Complete Streets/Slow Speed Lanes Program;
- Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management);
- Goods Movement;
- Grade Separation and Crossing Projects;
- Paratransit (Dial-a-Ride, Senior/Disabled);
- Metro/ Municipal Transit Capacity Expansion;
- Metro/Municipal Transit Incremental Operational Costs from Capacity Expansion;
- Metro/Municipal Transit Maintenance and Rehab;
- Transit Centers/Park and Ride;
- Car Sharing/Ridesharing/Vanpool/Telecommuting Programs;

- Sustainability SB Plan (Neighborhood-Oriented Development, First/Last Mile);
- Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle); and
- Transportation Enhancement/ Beautification Programs.

The South Bay Cities Mobility Matrix project list includes a wide variety of transportation improvements that are consistent with the priorities identified in Chapter 3.0. The list includes projects and programs that manage system demand through the appropriate use of existing and emerging technology applications and multimodal improvements. These include high-occupancy vehicle (HOV) lanes, transportation system management (TSM)/ intelligent transportation systems (ITS), bicycle and pedestrian improvements, transit, local use vehicles (LUVs), mixed-use and slow-speed lanes, and parking management.

Projects and programs that support the goal of reducing traffic congestion and improving local and regional mobility include freeway and arterial widenings and operational improvements, and rail and bus service expansions. Also included are projects, programs, and strategies that link transportation, land use, and economic development in a way that addresses existing livability/sustainability goals, fosters innovation, incentives and partnerships, and positions the region for future economic opportunities (e.g., sustainability plans and programs, goods movement projects, car and bicycle sharing programs, first/last mile improvements, and complete streets).

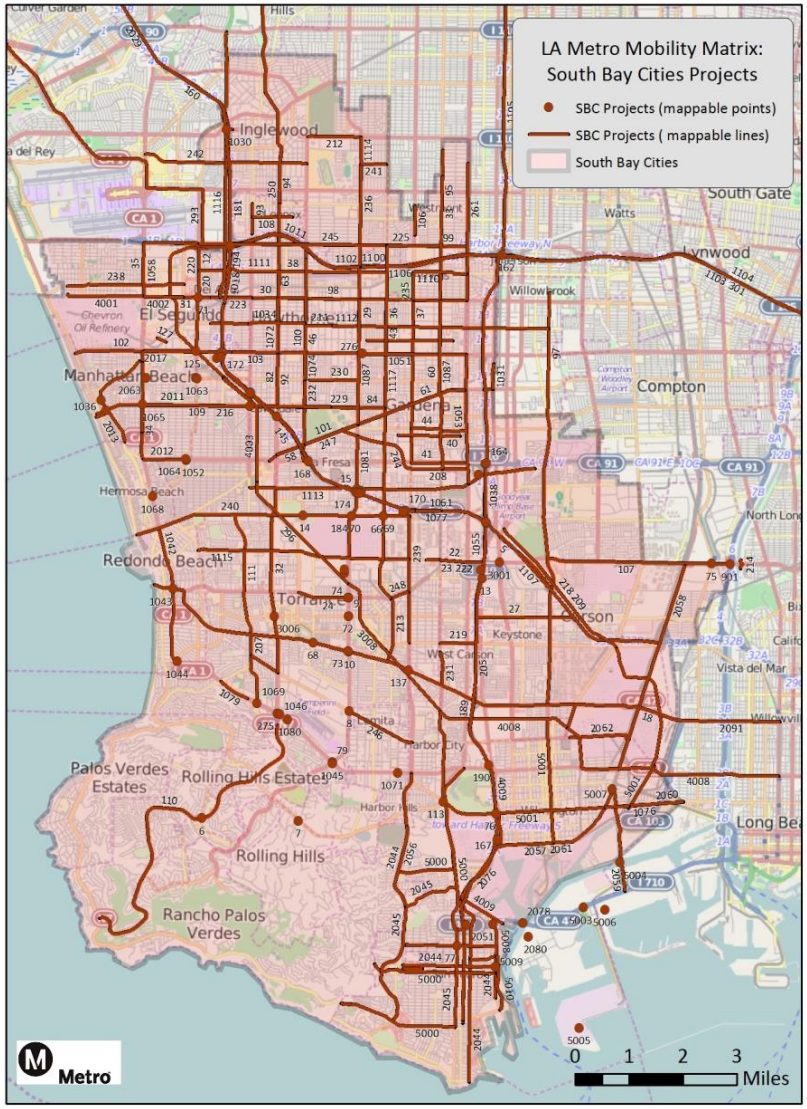
The list also includes state of good repair projects and programs that address the subregional priority of preserving existing transportation investments and extending the life of transportation assets.

Arterial improvements and programs compose about one-quarter of the project list, and freeway projects make up nearly another quarter. Active transportation, state of good repair, and transit projects comprise a significant portion of the remaining project list. In addition, the list includes a large variety of projects and programs that support the Sustainable South Bay Strategy and long-term subregional investments in TSM/ITS.

Finally, the list contains a "Regional Facilities" category, which is comprised of several projects related to improving regional access to the Ports of Los Angeles and Long Beach and Los Angeles International Airport (LAX).

A full list of the projects and programs can be found in Appendix C. Figure 4-1 presents a map of the South Bay Cities 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. South Bay Cities Mobility Matrix Projects and Programs Map



Source: Cambridge Systematics, 2015.

4.2 Evaluation

The evaluation is meant as a high-level analysis to identify subregional projects and programs that have the potential to address subregional and countywide transportation goals for later quantitative analysis in the LRTP update. The Mobility Matrix does not prioritize the projects, but rather is to be used as a screening tool and a starting point for the LRTP update process. The evaluation is qualitative in nature, due to the limited time frame 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 PDT subregional representatives across Los Angeles County.

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 together 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 South Bay Cities 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 4-1. 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 **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 BENEFIT	Results in cumulative negative impact on one or more theme goals or metrics

Table 4-2. Performance Evaluation – Summary by Subprogram

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Highway/Arterial Operational Improvement Program	**67**						
Highway/Arterial Capacity Enhancement Program	26	●	◑	◔	◔	◑	○
Highway/Arterial Intersection Improvement Program	19	◑	◔	○	◔	◔	○
Highway/Arterial School-Related Safety Improvements	2	○	●	◔	○	○	◔
Highway/Arterial TSM Program	15	◑	◔	◔	◔	◔	○
Parking Restrictions Program	2	◑	◔	○	○	○	○
Regional Facilities Arterial Improvements[a]	3	◑	◑	◔	◑	○	◔
Freeway Operational Improvement Program	**40**						
I-105 Freeway Operational Improvements	2	◑	◑	○	◑	○	○
I-110 Freeway Operational Improvements	3	◑	◑	○	◑	○	○

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
I-105 Freeway Operational Improvements; I-405 Freeway Operational Improvements	1	◑	◑	○	◑	○	○
I-405 Freeway Operational Improvements	10	◑	◑	○	◑	○	○
Freeway Interchange and Ramp Program	21	◑	◑	○	◑	◑	◔
Regional Facilities Freeway Improvements[a]	3	◑	◑	○	◑	◑	◔
Managed Lanes – HOV Lanes/ Express Lanes	**7**						
Express Lane Improvements	3	●	◑	◔	◑	◔	○
HOV Connectors Improvements	4	●	◑	◑	◑	◑	○
Freeway Capacity Expansion Improvements	**4**						
I-405 Freeway Capacity Improvements	3	◑	◔	○	◑	○	◔
I-710 Freeway Capacity Improvements	1	◑	◔	○	◑	○	◔

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
ITS/Communications with Motorists Program	**15**						
Freeway ITS Program	1	●	◑	◔	◑	○	○
Arterial ITS Program	10	●	◑	◔	◔	○	○
Other ITS Improvements	4	●	◑	◔	◔	○	○
Local Streets State of Good Repair	**33**						
Local Streets State of Good Repair Program	33	◑	◑	◑	◑	○	●
Bikeways Program	**54**						
Bikeways Program	54	◑	●	●	◔	◑	○
Pedestrian Program	**15**						
Pedestrian Program	15	◑	●	●	◔	◑	○
Complete Streets/ Slow Speed Lanes Program	**9**						
Complete Streets Program	8	◑	●	●	◑	●	◔
Slow Speed Implementation Program	1	●	◑	●	◔	●	○

SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management)	**42**						
Freeway TMS Program	7	●	◑	◔	◑	○	○
Subregional Traffic Management Center	1	◑	◑	○	◔	○	○
Arterial Messaging System	1	◔	◔	○	○	○	○
Event/Emergency Management System Program	5	◔	◑	○	○	○	○
Traffic Signal Synchronization Projects	28	●	◔	◔	◔	◔	◑
Goods Movement	**5**						
Regional Goods Movement Program[a]	5	◑	◑	◔	●	○	◔
Grade Separation and Crossing Projects	**16**						
Subregional Grade Separation Program	6	●	●	◑	◑	○	◑
Grade Crossing Improvement Projects	10	●	●	◑	◑	○	◔

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Paratransit (Dial-a-Ride, Senior/Disabled)	**1**						
Paratransit Program	1	◔	○	◔	○	●	○
Metro/Municipal Transit Capacity Expansion	**22**						
Metro Harbor Subdivision/Green Line Southern Extension to Torrance and Maintenance Facility	1	●	◔	◑	◑	●	◔
Metro Harbor Subdivision/Green Line Extension from Torrance to Long Beach Blue Line	1	●	◔	◑	◑	●	○
Metro Harbor Subdivision/Green Line Extension from Torrance to San Pedro	1	●	◔	◑	◑	●	○
Automated Transit Network Program	1	NA	NA	NA	NA	NA	NA
Bus Rapid Transit Program	2	◑	○	◑	◔	●	○
Bus Expansion Program	16	◑	○	◑	◔	●	○

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Metro/ Municipal Transit Incremental Operational Costs from Capacity Expansion	**6**						
Transit Operations Program	6	◑	○	◑	◔	●	○
Metro/Municipal Transit Maintenance and Rehab	**7**						
Green Line: Miscellaneous capital and operational improvements to existing line	1	◑	○	◔	◔	○	◑
Transit Maintenance and Rehab Program	6	◑	○	◔	◔	○	●
Transit Centers/Park and Ride	**12**						
Transit Center/Park and Ride/ Multimodal Center Program	12	●	○	●	◔	●	◔
Car Sharing/Ridesharing/ Telecommuting/Vanpool Programs	**2**						
Car Sharing/Ridesharing/ Telecommuting/Vanpool Program	2	●	○	●	◔	●	○

South Bay Mobility Matrix Projects & Programs	# of Projects	Mobility •Improves local and regional mobility and access •Manages system demand through multimodal strategies and technology •Reduces VMT	Safety •Improves travel reliability and reduces traffic conflicts •Reduces serious injury accidents and fatalities	Sustainability •Provides infrastructure and incentives to support low and zero emissions mobility modes •Promotes neighborhood serving development, integrated with emerging technology and private sector services •Advances innovative public and private sustainable transportation projects &, programs •Improves quality of life	Economy •Fosters innovation and promotes sustainable economic development and job growth •Ensures transportation investments service changing mobility and sustainability priorities •Delivers projects efficiently and cost-effectively •Improves goods movement efficiency	Accessibility •Promotes increased access and connectivity to all travel modes •Provides access for aging and transit-dependent populations	State of Good Repair •Maintains transportation facilities and assets in overall good condition •Extends useful life of transportation facility or equipment
Sustainability SB Plan (Neighborhood-Oriented Development, 1st/Last Mile)	**11**						
First/Last Mile Program	8	●	●	●	◑	●	○
Mobility/Sustainability Education and Incentive Program	1	◔	◔	◔	○	◔	○
Neighborhood-Oriented Development Program	1	◔	◔	●	◔	◑	○
Subregional Sustainability Transportation Program	1	◑	○	●	◑	◑	○
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle)	**5**						
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle) Program	5	◑	◔	●	◑	●	○
Transportation Enhancement/ Beautification Programs	**4**						
Transportation Enhancement/ Beautification Program	4	○	◔	◔	○	○	○

a These projects and programs are part of the Regional Facilities list.

4.3 Findings

Under the **Mobility** theme, high performers include: the arterial capacity improvement program, managed lanes improvements, TSM/ITS programs, slow-speed implementation program, grade separation and crossings program, Green Line extension projects, transit center/ park and ride/multimodal center program, Car Sharing/Ridesharing/Telecommuting/Vanpool Program, and First/Last Mile Programs. These projects and programs focus on improving local and regional mobility through the use of multimodal strategies and technology to manage system demand and reduce VMT.

Under the **Safety** theme, it was more difficult for programs to receive a high score indicating subregional improvements in transportation safety. However, projects and programs that result in the elimination or separation of traffic conflicts were given credit for helping to improve safety on a localized or corridor-specific scale; particularly those improving high-collision areas as revealed by the Baseline Conditions Report. Examples include: grade separation and crossing programs, arterial school-related safety improvements, active transportation programs, complete streets programs, and first/last mile programs. The transit projects and programs tended to score low or neutral for safety.

Due to a lack of detailed traffic and emissions modeling, roadway projects often received a neutral rating under the **Sustainability** theme. Since the goals and objectives under the Sustainability theme are based in large part on the Sustainable South Bay Strategy, programs and projects included or compatible with this plan scored well. These included: active transportation programs, complete streets/slow speed lanes program, transit center/park and ride/multimodal center program, car sharing/ridesharing/telecommuting/vanpool programs, Sustainability South Bay Plan (neighborhood-oriented development, first/last mile) programs, and the vehicle conversion (electric vehicle, slow speed vehicle) program.

Only one program, the regional goods movement program, scored a high (subregional) benefit for the **Economy** theme due to its focus on improving goods movement efficiency throughout the subregion. As a reminder, temporary construction jobs were not considered under the economy program. Though it is understood that all projects that improve transportation efficiency contribute to the economy, typically only those projects or programs that include a direct link to new development or increased goods movement efficiency received low or medium theme scores.

The **Accessibility** theme goals for the South Bay included increased access and connectivity to all travel modes and particularly for aging and transit-dependent populations. High performers included: complete streets/slow speed lanes program, paratransit program, Metro/municipal transit capacity expansion projects and programs, transit center/park and ride/multimodal center program, car sharing/ridesharing/telecommuting/vanpool program, first/last mile program, and the vehicle conversion (electric vehicle, slow speed vehicle) program.

Only two programs that focused on maintenance and preservation scored a high benefit for the **State of Good Repair** theme: the local state of good repair program and

the transit maintenance and rehab program. However, most of the projects score Neutral/No Benefit under the theme of State of Good Repair, since the majority of projects involve new infrastructure or have no need for or impact on maintenance or rehabilitation.

Overall, most projects and programs perform well under one or two Mobility Matrix themes, while also providing some secondary benefits in other themes. Some projects and programs have multiple neutral/no benefit scores, but that does not mean they do not provide benefits; rather, those projects or programs tend to be tightly focused on one theme, such as the arterial school-related safety improvements which are focused on improving safety.

As a reminder, the Mobility Matrix evaluation does not involve any prioritization. Rather, the Mobility Matrix evaluation of subregional projects and programs is intended as a screening tool only, for use as a starting point in the Metro 2009 LRTP update process. The intent of this evaluation is to simply identify subregional projects and programs with the potential to address subregional and countywide transportation goals for later quantitative analysis.

5.0 IMPLEMENTATION TIMEFRAMES AND COST ESTIMATES

5.1 Implementation Timeframes

The projects and programs described in Chapter 4 were categorized into the three different timeframes based on a number of factors, including 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 ten and twenty 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 on-going 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 South Bay Cities project/program categories. A full description of the categorization methodology can be found in Appendix B.

Most of the projects and programs in the South Bay Cities fall into the short- and mid-term implementation timeframes, with a few expected to be phased over 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.

Table 5-1. South Bay Cities Subregional Mobility Matrix Projects and Programs Categorization Summary

South Bay Mobility Matrix Projects and Programs	Number of Projects	Project Categories		
		Short Term (0-10 Years)	Mid Term (20 Years)	Long Term (20+ Years)
Highway/Arterial Operational Improvement Program	67	✓	✓	✓
Freeway Operational Improvement Program	40	✓	✓	✓
Managed Lanes - HOV Lanes/Express Lanes	7	✓	✓	✓
Freeway Capacity Expansion Improvements	4	✓	✓	✓
ITS/Communications with Motorists Program	15	✓	✓	✓
Local Streets State of Good Repair	33	✓	✓	✓
Bikeways Program	54	✓	✓	✓
Pedestrian Program	15	✓	✓	✓
Complete Streets/Slow Speed Lanes Program	9	✓	✓	✓
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management)	42	✓	✓	✓
Goods Movement	5	✓	✓	✓
Grade Separation and Crossing Projects	16	✓	✓	
Paratransit (Dial-a-Ride, Senior/Disabled)	1	✓	✓	✓
Metro/Municipal Transit Capacity Expansion	22	✓	✓	✓
Metro/Municipal Transit Incremental Operational Costs from Capacity Expansion	6	✓	✓	✓
Metro/Municipal Transit Maintenance and Rehab	7	✓	✓	✓
Transit Centers/Park and Ride	12	✓	✓	
Car Sharing/Ridesharing/Telecommuting/Vanpool Programs	2	✓	✓	✓
Sustainability South Bay Plan (Neighborhood-Oriented Development, 1st/Last Mile)	11	✓	✓	✓
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle)	5	✓	✓	✓
Transportation Enhancement/Beautification Programs	4	✓	✓	

5.2 Cost Estimates

This section contains the South Bay Cities Mobility Matrix cost range estimates at the summary 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, rough order-of-magnitude planning estimate 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 projects/programs and associated cost estimates.

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 Metro Short Range Transportation Plan. Estimates from prior years were escalated to year 2015 dollars at a three-percent annual rate.

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

Finally, due to the 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 revisited as part of the LRTP update 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 estimate methodology can be found in Appendix B.

Table 5-2 shows the estimated cost ranges for each South Bay Cities program level type, divided into the three time periods. The table also contains columns showing the total number of projects within the program, as well as the number of projects with available cost estimates. This will help indicate which programs have low cost estimate range values due to unavailable cost data. Table 5-3 summarizes the cost estimate ranges by time period categorized according to the high-level programs used for all the subregions.

Table 5-2. South Bay Cities Mobility Matrix Rough Order of Magnitude Cost Estimate Ranges and Categorizations

South Bay Mobility Matrix Projects & Programs	Total Projects	Projects with Estimated Costs	Projects with Original Costs	Short Term (0 to 10 Years)		Mid Term (11 to 20 Years)		Long Term (20 plus Years)	
				Low	High	Low	High	Low	High
Highway/Arterial Operational Improvement Program	67	59	44	$298,000,000	$441,000,000	$218,000,000	$310,000,000	$228,00,000	$340,000,000
Freeway Operational Improvement Program	40	39	37	$1,293,000,000	$1,945,000,000	$1,100,000,000	$1,693,000,000	$1,096,000,000	$1,651,000,000
Managed Lanes - HOV Lanes/Express Lanes	7	6	6	$280,000,000	$420,000,000	$130,000,000	$165,000,000	$608,000,000	$932,000,000
Freeway Capacity Expansion Improvements	4	3	3	$96,000,000	$144,000,000	NA	NA	$19,000,000	$36,000,000
ITS/Communications with Motorists Program	15	13	12	$93,000,000	$139,000,000	$50,000,000	$75,000,000	$9,700,000	$15,000,000
Local Streets State of Good Repair	33	33	32	$343,000,000	$518,000,000	$343,000,000	$518,000,000	$343,000,000	$518,000,000
Bikeways Program	54	50	37	$48,000,000	$74,000,000	$48,000,000	$74,000,000	$48,000,000	$74,000,000
Pedestrian Program	15	15	14	$47,000,000	$83,000,000	$47,000,000	$83,000,000	$47,000,000	$83,000,000
Complete Streets/Slow Speed Lanes Program	9	3	3	$10,000,000	$12,000,000	$14,000,000	$29,000,000	Under Development	Under Development
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management)	42	39	38	$118,000,000	$178,000,000	$122,000,000	$183,000,000	$118,000,000	$178,000,000
Goods Movement	5	4	4	$258,000,000	$387,000,000	$417,000,000	$625,000,000	Under Development	Under Development
Grade Separation and Crossing Projects	16	16	11	$234,000,000	$340,000,000	$140,000,000	$180,000,000	NA	NA
Paratransit (Dial-a-Ride, Senior/Disabled)	1	0	0	Under Development	Under Development	Under Development	Under Development	Under Development	Under Development
Metro/Municipal Transit Capacity Expansion	22	11	11	$629,000,000	$664,000,000	$37,000,000	$41,000,000	$2,766,000,000	$2,906,000,000
Metro/Municipal Transit Incremental Operational Costs from Capacity Expansion	6	5	5	$15,000,000	$22,000,000	$15,000,000	$22,000,000	$15,000,000	$22,000,000

South Bay Mobility Matrix Projects & Programs	Total Projects	Projects with Estimated Costs	Projects with Original Costs	Short Term (0 to 10 Years)		Mid Term (11 to 20 Years)		Long Term (20 plus Years)	
				Low	High	Low	High	Low	High
Metro/Municipal Transit Maintenance and Rehab	7	7	5	$31,000,000	$78,000,000	$11,000,000	$17,000,000	$11,000,000	$17,000,000
Transit Centers/Park and Ride	12	12	8	$60,000,000	$89,000,000	$5,000,000	$8,000,000	NA	NA
Car Sharing/Ridesharing/ Telecommuting/Vanpool Programs	2	0	0	Under Development	Under Development	Under Development	Under Development	Under Development	Under Development
Sustainability SB Plan (Neighborhood-Oriented Development, 1st/Last Mile)	11	8	6	$37,000,000	$55,000,000	$37,000,000	$55,000,000	$37,000,000	$55,000,000
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle)	5	5	3	$5,000,000	$8,000,000	$5,000,000	$8,000,000	$5,000,000	$8,000,000
Transportation Enhancement/Beautification Programs	4	2	2	$8,300,000	$12,000,000	Under Development	Under Development	NA	NA
TOTAL	**377**	**330**	**281**	**$3,904,000,000**	**$5,609,000,000**	**$2,749,000,000**	**$4,066,000,000**	**$5,351,000,000**	**$6,835,000,000**

Notes: Estimated costs in 2015 dollars.

NA – Not applicable.

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. Any subregional cost sharing agreements will be determined through future planning efforts. One exception to this in South Bay Cities is the I-710 Widening and Freight Improvement Project where the cost is only being included in the Gateway Cities.

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.

Table 5-3. South Bay Cities Mobility Matrix Summary Rough Order of Magnitude Cost Estimates and Categorizations

Type/ Category	Arterial	Goods Movement	Highway	Active Transportation	Transit	Other	Regional Facilities	Total
Short-Term (0-10 yrs)	$666M – $999M	$226M – $325M	$1.7B – $2.5B	$95M – $157M	$735M – $853M	$145M – $212M	$343M – $514M	$3.9B – $5.6B
Mid-Term (11-20 yrs)	$608M – $897M	$140M – $180M	$1.3B – $1.9B	$95M – $157M	$68M – $88M	$109M – $171M	$457M – $685M	$2.7B – $4.1B
Long-Term (>20 yrs)	$614M – $922M	NA	$1.8B – $2.7B	$95M – $157M	$2.8B – $2.9B	$55M – $82M	Under Development	$5.4B – $6.8B
Total	**Estimates for 134 out of 146 Projects $1.9B – $2.8B**	**Estimates for 6 out of 6 Projects $366M – $505M**	**Estimates for 53 out of 56 Projects $4.8B – $7.2B**	**Estimates for 65 out of 69 Projects $285M – $471M**	**Estimates for 35 out of 48 Projects $3.6B – $3.9B**	**Estimates for 27 out of 41 Projects $309M – $465M**	**Estimates for 10 out of 11 Projects $800M – $1.2B**	**Estimates for 333 out of 377 Projects $12.0B – $16.5B**

Estimated costs in 2015 dollars.

NA – Not applicable.

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. Any subregional cost sharing agreements will be determined through future planning efforts. One exception to this in South Bay Cities is the I-710 Widening and Freight Improvement Project where the cost is only being included in the Gateway Cities.

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.

5.3 Financing the Transportation System

5.3.1 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.

5.3.2 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.

5.4 What's Next?

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

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

- **SBCCOG 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.
- **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 subregions 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 SBCCOG Board Approvals as part of the South Bay Cities Subregional Mobility Matrix Study.

Table A-1. South Bay Cities Mobility Matrix PDT Meetings and Approvals

Meeting Type	Date/Time	Meeting Location	Discussion Points
PDT Meeting #1	09/17/14 10:00 AM to 11:30 AM	Blue Water Grill 665 North Harbor Drive Redondo Beach, CA 90277	Obtain consensus on the Mobility Matrix guiding principles, schedule, approach; develop a schedule to update the project list already distributed to PDT members; and develop a better understanding of Subregional goals and objectives
PDT Meeting #2	10/15/14 10:00 AM to 11:30 AM	Blue Water Grill 665 North Harbor Drive Redondo Beach, CA 90277	Obtain consensus on the revised subregional goals and objectives, discuss the status and updates to the preliminary project list, and discuss and obtain feedback on the performance metrics
SBCCOG Steering Committee Briefing	11/10/14 12:00 PM	South Bay Cities Council of Governments 20285 S. Western Ave., #100 Torrance, CA 90501	Provide overview briefing of the Mobility Matrix and discuss the project list
PDT Meeting #3	11/19/14 10:00 AM to 11:30 AM	Blue Water Grill 665 North Harbor Drive Redondo Beach, CA 90277	Discuss the status of the preliminary project list, present the finalized goals and objectives, discuss the performance metrics and evaluation approach, and review the baseline conditions data. Metro will also present on the LRTP update and proposed ballot measure.
SBCCOG Board Meeting	11/20/14 6:00 PM to 8:00 PM	South Bay Cities Council of Governments 20285 S. Western Ave., #100 Torrance, CA 90501	Approve Preliminary Project List

Meeting Type	Date/Time	Meeting Location	Discussion Points
PDT Meeting #4	12/17/14 10:00 AM to 11:30 AM	South Bay Cities Council of Governments 20285 S. Western Ave., #100 Torrance, CA 90501	Review the revised subregional project list, review the draft baseline conditions analysis, review performance metrics and initial program/project evaluation, and discuss the categorization of projects.
PDT Meeting #5	01/21/15 10:00 AM to 11:30 AM	Blue Water Grill 665 North Harbor Drive Redondo Beach, CA 90277	Finalize the baseline conditions analysis and discuss the initial performance analysis and categorization of the projects. Metro presented the relationship of the Mobility Matrices to the ballot measure and Metro LRTP update.
PDT Meeting #6	02/18/15 10:00 AM to 11:30 AM	Blue Water Grill 665 North Harbor Drive Redondo Beach, CA 90277	Approve performance evaluation, Baseline Conditions Report, and project list updates; review draft cost estimates and present draft final report structure; and identify next steps
SBCCOG Steering Committee Meeting	03/19/15 12:00 PM	South Bay Cities Council of Governments 20285 S. Western Ave., #100 Torrance, CA 90501	Provide update briefing of the Mobility Matrix and advance Final Report to SBCCOG Board
SBCCOG Board Meeting	03/26/15 6:00 PM to 8:00 PM	South Bay Cities Council of Governments 20285 S. Western Ave., #100 Torrance, CA 90501	Accept Final Report

APPENDIX B METHODOLOGY MEMORANDUMS

Introduction

The following 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 section 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

The themes are defined as:

- **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 21st 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 developed a set of subregion-specific goals and objectives associated with the six countywide themes above. 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 in Section 3.1. 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 above.

Table B-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 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 section 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 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 ten and twenty year timeframes. The timeframes correspond to when the projects are completed and in operation.

Short-Term 0-10 years (2015-2024) Projects can be completed and in operation in less than ten years.
Mid-Term 11-20 years (2025-2034) Projects can be completed and in operation in 11 to 20 years.
Long-Term 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 multi-phased? 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 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 section outlines the context and approach for estimating rough order-of-magnitude capital 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.

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 Research Literature.** In some cases, industry standard cost estimates were available in research literature on a per-mile or per-unit basis. If no comparable costs were submitted through the Mobility Matrix project or program lists, these studies were utilized to develop cost estimates. Specific cost estimates were expanded to a minimum (20 percent below) and maximum (20 percent above) cost range.
- **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 Are 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 Transit 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-1. South Bay Cities Mobility Matrix – Preliminary Project List

Program	Subprogram	MM Project ID	Jurisdiction	Description
Highway/Arterial Operational Improvement Program	Highway/ Arterial Capacity Enhancement Program	2057	LA City - Wilmington-Harbor City	Alameda St: Widen to provide three lanes per direction form I-10 to Henry Ford Avenue
		1076	LA City	Anaheim Street: Farragut Avenue to Dominguez Channel: Widen Anaheim Street from 78' to 84' and restripe to accommodate an additional lane in each direction; this would improve the roadway from 4 lanes to 6 lanes
		2060	LA City - Wilmington-Harbor City	Anaheim Street: Widen between Cushing and I Streets to provide three lanes eastbound and 2 lanes westbound.
		12	LA County	Aviation Boulevard: Aviation Boulevard widening project from Imperial Highway to Rosecrans Avenue
		20	El Segundo	Aviation: Widen southbound Aviation Blvd to increase from two to three lanes between Imperial Ave. and Rosecrans, and improve left turn movements.
		8	Lomita, Torrance	Crenshaw and Lomita Bl: Street widening including ad's ROW: on Crenshaw – add dual NB right-turn and a single SB lane. Lomita – add dedicated WB right-turn lane and 4th through lane
		9	Torrance	Crenshaw and Torrance Bl: Street widening including add'l ROW: – Crenshaw and Torrance Bl. Provide dedicated SB right turn lane
		16	Torrance	Crenshaw Bl and Carson St: Street widening (including add'l ROW: – Crenshaw and Carson St – Add 4th through lane on Crenshaw at intersection; and transition to merge back to 3 NB lanes
		10	Torrance	Crenshaw Bl and Sepulveda Bl: Street widening including add'l ROW: – Crenshaw at Sepulveda Bl. On Crenshaw: add dual NB right-turn on Sepulveda; add dedicated EB right-turn lane and 4th through lane
		1077	LA City	Del Amo Boulevard: from Western Avenue to Vermont Avenue
		1050	LA County	Del Amo Boulevard: from Western Avenue to Vermont Avenue: Reconstruct and widen from one lane in each direction to two lanes in each direction
		23	LA City and County	Del Amo Bl: Complete the missing segment of Del Amo Bl between Denker Av and Normandie Av. Complete missing segment from Normandie to Vermont Av

Program	Subprogram	MM Project ID	Jurisdiction	Description
Highway/Arterial Operational Improvement Program (continued)	Highway/ Arterial Capacity Enhancement Program (continued)	22	LA County	Del Amo Bl: Construction of a roadway to close the gap between Normandie Av and Vermont Av
		4002	El Segundo	El Segundo Blvd. Widen the street between Sepulveda Blvd and Douglas Ave. to four lanes in the eastbound direction and install bike lane
		2059	LA City - Wilmington-Harbor City	Henry Ford Avenue: Widen to provide three lanes per direction from Alameda Street to Terminal Island Freeway (Alameda Corridor)
		2062	LA City - Wilmington-Harbor City	Lomita Boulevard: Improvement as a Secondary Highway, east of Eubank Avenue to Alameda Street, with an at-grade intersection at Alameda. [TIMP]
		19	Manhattan Beach	Manhattan Beach Arterial Capacity enhancements
		1042	Redondo Beach	Pacific Coast Highway: from Anita Street to Palos Verdes Boulevard: PCH Study Improvements: Implement PCH Study Recommendations (11)
		14	Torrance	Prairie Av and 190th St: Street widening including add'l ROW: – On 190th add dual NB right-turn and re-striping to provide 3 through lanes for WB and EB. Also prohibit on-street parking
		1088	Lawndale	Redondo Beach Blvd: At I-405, from Hawthorne Boulevard to Prairie Avenue: ROW Acquisition, signal upgrades, concrete pads for transit, ADA ramps
		1034	Lawndale	Rosecrans Avenue: Traffic signal improvements, left-turn improvements and various concrete improvements. From East of Inglewood Ave to Prairie Ave
		18	Carson	Sepulveda Blvd: from Alameda Street to ICTF Driveway: Widen from four lanes to six lanes, rehabilitate bridge. Bridge widening over Dominguez Channel, Street widening, channelization, roadway work, signals, left turning phases, striping, street lighting
		1058	El Segundo	Sepulveda Boulevard: from Imperial Highway to El Segundo Boulevard: Implement PCH Study Recommendations (8)
		24	Torrance	Torrance Bl : Widen to 3 WB through lanes from Crenshaw to Madrona Av

Program	Subprogram	MM Project ID	Jurisdiction	Description
Highway/Arterial Operational Improvement Program (continued)	Highway/ Arterial Capacity Enhancement Program (continued)	13	LA County, Caltrans	Torrance Bl: Torrance Bl/I-110 undercrossing widening
		1087	Gardena	Various Improvements: 1) Redondo Beach Blvd Arterial Improvements from Crenshaw Blvd to Vermont Ave; 2) Crenshaw Blvd Arterial Improvements from Redondo Beach Blvd to El Segundo Blvd; 3) Normandie Ave Arterial Improvements from El Segundo Blvd to 177th Street
	Highway/ Arterial Intersection Improvement Program	1052	Redondo Beach	Aviation Boulevard: at Artesia Boulevard: Construct northbound right-turn lane. Aviation Boulevard Phase 1: Intersection Projects
		184	Torrance	Crenshaw Bl and 190th St: Reconstruct intersection (remove median and re-stripe) – add on Crenshaw NB left turn lane at Crenshaw Bl and 190th St
		15	Torrance	Crenshaw Bl at 182nd St: Widen 182nd St to provide 2 designated WB left turn lanes, 2 WB through lanes and a new EB through right lane. Widen the east side of Crenshaw Bl to provide 3 NB through lanes. Modify signal
		1086	Torrance	Hawthorne Bl: At 182nd Street, Spencer Street, Emerald Street, and Lomita Blvd: for roadway widening to construct new northbound right turn lanes
		6	Rolling Hills Estates	Hawthorne Bl: at Silver Spur Rd.; Add dual EB and WB left turn pockets
		1070	Redondo Beach	Inglewood Avenue: at Manhattan Beach Boulevard: Add southbound right-turn lane south of railroad tracks to Manhattan Beach Boulevard
		124	Inglewood	La Cienega Bl: La Cienega Bl at La Tijera Bl & Centinela Av
		3001	Carson	Main St at Del Amo Blvd: Intersection improvement to support major development
		1039	Inglewood	Manchester/La Cienega : Channelize and raise median Manchester Blvd from Ash Ave to La Cienega Blvd, Improve turn radii La Cienega Blvd at Manchester Blvd, Improve turn radii and through-right lane La Cienega Boulevard at Florence Avenue
		2063	Manhattan Beach	Marine Avenue at Cedar Way: Half-Signal and Reconfiguration
		1068	Hermosa Beach	Pacific Coast Highway: at Aviation Boulevard: Add southbound dual left turn lanes
		1045	Torrance	Pacific Coast Highway: at Crenshaw Avenue operational improvements
		1046	Torrance	Pacific Coast Highway: At Hawthorne Boulevard add northbound, eastbound, and westbound right-turn lane, add eastbound left-turn, signal upgrades
		1044	Redondo Beach	Pacific Coast Highway: at Palos Verdes Boulevard: Install westbound right-turn lane
		1043	Redondo Beach	Pacific Coast Highway: at Torrance Boulevard: Add northbound right-turn lane

Program	Subprogram	MM Project ID	Jurisdiction	Description
Highway/Arterial Operational Improvement Program (continued)	Highway/ Arterial Intersection Improvement Program (continued)	1069	Torrance	Pacific Coast Highway: At Vista Montana/Anza Avenue, restripe to add southbound through lane & signal modification for protected northbound/southbound left-turn phasing. Modify striping to accommodate a longer northbound left-turn lane
		7	Rolling Hills Estates	Palos Verdes Dr: North at Rolling Hills Rd.: Add second WB and EB lanes and protected left turn phasing
		1036	Manhattan Beach	Valley Drive/Armore: Intersection Improvements at Manhattan Beach Boulevard and 15th Street. Construction of traffic circles at the intersections of Valley/Armore at Manhattan Beach Boulevard and 15th Street
		11	Torrance, Los Angeles	Western /Sepulveda: Add northbound left-turn lane; widen and restripe for dual eastbound left-turn lanes and westbound right-turn lanes, modify signals and WB double left turn lanes
	Highway/ Arterial School-Related Safety Improvements	1079	Torrance	Pacific Coast Highway: From Calle Mayor to Janet Lane. Safety guardrail, fencing and landscaping project to prevent illegal mid-block pedestrian crossing and vehicle incursion onto PCH from a frontage road on the south side of PCH used as a student drop off area for South High School which is on the north side of PCH.
		3	Rolling Hills Estates	Palos Verdes Dr: North at Dapplegray School; add EB merge lanes
	Highway/ Arterial TSM Program	69	Torrance	190th St/Van Ness Ave Intersection Improvement
		70	Torrance	190th St/Crenshaw Blvd Intersection Improvement
		113	LA City	Anaheim St Roundabout @ Gaffey/Vermont/PV Drive North
		71	El Segundo	Aviation Blvd/El Segundo Blvd Intersection Improvement
		72	Torrance	Crenshaw Blvd/ Carson St TSM Intersection Improvement
		73	Torrance	Crenshaw Blvd/ Sepulveda Blvd TSM Intersection Improvement
		74	Torrance	Crenshaw Blvd/ Torrance Blvd TSM Intersection Improvement
		75	Carson	Del Amo Blvd./Santa Fe Ave Intersection Improvement
		77	LA City	Gaffey St/1st St Intersection Improvement
		67	Lawndale	Hawthorne Bl and PCH: Add dedicated right turn lanes and left turn pockets
		112	Lawndale, Redondo Beach	Inglewood Av: Widen Inglewood Av from Manhattan Beach Bl to I-405 to add right-turn lane, SB – Redondo Beach, NB – Lawndale
		122	Inglewood	La Cienega Bl: Corridor Improvement Project, concept to I-10
		79	Torrance	Pacific Coast Highway/Crenshaw Blvd intersection improvement

Program	Subprogram	MM Project ID	Jurisdiction	Description
Highway/Arterial Operational Improvement Program (continued)	Highway/ Arterial TSM Program (continued)	1080	Caltrans, Torrance	Pacific Coast Highway: Madison Ave: Signal upgrades to provide left-turn phasing
		66	Torrance	Van Ness Av and 190th St: Widen signalized intersection. On 190th, restripe to add 3 through lanes for both WB and EB and prohibit on-street parking and upgrade traffic signal
	Parking Restrictions Program	2056	LA City - Wilmington-Harbor City	Anaheim Street and Western Ave: Additional PM parking restrictions and striping for an additional lane are proposed on: • Anaheim Street between Alameda Street and east of Dominguez Channel [TIMP] • Western Avenue between Sepulveda Boulevard and Capitol Avenue [TIMP]
		2045	LA City - San Pedro	San Pedro Priority Motorized Vehicle Routes. The San Pedro Community Plan identifies motorized vehicle priority streets. Street improvements for may include peak hour parking restrictions for use of curb lanes, turn lane channelization and traffic signal coordination and other traffic management techniques to facilitate motorized vehicle flow and discourage cut-through traffic on local neighborhood streets. Motorized vehicle priority streets include: Western Avenue between 25th Street and north San Pedro border; Gaffey Street between 25th Street and north San Pedro border; 25th Street between Rancho Palos Verdes border and Gaffey Street; and Capitol Drive between Western Avenue and Gaffey Street.
	Regional Facilities Arterial Improvements	5008	Port of Los Angeles	Harbor Blvd - As part of the San Pedro Waterfront Development Project, Harbor Blvd will be restriped, and the median removed/reconstructed as needed to provide three NBT and SBT lanes between the reconstructed Sampson Way/Harbor Blvd intersection and the WB on ramp/Front Street intersection. This will result in the removal of parking and the bike lane on the northbound side. The parking and 5' bike lane on the southbound side, south of O'Farrell Street will be preserved. North of O'Farrell Street, the parking and the parking lane on the southbound side would need to be removed to accommodate the northbound dual left-turn lane. The innermost northbound through lane at the EB off-ramp intersection would become a forced left-turn lane at the SR 47 WB on-ramp. This improvement is projected to be needed by the year 2024.

Program	Subprogram	MM Project ID	Jurisdiction	Description
Highway/Arterial Operational Improvement Program (continued)	Regional Facilities Arterial Improvements (continued)	5009	Port of Los Angeles	Harbor Blvd. & 7th Street Intersection- The project includes a reconfigured intersection at the junction of Harbor Blvd, Sampson Way, and 7th Street. Work includes retaining wall, street work, grading, paving, lighting, restriping and a new signalized intersection.
		5010	Port of Los Angeles	Sampson Way to 22nd Street & Miner Street - Sampson Way would be realigned and expanded to two lanes in each direction and would curve near the Municipal Fish Markets to meet with 22nd Street in its westward alignment east of Miner Street. In the proposed project, Harbor Blvd. would remain in place at its current capacity with two lanes in each direction. Proposed enhancements would be consistent with design standards for the Community Redevelopment Agency (CRA) Pacific Corridor and the City of Los Angeles Planning Department Community Design Overlay.
Freeway Operational Improvement Program	I-105 Freeway Operational Improvements	1102	Caltrans	I-105: Add Aux lane on EB I-105 from Nash Avenue to Van Ness Avenue. PM 0.99/5.23
		1101	Caltrans	I-105: Add Aux lane on WB I-105 from Wilton Place to Hawthorne Blvd. PM 3.05/5.48
	I-110 Freeway Operational Improvements	189	Caltrans, SBCCOG	I-110: Add auxiliary lane SB I-110 between Sepulveda and PCH
		1038	Caltrans, Carson, Los Angeles, Los Angeles County	I-110: Auxiliary Lane on SB I-110 from WB SR-91 Connector from Torrance Boulevard off-ramp.
		205	Caltrans, SBCCOG	I-110: Implement Interagency Integrated Corridor Management System on I-110 from Artesia Blvd and Pacific Coast Hwy. The project will integrate freeway, arterial and transit operations, implement a Decision Support System for coordinated agency operations and traveler information systems.
	I-105 Freeway Operational Improvements; I-405 Freeway Operational Improvements	1061	Caltrans	I-405 and I-105: I-405 from I-110 to I-105 and I-105 from I-405 to Crenshaw: Corridor Refinements

Program	Subprogram	MM Project ID	Jurisdiction	Description
Freeway Operational Improvement Program (continued)	I-405 Freeway Operational Improvements	1100	Caltrans	I-405: Add Aux lane on SB I-405 from Hawthorne to Redondo Beach. PM 17.58/16.90
		1099	Caltrans	I-405: Add Aux lane on SB I-405 from Inglewood to Hawthorne Blvd. PM 18.25/17.58
		144	Caltrans, Lawndale	I-405: Add NB auxiliary lane from Hawthorne to Inglewood Av. PM 17.58/18.25
		147	Caltrans, Lawndale	I-405: Add NB auxiliary lane from Redondo Beach Bl to Hawthorne. PM 16.90/17.58
		149	Caltrans, SBCCOG	I-405: Add northbound auxiliary lane from Inglewood Ave to Rosecrans Ave. PM 18.25/19.22
		150	Caltrans, SBCCOG, LA City	I-405: Add northbound auxiliary lane from Normandie Ave to Western Ave. PM 13.85/9.98
		1018	Caltrans, Hawthorne	I-405: Add northbound auxiliary lane from south of El Segundo Blvd to I-105
		151	Caltrans, SBCCOG	I-405: Add southbound auxiliary lane from Hindry Avenue to Inglewood Ave. PM 19.10/18.25
		179	Caltrans, SBCCOG	I-405: Open and restripe the SB Hawthorne Blvd to northbound I-405 on ramp, bridge widening
		202	Caltrans, LA City, Inglewood	I-405: Realign the SB I-405 south of SR-90 to Manchester where it bends sharply just north of Manchester Bl. PM 25.5/23.7
	Freeway Interchange and Ramp Program	76	Caltrans, LA City, SBCCOG	I-110/Anaheim St: Widen Anaheim Street and reconfigure I-110 ramps at Anaheim St
		1002	Caltrans, Carson	I-110: Figueroa Street Ramps and Aux Lanes: Widening of NB off-ramp (from 1 to 2 lanes) and NB on-ramp (from 1 to 2 lanes) at I-110 freeway (between Torrance Blvd and Del Amo Ave)
		1021	Caltrans, LA City	I-110: Signalize northbound off-ramp, intersection improvements and widen existing ramps at PCH
		190	Caltrans, SBCCOG	I-110: Widen southbound I-110 off-ramp at Pacific Coast Hwy
		1057	Caltrans, Torrance	I-405: I-405 on &off ramps at 182nd St./Crenshaw Boulevard operational improvements. EA 29360
		195	Caltrans, SBCCOG	I-405: Widen NB I-405 off-ramp to Artesia WB and widen the structure

Program	Subprogram	MM Project ID	Jurisdiction	Description
Freeway Operational Improvement Program (continued)	Freeway Interchange and Ramp Program (continued)	172	Caltrans, SBCCOG	I-405: Widen northbound I-405 off ramp at Rosecrans Ave. PM 19.10
		187	Caltrans, Lawndale, Redondo Beach	I-405: Widen SB Inglewood on-ramp to NB I-405. PM 18.40
		173	Caltrans, SBCCOG	I-405: Widen southbound I-405 off-ramp to Rosecrans Ave. PM 19.36
		168	Caltrans, Torrance	I-405: At Artesia Bl, modify NB on-ramp from Artesia Bl WB to add a third lane onto NB I-405
		175	Caltrans, Lawndale	I-405: I-405 ramp improvements at Hawthorne Bl. (1) Reopen SB Hawthorne to NB I-405 (2) Upgrade signalization at I-405 SB and NB off-ramps Hawthorne Bl. PM 17.59
		204	Caltrans, Hawthorne	I-405: Implement I-405 at Rosecrans Access Point improvement project. PM 19.22
		182	Caltrans, Hawthorne	I-405: SB between Hindry Av and Rosecrans Avenue off ramp. PM 19.22/19.11
		177	Caltrans, Hawthorne	I-405: Signalize intersection at bottom of SB Rosecrans off-ramp
		178	Caltrans, Lawndale, Redondo Beach	I-405: Widen NB Inglewood loop on-ramp to NB I-405. PM 18.20
		185	Caltrans, LA City	I-405: Widen SB on-ramp at 190th (just west of Western Av) from Western Av to 190th St
		170	Caltrans, LA City	I-405: Widen SB on-ramp from Western Av/190th St and I-405. PM 14.53
		166	Caltrans, SBCCOG, Inglewood	I-405: Widen southbound I-405 on-ramp from southbound La Cienega Blvd by adding a continuous Aux to SB I-405. PM 23.69
		171	Caltrans, SBCCOG	I-405: Widen the SB Inglewood on-ramp to SB I-405. PM 18.06

Program	Subprogram	MM Project ID	Jurisdiction	Description
Freeway Operational Improvement Program (continued)	Freeway Interchange and Ramp Program (continued)	901	Caltrans	I-710/Del Amo Interchange Reconfiguration - Reconfigure Interchange at I-710 and Del Amo (includes Del Amo/Susana improvement)
		201	Caltrans	South Bay Ramp and Interchange Improvements : Intersection and interchange improvements, signal synchronizations, ITS corridor improvements, auxiliary lanes, gap closures, and congestion relief, etc. on I-405, I-110, I-105, SR-91, and PCH.
	Regional Facilities Freeway Improvements	1019	Caltrans, LA City, Port of Los Angeles	I-110: Vincent Thomas Bridge 110 Connector: (Port of Los Angeles)
		5003	The Port of Los Angeles, Caltrans	SR 47/Navy Way Interchange: Construction of interchange at SR-47/Navy Way to eliminate traffic signal and movement conflicts; this project was a S.CA Trade Corridor Tier II TCIF project as submitted to the CTC in 2008; project removes last signal on SR 47 between Desmond and V. Thomas Bridges; NHS Intermodal Connector Route
		1030	Caltrans, Port of Los Angeles	SR 47: V. Thomas Bridge/Front St Interchange: New Westbound SR 47 on- and off-ramps at Front St just West of Vincent Thomas Bridge and eliminate the existing non-standard ramp connection to the Harbor Blvd Off-ramp
Managed Lanes – HOV Lanes/ Express Lanes	Express Lane Improvements	1103	Caltrans	I-105: Add HOT Lane on 105 from 405 to 605. PM 1.63/17.82. EA 31450
		2069	Metro, Caltrans	I-110: Express Lane South Extension to I-405
		193	Caltrans, SBCCOG	I-405: Add Express Lanes on I-405 between I-110 and I-105
	HOV Connectors Improvements	163	Caltrans, SBCCOG	I-105/I-405: HOV Connectors from I-105 westbound to northbound and southbound I-405
		162	Caltrans, SBCCOG	I-110/I-105: Add HOV connectors from northbound I-110 to eastbound and westbound I-105
		165	Caltrans, SBCCOG	I-405/I-110: Reconstruct the NB I-405 connector to SB I-110 and HOV connector from SB I-405 to NB I-110
		161	Caltrans, SBCCOG	SR-91/I-110: Add HOV connectors from northbound and southbound I-110 to eastbound SR 91 and from westbound SR-91 to northbound I-110

Program	Subprogram	MM Project ID	Jurisdiction	Description
Freeway Capacity Expansion Improvements	I-405 Freeway Capacity Improvements	197	Caltrans, SBCCOG	I-405: Add 1 or 2 lanes to NB and SB I-405 between Inglewood northern border and I-110; consider inclusion of transit-only fixed guideways
		194	Caltrans, SBCCOG	I-405: Add northbound lane on I-405 from El Segundo Blvd to I-105
		1010	LA City, Caltrans	I-405: Widen from 3 to 4 lanes through interchange at I-110
	I-710 Freeway Capacity Improvements	2085	Caltrans, the Port of Los Angeles, Port of Long Beach, SCAG, GCCOG, SBCCOG, and the I-5 Joint Powers Authority	I-710: Widening and Freight Corridor. Widen to 10 Mixed Flow Lanes (Addition of Lanes Vary with I-710 Segments). Reconfigure Approx. 13 Local Access Interchanges Between Ocean Blvd/Shoreline Dr. and Atlantic Blvd/Bandini Blvd Arterial Improvements. Construction of Freight Corridor on I-710 (4 Truck Lanes with Dedicated Ingress/Egress at Select Locations (Harbor Scenic Drive, Ocean Blvd, Pico Ave, Anaheim Street, South of PCH, North of I-405 at 208th Street, SR-91, Patata Street, Bandini Blvd, Washington Blvd and Sheila Street)). (Note: Cost not included here, it is represented on the Gateway Cities Mobility Matrix list)
ITS/ Communications with Motorists Program	Freeway ITS Program	1104	Caltrans	I-105: Along I-105 between I-605 and Route 1 (ATM and TMS improvements)
	Arterial ITS Program	87	LA City	District 15 Intelligent Transportation System Improvements
		82	LA County	Hawthorne Blvd: ITS Improvement from Imperial Hwy to Manhattan Beach Blvd
		2030	Inglewood	Inglewood ITS - Phase IV Part B: Design and installation of fiber-optics on La Cienega Blvd., Centinela Ave., Florence Ave. and Prairie Ave. New CCTV, speed detection systems and web-based traveler information. Upgrade the current Traffic Control System (TCS) to Adaptive TCS and replace 5 Type 170 controllers with Type 2070 controllers on Prairie Ave.
		1075	Inglewood	Inglewood ITS - PHASE V: (1) Designs and constructs computerized traffic control and monitoring systems. (2) Expands central traffic control and advance traffic management at 39 intersections (3) improves 6.13 miles of fiber optic communications, (4) expands Closed Circuit Television Cameras (CCTV) at 10 intersections, (5) installs Changeable Message Signs (CMS) at 2 intersections, and (6) installs new communication hubs at 3 intersections.
		84	LA County	Manhattan Beach Blvd: ITS Improvement from Manhattan Ave to Van Ness Ave
		1083	Various	Metro/various: South Bay Baseline Arterial Performance Monitoring Implementation
		86	LA County	South Bay Forum ITS Improvements: Various
		1118	LA County	South Bay ITS Communications
		88	LA County	South Bay ITS Improvements
		1089	LA County	System Operations

Program	Subprogram	MM Project ID	Jurisdiction	Description
ITS/ Communications with Motorists Program (continued)	Other ITS Improvements	1048	Various	Implement South Bay Subregional ITS Plan
		1027	Hawthorne	Various: Municipal Wireless Network for Transportation communications
		290	Torrance Transit	Various: Real-Time Passenger information at all major stops and transfer points (Torrance Transit)
		2072	Redondo Beach: Beach Cities Transit	Various: Real-Time Passenger information at the Transit Center (Redondo Beach; Beach Cities Transit)
Local Streets State of Good Repair	Local Streets State of Good Repair Program	38	Hawthorne	120th St Improvement : Prairie Ave to Inglewood Ave
		39	Gardena	139th St Improvement - Ardath Ave to Budlong Ave
		40	Gardena	166th St Improvement - Berendo Ave to Gramercy Place
		4005	Torrance	Annual maintenance of roadways, citywide, inclusive of pavement, curb & gutter, access ramps, ADA pathways, lighting, ITS, signal equipment, etc…
		49	Redondo Beach	Arterials/Collectors Street Pavement Rehabilitation
		41	Gardena	Artesia Blvd: Street Improvement-Vermont Blvd to Western Ave
		198	SBCCOG	Coordination of Rehabilitation and Improvement of State Highways (nonfreeway routes): between Caltrans, Metro and South Bay Cities Council of Governments
		43	Hawthorne	Crenshaw Blvd Improvement : 131st St to Rosecrans Ave
		29	Gardena	Crenshaw Blvd: Street Improvement- Redondo Beach Blvd to El Segundo Blvd, street improvement and signal improvements(6 signals) along the route.
		30	Hawthorne	El Segundo Blvd Improvement : Inglewood Ave to Crenshaw Blvd
		31	El Segundo	El Segundo Blvd Improvement : Sepulveda Blvd to Aviation Blvd
		44	Gardena	Gardena Blvd: Street Improvement - Vermont Ave to Western Ave
		32	Torrance	Hawthorne Blvd Improvement : 182nd St to Lomita Blvd
		63	Hawthorne	Hawthorne Blvd Improvement : El Segundo Blvd to Imperial Hwy
		105	LA County	LA County Traffic Signal Operation Improvements
		1108	El Segundo	Local and Arterial Street Maintenance and Repair and Pavement Rehabilitation
		26	Inglewood, Los Angeles	Manchester Blvd and La Cienega Blvd Corridor Improvement (with City of Los Angeles)
		33	LA County	Normandie Ave: Street Improvement - 95th St to El Segundo Blvd
		60	Gardena	Normandie Ave; Street Improvement- El Segundo Blvd to 177th St
		50	LA County	Pavement Preservation
		46	Hawthorne	Prairie Ave Improvement : Imperial Blvd to Rosecrans Ave
		28	LA City	Redondo Beach Blvd Improvement : I-110 to Figueroa

Program	Subprogram	MM Project ID	Jurisdiction	Description
Local Streets State of Good Repair (continued)	Local Streets State of Good Repair Program (continued)	61	Gardena	Redondo Beach Blvd Improvement: Crenshaw Blvd to Vermont
		58	Lawndale	Redondo Beach Blvd: From Artesia to Prairie, roadway improvements and signal upgrades
		52	Redondo Beach	Residential Street Pavement Rehabilitation
		34	Manhattan Beach	Sepulveda Blvd Improvement : Rosecrans to Artesia Blvd
		35	El Segundo	Sepulveda Blvd. Improvement : Imperial Hwy to El Segundo Blvd
		25	LA County	Sidewalk, Curb, Parkway Preservation; Repair and Reconstruction
		140	SBCCOG	State Highway Bridge and major arterial seismic retrofit program (Manhattan Overhead) at Route 1. PM 23.70/23.80
		54	Manhattan Beach	Street Improvements - Annual Rehabilitation
		47	Redondo Beach	Traffic Signals and Street Lights - Regular Deferred Maintenance
		36	Gardena	Van Ness Ave: Street Improvement- Redondo Beach Blvd to El Segundo Blvd
		37	Gardena	Western Ave St Improvement : Artesia Blvd to El Segundo Blvd
Bikeways Program	Bikeways Program	211	Hawthorne, LA County	135th St: Isis St to Crenshaw Bl
		240	Torrance, Hermosa Beach, Redondo Beach	190th St/Herondo Anita: South Bay Bike Trail Harbor Drive to Western Ave
		219	LA County	223rd Street; Normandie Ave to I-110; Class 2 Bike Lanes
		212	Inglewood	90th St: Prairie Av to Crenshaw Bl
		207	Torrance	Anza Ave: Sepulveda Bl to PCH Bike/Ped Improvements
		241	LA City, Inglewood	Arbor Vitae St : Crenshaw Bl to Arlington Av
		242	LA City, Inglewood	Arbor Vitae St : LA, Inglewood Arbor Vitae St Sepulveda Bl to Prairie Av
		2012	Manhattan Beach	Artesia Bl. Bike Lane - Sepulveda Bl. to Aviation Bl.
		220	LA County	Aviation Blvd; Imperial Hwy to 124th St; Class 2 Bike Lanes
		2016	Manhattan Beach	Bell Avenue Bike Lane/Path
		213	Torrance	Cabrillo Bikeway: Sepulveda Bl to Torrance Bl

Program	Subprogram	MM Project ID	Jurisdiction	Description
Bikeways Program (continued)	Bikeways Program (continued)	278	SBCCOG	Bike sharing program
		214	LA County	Compton Creek Bike Trail: Bike Trail Class 1 Facility/Connector between Del Amo Bl and LA River Bike Trail
		236	Inglewood	Crenshaw Bl : I-105 to 90th St
		221	LA County	Crenshaw Bl; in Palos Verdes Peninsula; Class 2 Bike Lanes
		222	LA County	Del Amo Blvd; Normandie Ave to I-110; Class 2 Bike Lanes
		218	LA County	Dominguez Channel Bike Trail: Bike Trail Class 1 Facility/Connector from Main St to Wilmington
		208	LA County	Dominguez Channel: Redondo Beach Blvd to Vermont Ave; Class 1 Bike Path
		209	LA County	Dominguez Creek Bike Path; Main St to Pacific Coast Hwy; Class 1 Bike Path
		244	Gardena, Torrance	Dominguez Creek Channel: Near El Camino College to Western Av
		223	LA County	El Segundo Blvd; Isis Ave to Inglewood Ave; Class 2 Bike Lanes
		1084	El Segundo	El Segundo Commuter Bikeways- Aviation Blvd, Douglas St., and Nash St. Establish three bicycle corridors within the city limits which are near large employers and adjacent to green line stations.
		210	Torrance	Enhanced Bicycle right-of-way and rack
		1031	LA City	Figueroa Street: Bicycle improvements from 146th Street to Redondo Beach Blvd
		206	Various	I-405: Implement bikeway projects throughout the I-405 corridor (approx. 24 miles of Class II and 1.6 miles of Class I: Corridor-wide
		245	LA City and County	Imperial Hwy: Aviation Bl to Arlington Av
		224	LA County	Imperial Hwy; La Cienega Blvd to Inglewood Ave; Class 2 Bike Lanes
		225	LA County	Imperial Hwy; Van Ness Ave to Vermont Ave; Class 2 Bike Lanes
		238	El Segundo	Installation of bike routes and related support facilities throughout El Segundo's major and minor arterials, including Aviation Blvd., El Segundo Blvd., Nash St., Douglas St., Grand Ave., Rosecrans, Mariposa, Imperial Ave. Main St., Loma Vista, Sheldon and Center St.
		250	LA City, Inglewood	La Brea Av: Exposition Bl to Imperial Hwy
		226	LA County	La Cienega Blvd; Imperial Hwy to El Segundo Blvd; Class 2 Bike Lanes
		228	LA County	Local Bikeways; Class 2 & Class 3 Bikeways on Local Streets
		246	Lomita	Lomita Bl (east segment): Crenshaw Bl to Western Av

Program	Subprogram	MM Project ID	Jurisdiction	Description
Bikeways Program (continued)	Bikeways Program (continued)	215	Torrance	Lomita Bl (west segment) Anza Av to Hawthorne Bl
		216	LA City, Lawndale, Manhattan Beach, Redondo Beach	Manhattan Beach Bl: South Bay Bike Trail to Dominguez Channel
		229	LA County	Manhattan Beach Blvd; Prairie Ave to Crenshaw Blvd; Class 2 Bike Lanes
		2015	Manhattan Beach	Manhattan Beach Citywide Bike Friendly Streets - Redondo Ave, Meadows Ave. Peck Ave. 15th St, 2nd St.
		2018	Manhattan Beach	Manhattan Beach Citywide Bike Racks and Lockers
		267	Manhattan Beach	Manhattan Beach: Bikeway/Pedestrian Improvements - Annual misc non-motorized transportation improvements; (construct crosswalk, bike lances, etc.)
		230	LA County	Marine Av; Gerkin Ave to Crenshaw Blvd; Class 2 Bike Lanes
		2011	Manhattan Beach	Marine Ave. Bike Lanes - Sepulveda Bl. to Aviation Bl.
		231	LA County	Normandie Avenue; 225th St to Sepulveda Blvd; Class 2 Bike Lanes
		2014	Manhattan Beach	Parkway Dr. and Redondo Ave. Bike Lane/Paths
		217	Torrance	Prairie Av: Artesia to Redondo Beach Bl
		232	LA County	Prairie Ave; Redondo Beach Blvd to Marine Ave; Class 2 Bike Lanes
		247	LA County, Lawndale, Gardena, Torrance	Redondo Beach Bl : Hawthorne Bl to Western Av
		233	LA County	Redondo Beach Blvd; Prairie Ave to Crenshaw Blvd; Class 2 Bike Lanes
		2017	Manhattan Beach	Rosecrans Ave. Bike Lanes/Path-Sepulveda Bl. to Aviation Bl.
		5000	LA City - San Pedro	San Pedro Community: Complete Bike Network in City of LA, San Pedro Community, including connections on 1st Street, 25th Street, 9th Street, Grand Avenue, Gaffey Street, and Westmont Drive, as well as the Greenway Network reference in the General Plan Framework.

Program	Subprogram	MM Project ID	Jurisdiction	Description
Bikeways Program (continued)	Bikeways Program (continued)	2000	LA City - Harbor Gateway	San Pedro: City initiation of the development of proposed Bikeways along power line rights-of-way, flood control channels and abandoned railroad property. Landscaping of street medians is also proposed, where feasible.
		2013	Manhattan Beach	Valley Dr./Ardmore Ave. Bike Path - Sepulveda Bl. to Longfellow Ave.
		239	Torrance	Western Av: 223rd St to 190th St
		235	LA County	Western Ave; 120th Street to El Segundo Blvd; Class 2 Bike Lanes
		5001	City of Los Angeles	Wilmington-Harbor City Area Bikeway System: Complete the City of LA, Wilmington-Harbor City Area Bikeway System: (1) Implement the proposed Bikeway Master Plan in the Bikeway Five Year Program and the 20- year Plan for the Wilmington-Harbor City area along the Dominguez Channel, Anaheim Street, Avalon Blvd, and Figueroa Street.
Pedestrian Program	Pedestrian Program	259	SBCCOG	Beach access/circulation improvements and parking visitor information/way-finding
		2024	Manhattan Beach	Bell Ave./Blanche Ave./24th St./25th St. Crossing Realignment
		4007	El Segundo	High Pedestrian Crossing Improvements - Main St, near schools
		2019	Manhattan Beach	Highland Ave. Walk Street Crossings
		260	LA County	LA County Pedestrian Improvements; Construct New Sidewalk
		264	LA County	Los Angeles County: Pedestrian Improvements
		263	Manhattan Beach	Manhattan Beach Annual Pedestrian Improvements
		2020	Manhattan Beach	Manhattan Beach Downtown Pedestrian Crossing Enhancements
		265	Manhattan Beach	Manhattan Beach New Pedestrian Improvements
		3006	Torrance	Pedestrian overpass across Hawthorne Blvd at Del Amo Fashion Center and Financial Center
		258	Redondo Beach	Pedestrian Path of Travel Improvements (including sidewalk, curb, gutters, ramps, and storm drain inlet devices)
		2021	Manhattan Beach	Sepulveda Bl. Crossing Treatments

Program	Subprogram	MM Project ID	Jurisdiction	Description
Pedestrian Program (continued)	Pedestrian Program (continued)	262	LA County	Sidewalk Curb Parkway Preservation
		261	LA County	Vermont Ave; 92nd St to El Segundo Blvd; Regional Pedestrian Trail
		2023	Manhattan Beach	Veterans Parkway Pedestrian Crossing Enhancements
Complete Streets/Slow Speed Lanes Program	Complete Streets Program	2022	Manhattan Beach	Center Place and 11th St. Walk Streets-Ocean Dr. to Morningside Dr.
		5002	City of Los Angeles	Complete Streets Program for San Pedro. 5th Street: Conversion of 5th Street from Harbor Boulevard to Pacific Avenue into a one lane one-way westbound with angled parking. 7th Street: Conversion of 7th Street from Harbor Blvd to Pacific Ave into a one lane one-way eastbound with angled parking. 6th Street create a Pedestrian Priority Street from Pacific to Harbor N. Pacific Ave. Pedestrian street between 3rd St - 9th Street. 8th Street: Pedestrian Street: Between S. Weymouth Ave + S Walker Ave.
		271	SBCCOG	Develop "complete streets" designed to accommodate Neighborhood Electric Vehicles
		3000	Lawndale	Develop and Implement Citywide Mobility Plan and Complete Streets Guidance
		4001	El Segundo	El Segundo Blvd - Complete Street between Whiting and Sepulveda Blvd.
		2053	LA City - San Pedro Ports O'Call	Sampson Way: proposed expansion of Sampson Way into a scenic boulevard along the west perimeter of Ports O'Call Village, and the creation of an extensive network of public promenades, bikeways, and Coastal Trail connections will facilitate public access throughout the waterfront area to better connect the waterfront with downtown San Pedro and the surrounding community.
		2044	LA City – San Pedro	San Pedro priority transit routes. The San Pedro Community Plan identifies transit priority streets. Transit priority streets are arterials where bus use is prioritized. The design of these streets should support the comfortable use of transit, utilizing wide sidewalks, landscaping, attractive street furniture and well designed bus stops/shelters. Pedestrian amenities, such as trash cans and benches, and safety measures, such as pedestrian lighting and special crosswalk paving, help support a pedestrian-friendly environment along these streets. Roadway construction features should include concrete bus pads and other features to address the extra maintenance issues associated with high volumes of bus traffic. Transit priority streets include: Western Avenue between 25th and North San Pedro boundary ; Harbor Boulevard between Vincent Thomas Bridge and 17th Street; Pacific Avenue between Bluff Pl and John S. Gibson Boulevard; 5th Street between Pacific Avenue and Harbor Boulevard; and 7th Street between Harbor Boulevard and Weymouth Street.

Program	Subprogram	MM Project ID	Jurisdiction	Description
Complete Streets/Slow Speed Lanes Program (continued)	Complete Streets Program (continued)	4000	Rancho Palos Verdes, LA City, Caltrans	Western Ave (SR213) - Complete Street Project
	Slow Speed Implementation Program	266	SBCCOG	Slow Speed Lane Implementation Program
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management)	Freeway TMS Program	1106	Caltrans, Los Angeles, Hawthorne, Inglewood	I-105: From Imperial Hwy to Rte 110, Post Mile 0.0/7.264, upgrade Transportation Management System
		1105	Caltrans, Los Angeles	I-110: From 9th Street to I-5, PM 0.00/25.75, Install Transportation Management System and upgrade for life cycle replacements of the TMS for the connected corridor
		181	Caltrans, Los Angeles, LA County, Inglewood	I-405/I-105/SR-90: NB and SB I-405 "Add connector metering and ramp metering between I-105 and SR-90 interchanges". PM R21.18/25.94
		2029	Caltrans, Los Angeles, Inglewood, Culver City	I-405: From Rte 105 to Rte 10, Postmile 21.175/29.5, Upgrade Transportation Management System
		200	Caltrans, Metro	I-405: Expand operations of FSP Corridor-wide (yearly)
		199	Caltrans, Metro	I-405: Expand operations of FSP throughout Segment B of I-405 Yearly
		1107	Caltrans, Los Angeles, Carson, Torrance, Lawndale, Redondo Beach, Hawthorne	I-405: From Alameda Street to Rte 105, Postmile 8.78/21.175, upgrade transportation management system
	Subregional Traffic Management Center	203	SBCCOG	Implement a Sub-Regional Traffic Management Center

Program	Subprogram	MM Project ID	Jurisdiction	Description
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management) (continued)	Arterial Messaging System	3003	Various	Arterial Messaging System
	Event/ Emergency Management System Program	3002	Various	Community Notification System
		3004	Hawthorne, El Segundo, Redondo Beach, Hermosa Beach, Gardena, and Manhattan Beach	Emergency Vehicle Priority System
		3005	El Segundo, Gardena, Hawthorne, Hermosa Beach, Manhattan Beach, Redondo Beach	Emergency Vehicle Priority System Upgrades. Implement adding emergency vehicle dynamic signing at 100 intersections equipped with emergency vehicle priority equipment in the cities of Hawthorne, El Segundo, Redondo Beach, Hermosa Beach, Gardena and Manhattan Beach.
		116	Carson	StubHub Arena Event Management System
		2046	LA City - San Pedro	Tsunami evacuation route. Work with the Emergency Management Department and the Fire Department to change the tsunami evacuation route from 6th Street to 7th Street, should 6th Street be closed to motorized vehicles in the future.
	Traffic Signal Synchronization Projects	1110	LA County	120th Street (EAST) TSSP; Western Ave to Vermont Ave; Traffic Signal Synchronization
		1111	LA County	120th Street (WEST) TSSP; Aviation Bl to Van Ness Ave; Traffic Signal Synchronization
		1112	LA County	135th Street TSSP; Yukon Ave to Avalon Bl; Traffic Signal Synchronization
		1113	LA County	182nd Street/Albertoni Street; Inglewood Ave to Avalon Bl signal synchronization
		111	LA County	Anza Av: 190th St to Pacific Coast Hwy signal synchronization
		97	LA County	Avalon Boulevard TSSP; 126th St to Sepulveda Bl; Traffic Signal Synchronization
		1114	LA County	Crenshaw Boulevard (NORTH) TSSP; Manchester Ave to Rosecrans Ave signal synchronization

Program	Subprogram	MM Project ID	Jurisdiction	Description
Transportation Management Systems (Traffic Operations Centers, Traffic Signals, Emergency Management) (continued)	Traffic Signal Synchronization Projects (continued)	107	LA County	Del Amo Bl : Avalon Bl (EAST) to Susana Road signal synchronization
		1115	LA County	Del Amo Boulevard (WEST) TSSP; Prospect Ave to Western Ave signal synchronization
		98	LA County	El Segundo Boulevard TSSP; Illinois St to Vermont Ave; Traffic Signal Synchronization
		1109	LA County	Hawthorne Bl : 104th St to Imperial Hwy signal synchronization
		110	LA County	Hawthorne Bl : 244th St to Palos Verdes Dr W signal synchronization
		92	LA County	Hawthorne Bl : Imperial Hwy to Manhattan Beach Bl signal synchronization
		99	LA County	Imperial Highway TSSP; Sundale Ave to Budlong Ave; Traffic Signal Synchronization
		93	LA County	Inglewood Av : 104th St To 111th Pl signal synchronization
		94	LA County	La Brea Av : Centinela Av to Century Bl signal synchronization
		1116	LA County	La Cienega Boulevard TSSP; Slauson Avenue to El Segundo Blvd signal synchronization
		1066	Lawndale	Lawndale Various Citywide Traffic Signal Improvements Citywide
		108	LA County	Lennox Bl : Inglewood Av to Freeman Av signal synchronization
		109	LA County	Manhattan Beach Bl : Manhattan Av to Van Ness Av signal synchronization
		95	LA County	Normandie Av : 89th St to El Segundo Bl signal synchronization
		101	LA County	Redondo Beach Boulevard; Artesia Bl to Vermont Ave; Traffic Signal Synchronization
		102	LA County	Rosecrans Avenue TSSP; Highland Ave to Ocean Gate Ave; Traffic Signal Synchronization
		103	LA County	Rosecrans Avenue TSSP; Ocean Gate Ave to Vermont Ave; Traffic Signal Synchronization
		104	LA County	South Bay Arterial Operational Improvements, Signal Synchronization, Backbone network redundancy, CCTV @ 16 locations
		1117	LA County	Van Ness Ave TSSP; Imperial Hwy to Torrance Bl signal synchronization
		106	LA County	Western Av : 104th St to 111 St signal synchronization
		2055	LA City - Wilmington-Harbor City	Wilmington-Harbor City's signalized intersections are integrated with the City's ATSAC system

Program	Subprogram	MM Project ID	Jurisdiction	Description
Goods Movement	Regional Goods Movement Program	5004	Port of Los Angeles and Port of Long Beach	New Cerritos Channel Rail Bridge
		5005	Port of Los Angeles	Pier 400 Second Lead Track
		5006	Port of Los Angeles	Port of Los Angeles Improvements: 1) WBCT On-Dock Rail: Addition of 2 new loading tracks; 2) YTI On-Dock Rail: Addition of 1 new loading track; 3) Pier 400 Rail Expansion-Phase 1; 4) Pier 300 Rail Expansion: Addition of 2 new loading tracks; 5) Seaside Yard: Dedicated on-dock rail yard for Berth 226-236 terminal (Evergreen); 6) Terminal Island Support Yard; 7) Berth 200 Railyard Expansion: Additional Storage/working tracks; 8) Port of LA Container Movement Enhancement Program: WBCT wharf improvements, YTI wharf improvements and Pier 300 wharf improvements
		139	SBCCOG	South Bay Goods movement projects related to Port of Los Angeles and LAX
		5007	Port of Los Angeles and Port of Long Beach	Triple Track S.O Thenard
Grade Separation and Crossing Projects	Grade Crossing Improvement Projects	131	Carson, LA City, LA County, Torrance	Carson St : Improve striping
		132	El Segundo	Imperial Hwy: Additional signage and improved striping; roadway improvements at crossing
		135	Redondo Beach, Lawndale	Inglewood Av : Adjust signal timing and install raised median
		133	Inglewood	La Brea Av : Installation of a pre-signal, additional signage and improved striping
		134	Inglewood	La Cienega Bl : Additional signage and improved striping
		136	Lawndale	Manhattan Beach Blvd: Improve drainage to prevent failure of crossing gates
		129	Redondo Beach, Hawthorne	Marine Av: Additional signage and improved striping (and intersection modification). Goods movement and safety enhancement at RR tracks.
		137	LA City, Torrance (Caltrans)	Sepulveda Bl: Adjust signal timing at Western Av/Sepulveda Bl to reduce queuing over tracks

Program	Subprogram	MM Project ID	Jurisdiction	Description
Grade Separation and Crossing Projects (continued)	Grade Crossing Improvement Projects (continued)	130	Torrance	Torrance Bl: Adjust signal timing to relieve queuing at Torrance Bl crossing: Torrance Crenshaw Bl Adjust signal timing to relieve queuing at Torrance Bl crossing
		138	Torrance	Western Av: Revise warning time and gate down operations related to train switching maneuvers
	Subregional Grade Separation Program	125	Manhattan Beach, El Segundo, Hawthorne; SBCCOG	Aviation Bl/Rosecrans Av Grade Separation: Grade sep Aviation Bl under Rosecrans Av for free-flow north-south movements via tunnel & at-grade east-west movements at signalized intersection
		3008	Torrance	Grade Separation between rail and street at: Torrance Blvd, Carson St., Sepulveda Blvd, and Western Ave
		141	Caltrans, SBCCOG	I-405: NB I-405 Construct grade separation at La Cienega Blvd and Manchester Blvd. PM 23.64/23.35
		1033	Inglewood	La Cienega Boulevard: La Cienega Expressway: complete gaps in La Cienega Blvd. grade separation
		127	El Segundo	Park Place: Roadway extension of Park Place and railroad grade separation between Sepulveda Blvd. and Nash St. (roadway does not currently exist - this is a gap closure project) to help relieve traffic on Rosecrans between Sepulveda Blvd. and the I-405, and on Sepulveda between El Segundo Blvd and Marine Ave.
		3007	Torrance	Plaza Del Amo Extension and Grade Separation
Paratransit (Dial-a-Ride, Senior/ Disabled)	Paratransit Program	2086	Torrance	Construct and operate a Regional Mobility Center to assist senior and disabled patrons.
Metro/Municipal Transit Capacity Expansion	Metro Harbor Subdivision/ Green Line Southern Extension to Torrance and Maintenance Facility	296	Metro, SBCCOG	Metro Harbor Subdivision/Green Line Southern Extension to Torrance with Maintenance Facility (underfunded)

Program	Subprogram	MM Project ID	Jurisdiction	Description
Metro/Municipal Transit Capacity Expansion (continued)	Metro Harbor Subdivision/ Green Line Extension from Torrance to Long Beach Blue Line	4008	Metro	Metro Harbor Subdivision/Green Line Extension from Torrance to Long Beach Blue Line
	Metro Harbor Subdivision/ Green Line Extension from Torrance to San Pedro	4009	Metro	Metro Harbor Subdivision/Green Line Extension from Torrance to San Pedro
	Automated Transit Network Program	4010	Inglewood	Automated Transit Network (ATN) for the City of Inglewood
	Bus Rapid Transit Program	285	SBCCOG	High frequency South Bay Municipal operator "Rapid" lines for regional connectivity to South Bay Rail and Express Bus Stations
		286	LA City, LA County, Inglewood	Increase Metro Rapid Service To San Fernando Valley
	Bus Expansion Program	300	LA City, Long Beach, Redondo Beach, Torrance	Add transit service connection to downtown Long Beach to South Bay Galleria
		2090	Torrance	Carson Street Corridor service - Del Amo Mall to Del Amo Station
		3012	Torrance	Creation of on-street layover bays in sub-regional HUB areas (add restrooms where possible). Additional Operating funding for service expansion.
		4006	Various	Demand Responsive Transportation Program
		2096	Torrance	Downtown Circulator Service
		2095	Torrance	Expansion and Replacement Buses

Program	Subprogram	MM Project ID	Jurisdiction	Description
Metro/Municipal Transit Capacity Expansion (continued)	Bus Expansion Program (continued)	288	El Segundo, Hermosa Beach, Manhattan Beach, Redondo Beach	Increase Airport express bus service from LAX to South Bay
		284	Torrance Transit	Increase Express bus service on I-405
		280	Downey, LA City, LA County, Lynwood, Norwalk, Paramount	Increase feeder bus service to Metro Green line and Harbor Transit way – Metro Green Line (Lines 40, 232, 439:, Harbor Transit way (Lines 442, 445, 550)
		268	SBCCOG, LA City	Municipal and Local Transit Capital and Operations and Paratransit Services (e.g., DASH) Capital and Operations unmet funding needs and expansion of services
		2094	Torrance	Provide additional circulator service within Torrance boundaries to connect with RTC
		2091	Torrance	Sepulveda Corridor service - Redondo Beach Pier to Willow Station
		2089	Torrance	Torrance to Disneyland/Metrolink (Orange County) via CA-91
		2092	Torrance	Torrance to Orange County Metrolink - via I-405 HOT Lane
		2088	Torrance	Torrance to UCLA/West LA Job Centers via I-405
		2054	LA City - Wilmington-Harbor City	Transit improvements [TIMP]: Implement the South Bay Transit Restructuring Study, which will recommend public transit improvements
Metro/Municipal Transit Incremental Operational Costs from Capacity Expansion	Transit Operations Program	2071	Redondo Beach: Beach Cities Transit	Annual maintenance and operations funding for RB South Bay Regional TC
		306	Torrance Transit	Annual maintenance and operations funding for RTC
		2064	Manhattan Beach, El Segundo	Annual Summertime Beach/Downtown Circulator Bus System
		2075	Redondo Beach: Beach Cities Transit	Operating funds for business districts shuttles to RB South Bay TC

Program	Subprogram	MM Project ID	Jurisdiction	Description
Transit Incremental Operational Costs from Capacity Expansion (continued)	Transit Operations Program (continued)	283	Torrance Transit	Operating funds for RTC to DAFC shuttle
		282	Torrance Transit	Reduce peak period headways on selected local and express transit at various locations to be determined
Metro/Municipal Transit Maintenance and Rehab	Green Line: Miscellaneous capital and operational improvements to existing line	301	Metro, El Segundo, Hawthorne, City of LA City, LA County	Green Line: Miscellaneous capital and operational improvements to existing line. Improvements include adding tail tracks and crossovers at the Redondo Beach Station and extending station platforms to allow for 3-car trains at Aviation/LAX, Mariposa, Douglas, and Redondo Beach stations.
	Transit Maintenance and Rehab Program	2097	Torrance	Bus Stop Improvements
		2065	Manhattan Beach	Citywide Bus Shelters and Amenities
		3011	Torrance	Increase Maintenance Capacity - Add Mechanics, Paint & Body Personnel, Hardware Electronics Expert, new Maintenance Bays.
		303	SBCCOG	Preventive Maintenance/Rehabilitation of Transit (Bus & Rail)
		304	Manhattan Beach	Public Transit Services Annual Operating
		2073	Redondo Beach: Beach Cities Transit	Rehabilitation of Transit Maintenance and Operations Facility
Transit Centers/ Park and Ride	Transit Center/Park and Ride/Multi Modal Center Program	1081	Torrance	Crenshaw Blvd Torrance Transit Center Roadway Improvements - From Del Amo to Dominguez: 3 Southbound turn lanes @ Del Amo Blvd, 208th St, Transit Center Entrance, Signal Improvements at 2 and new signal @ Transit Center
		2033	LA City - San Pedro	Develop multi modal center in or near downtown San Pedro.
		277	Metro	Expand Artesia Station park-and-ride facility
		273	Torrance	Furniture and Equipment to complete Phase I of the Regional Park and Ride Facility (RTC)
		1020	LA County, LA City - Harbor Gateway	Harbor Freeway Transit way and Transit Center (Artesia Transit Center): Expand park & ride facility.

Program	Subprogram	MM Project ID	Jurisdiction	Description
Transit Centers/ Park and Ride (continued)	Transit Center/Park and Ride/Multi Modal Center Program (continued)	275	Torrance	Pacific Coast Highway/Hawthorne Blvd Park and Ride structure
		276	Gardena	Park and Ride facility - southwest corner of El Segundo/Vermont and southwest El Segundo/Western
		1082	Torrance	PCH/Hawthorne Park and Ride
		274	Torrance	Phase II of the Regional Parking and Ride Facility (Parking Structure)
		1054	Torrance	Torrance Regional Transit Center- 465 Crenshaw Boulevard: Construct a regional Transit Center including an 8 bus berth transit center building, a kiss-n-ride passenger drop-off, and a park-and-ride vehicle lot for 250 vehicles for the initial parking space provision
		2070	Redondo Beach: Beach Cities Transit	Upgrade to Transit Center parking lot for Green Line extension
		2087	Torrance	Work with LACMTA (Metro) to rehab the Torrance Transit Park and Ride Regional Terminal (RTC)
Car Sharing/Ride sharing/ Vanpool/ Telecommuting Programs	Car Sharing/ Ride sharing/ Vanpool/ Telecommuting Programs	278	SBCCOG	Car and Bike Sharing Programs
		4004	Various, SBCCOG	Telecommuting Program
Sustainability SB Plan (Neighborhood-Oriented Development, 1st/Last Mile)	First/Last Mile Program	252	SBCCOG	"First/Last-mile" connections for transit; Metro Green Line, I-110 Express Lanes station
		253	SBCCOG	"First/Last-mile" connections for transit; Transit hubs for ease of transfers. Up to 12 new/upgraded stations
		254	LA County	Aviation Blvd/LAX Green Line Station: Transit Oriented District; First Mile/Last Mile Active Transportation Access Improvements
		255	LA County	Hawthorne/Lennox Green Line Station; Transit Oriented District; First Mile/Last Mile Active Transportation Access Improvements
		256	LA County	I-110/West Carson Transit Center; Transit Oriented District; First Mile/Last Mile Active Transportation Access Improvements
		1098	Redondo Beach: Beach Cities Transit	Improve access to/from Transit Center/Green Line Extension station near Artesia Blvd/Kingsdale Ave/South Bay Galleria areas
		307	Torrance	Pedestrian walkway and elevators from proposed rail station to bus bay

Program	Subprogram	MM Project ID	Jurisdiction	Description
Sustainability SB Plan (Neighborhood-Oriented Development, 1st/Last Mile) (continued)	First/Last Mile Program (continued)	257	LA County	Vermont/Athens Green Line Station; Transit Oriented District; First Mile/Last Mile Active Transportation Access Improvements
	Mobility/ Sustainability Education and Incentive Program	3009	Various	Enhance Mobility/Sustainability Education and Incentive Program
	Neighborhood-Oriented Development Program	279	SBCCOG	Establish and implement "Neighborhood-Oriented Development" Program
	Subregional Sustainability Transportation Program	272	SBCCOG	Sub-regional Sustainability Transportation Program
Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle)	Vehicle Conversion (Electric Vehicle, Slow Speed Vehicle) Program	3010	Torrance	Alternative Fueling Infrastructure (Program at various locations)/Electric Charging Stations at City facilities and parks
		269	Torrance	CNG Station (Madrona Site) upgrade
		2074	Redondo Beach: Beach Cities Transit	CNG Station at Transit Maintenance and Operations Facility
		281	Torrance Transit	Fleet modernization project-replacement of diesel buses with hybrid buses by the end of 2015
		270	SBCCOG	South Bay Plug-in Electric Vehicle Public Infrastructure Program throughout the subregion
Transportation Enhancement/ Beautification Programs	Transportation Enhancement/ Beautification Program	1	LA County	LA County Aesthetics Beautification
		2048	LA City - San Pedro	San Pedro Scenic Highways. Improvements on 25th Street between the westerly Plan area boundary and Western Avenue; Paseo Del Mar; Harbor Blvd; and Western Ave between 25th Street and Paseo Del Mar
		2049	LA City - San Pedro	San Pedro Streetscapes. Implement a streetscape plan for 6th Street between Pacific Blvd. and Harbor Blvd. Implement streetscape plans for N. and S. Gaffey St.

Program	Subprogram	MM Project ID	Jurisdiction	Description
Transportation Enhancement/ Beautification Programs (continued)	Transportation Enhancement/ Beautification Program (continued)	305	Torrance Transit	Solar lighting at RTC, Bus Shelters and stops

*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.

SUBREGIONAL MOBILITY MATRIX
South Bay Cities Subregion
Project No. PS-4010-3041-F-01-TO3

APPENDIX D
Baseline Conditions – Final Report

Prepared for:

Metro

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February 2015

Baseline Conditions – Final Report

Subregional Mobility Matrix
South Bay Cities Subregion
PS-4010-3041-F-01-TO3

Prepared for:

Metro

Los Angeles County
Metropolitan Transportation Authority

Prepared by:
Cambridge Systematics, Inc.

Quality Review Tracking

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Internal Review Draft	12/12/2014	Krista Jeannotte	
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Revised Final	2/20/2015	Krista Jeannotte	
Revised Final 2	2/27/2015	Krista Jeannotte	

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List of Terms and Acronyms

Acronyms	Definitions
ACS	American Community Survey
BEV	Battery Electric Vehicle
BRT	Bus Rapid Transit
CalEPA	California Environmental Protection Agency
CMP	Congestion Management Plan
COG	Council of Governments
CSAN	Countywide Significant Arterial Network
CSTAN	Countywide Significant Truck Arterial Network
ITS	Intelligent Transportation Systems
LRTP	Long Range Transportation Plan
LADOT	Los Angeles Department of Transportation
LUV	Local Use Vehicle
Metro	Los Angeles County Metropolitan Transportation Authority
MPH	Miles Per Hour
NEV	Neighborhood Electric Vehicle
PCH	Pacific Coast Highway
PHEV	Plug-in Hybrid Electric Vehicle
SBCCOG	South Bay Cities Council of Governments
SCAG	Southern California Association of Governments
SFVCOG	San Fernando Valley Council of Governments
SGVCOG	San Gabriel Valley Council of Governments
SR	State Route
SRTP	Short Range Transportation Plan
SWITRS	Statewide Integrated Traffic Records System

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, were 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 provide a performance evaluation framework to identify short-, mid-and long-term projects and programs through a subregional collaborative process. It is envisioned that these matrices will assist the subregions in identifying projects and programs for future transportation funding, as well as future updates to the Metro Long Range Transportation Plan (LRTP).

Figure 1-2 presents the South Bay Cities Mobility Matrix Subregion, also referred to as the "study area" for the purposes of this document. The South Bay Association formally became a Council of Governments (SBCCOG) in 1994. Its members are the cities of Carson, El Segundo, Gardena, Hawthorne, Hermosa Beach, Inglewood, Lawndale, Lomita, Los Angeles (Harbor Gateway/San Pedro areas), Manhattan Beach, Palos Verdes Estates, Rancho Palos Verdes, Redondo Beach, Rolling Hills, Rolling Hills Estates, Torrance, and unincorporated areas of Los Angeles County.

The SBCCOG mission is to provide a leadership forum for South Bay local governments to act collaboratively and advocate for subregional issues with a focus on improving transportation and the environment, and strengthening economic development. The SBCCOG is striving to be a subregion that is environmentally sustainable, has reduced congestion, and a healthy economy.

1.2 Report Purpose and Structure

This document establishes baseline transportation conditions in the South Bay Cities 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, goods movement, and local use vehicles (LUV).

Section 2.0 describes the projects removed from consideration in the South Bay Cities Mobility Matrix due to the project being identified as complete, in construction, fully funded, redundant

with another project, or no longer desired by the South Bay Cities Mobility Matrix Subregion.. The land uses and demographics of the study area are covered in Section 3.0. Section 4.0 contains an overview of travel patterns. Sections 5.0, 6.0, and 7.0 analyze the freeways and arterials, transit, and the bicycle and pedestrian facilities in the study area, respectively. Finally, Section 8.0 provides a summary and discussion of next steps.

1.3 Land Use and Demographics

Section 3.0 describes subregional land use and demographic conditions.

The South Bay Cities Mobility Matrix Subregion varies greatly in its land use and demographic make-up. While some areas are almost exclusively residential, other areas have a mix of residential, industrial, and commercial activity. Ethnic diversity also varies within the study area, with some areas almost consisting exclusively of minority populations.

The 143 square mile study area is home to about a million residents and 428,000 jobs. The population is expected to grow by seven percent to over 1.1 million over ten years (2024). Employment in the study area is also expected to increase by about five percent to 448,000 over the same period. This growth is on par with the average growth forecast for all of Los Angeles County.

1.4 Multimodal Transportation System

This report provides a high-level analysis of baseline conditions on the multimodal transportation system. Section 4.0 outlines Mobility Matrix Subregional travel markets in the South Bay study area.

Commuters in the study area are somewhat more dependent upon vehicle travel than the county average. About 76.1 percent commuted via single-occupant vehicle in 2012, followed by carpooling (10.3 percent), transit (5.5 percent), telework (4.1 percent), active transportation (2.6 percent), and other – motorcycle, taxi, and ferry (1.3 percent). Subsequent sections address mode-specific facility performance.

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 South Bay Cities Mobility Matrix Subregion contains five primary highways:

- **I-405.** The central north-south freeway that travels through the heart of the South Bay.
- **I-110.** This north-south freeway runs down the eastern border of the South Bay. To the north, it connects to Central Los Angeles.
- **I-105.** An east-west freeway near the northern border of the South Bay and connects to Gateway Cities subregion.
- **SR-91.** An east-west highway that extends to the eastern edge of Gardena and connects to Gateway Cities.
- **SR-1/Pacific Coast Highway (PCH).** A north-south highway near the western edge that also runs east-west into Long Beach.

The study area consists of about 100 linear miles of major arterials, ten major north-south arterials and 15 major east-west arterials, including critical routes for regional goods movement.

1.4.2 Transit

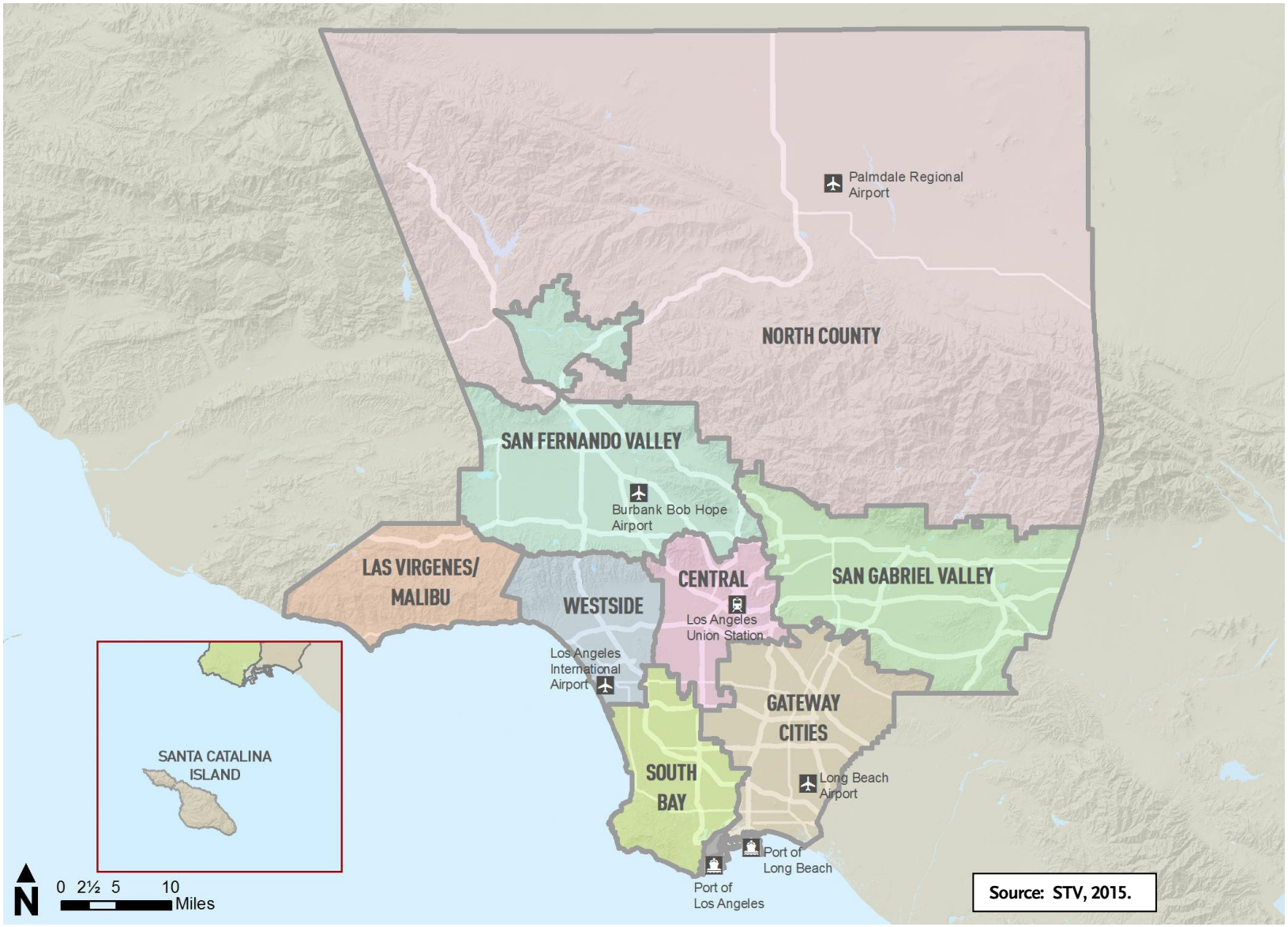
Section 6.0 provides an overview of the study area's bus transit and passenger rail opportunities. The South Bay Cities Mobility Matrix Subarea includes the following critical transit infrastructure that provide multimodal connection and access to key destinations:

- **Metro Green Line**
- **Metro Silver Line Bus Rapid Transit (BRT)**
- **Bus Services.** There are several bus service providers offering about 75 routes in total:
    - Beach Cities Transit
    - Carson Circuit
    - Gardena Bus Lines
    - LADOT DASH & Commuter Express
    - Lawndale Beat
    - Metro Bus Service
    - Palos Verdes Peninsula Transit
    - Torrance Transit

1.4.3 Active Transportation

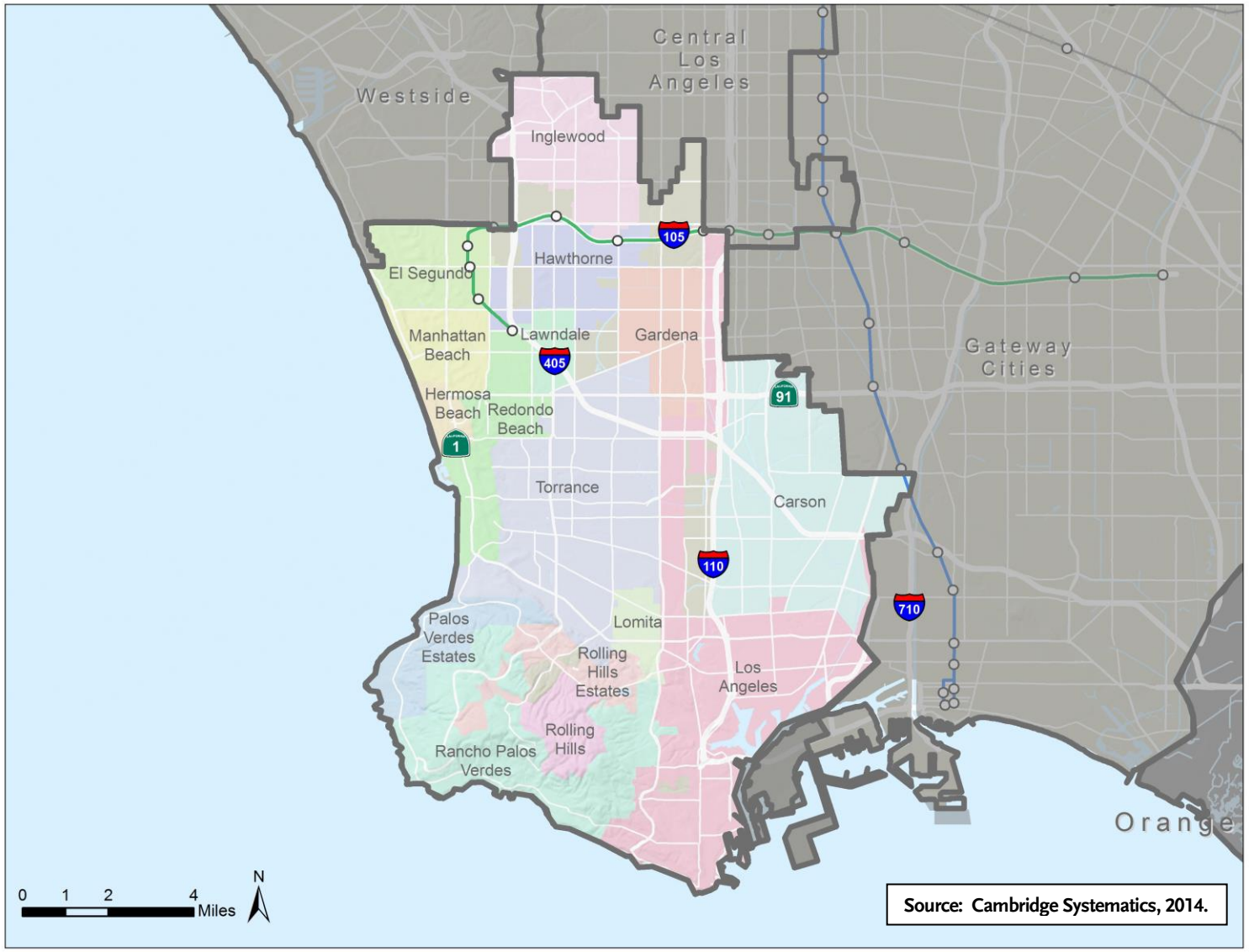
The South Bay Cities Mobility Matrix Subregion is home to a growing network of bicycle and pedestrian facilities. Section 7.0 addresses active transportation facilities in the study area, including safety.

Figure 1-1. Los Angeles County Mobility Matrix Subregions



SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES SUBREGION

Figure 1-2. South Bay Cities Mobility Matrix Subregion



SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES SUBREGION

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 South Bay 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 subregion. Table 2-1 contains a list of projects that are funded, in construction, or completed.

Table 2-1. Funded, In Construction, and Completed Projects in the South Bay Cities Mobility Matrix Subregion

Status	Project Type	Agency	Description	Project ID
Construction Complete	Arterial	Torrance	Maple Av at Sepulveda Bl: Construct SB right turn pocket	68
	Highway	Carson	I-405: Modify the SB on-ramp at Avalon Bl	176
In Construction	Arterial	Lawndale	Inglewood Avenue: From 156th Street to I-405 southbound on-ramp (Extension of Phase 2 widening)	1049
		Hermosa Beach	Pacific Coast Highway: From Artesia Boulevard to Anita Street: Widen and upgrade the intersections by construction of dedicated right and left-hand turn pockets, re-striping, and re-signalization.	1041
		Gardena	Rosecrans Avenue- from Vermont Avenue to Crenshaw Boulevard: Install median, left turn pockets, intersection upgrade. Coordinated with County TSSP project.	1051
		Manhattan Beach	Sepulveda Boulevard: at Marine Avenue add westbound dual left turns. Intersection improvements on Sepulveda at Rosecrans Ave., Cedar Ave., Valley Dr., 33rd St., 30th St., 14th St., and 2nd St.	1040
		Gardena	Vermont Avenue- from Rosecrans Avenue to 182nd Street: Addition of turn pockets, channelization, pavement upgrade, traffic signal improvements, and minor concrete work	1053
		Hawthorne	Hawthorne Boulevard- El Segundo Boulevard to Rosecrans Avenue: Improve traffic signals; add left-turn pockets; pedestrian, transit & handicap access improvements.	1072
Fully Funded	Arterial	Hermosa Beach	Aviation Blvd - Pacific Coast Highway Corridor Improvement	59
		Manhattan Beach	Aviation Boulevard- at Artesia Boulevard: Construct southbound right-turn lane. Aviation Boulevard Phase 1: Intersection Projects	1064
		Manhattan Beach	Aviation Boulevard- at Marine Avenue: Add dual southbound left-turn lanes. Aviation Boulevard Phase 1: Intersection Projects	1062
		Hawthorne	Aviation Boulevard- at Marine Avenue: Construct westbound right-turn lane. Aviation Boulevard Phase 1: Intersection Projects	1063
		Inglewood	Century Blvd Improvement - Van Ness Ave to Felton Ave	42
		Lawndale	Inglewood Ave Improvement from Rosecrans to Marine Avenue	45
		Lomita	Pacific Coast Highway- at Walnut: Improve receiving lane of northern leg of intersection	1071

Status	Project Type	Agency	Description	Project ID
Fully Funded	Arterial	Hawthorne	Prairie Avenue- from 118th Street to Marine Avenue: Signal improvements on Prairie Avenue from 118th Street to Marine Avenue	MR312.47
		LA County	Prairie Avenue TSSP; 118th St to Redondo Beach Bl; Traffic Signal Synchronization	100
		Manhattan Beach	Sepulveda Boulevard- at Manhattan Beach Boulevard: Add northbound, westbound and eastbound dual left turn lanes and southbound right-turn lane	1065
		Manhattan Beach	Sepulveda Boulevard- from 33rd Street to south of Rosecrans Avenue: Add one northbound lane by widening bridge no. 53-62	1059
		Redondo Beach	Torrance Bl : Catalina Av to Redondo Beach city boundary	251
	Highway	Redondo Beach	I-405: Widen southbound on-ramp from southbound Inglewood Avenue including a designated right-turn lane within existing ROW	171

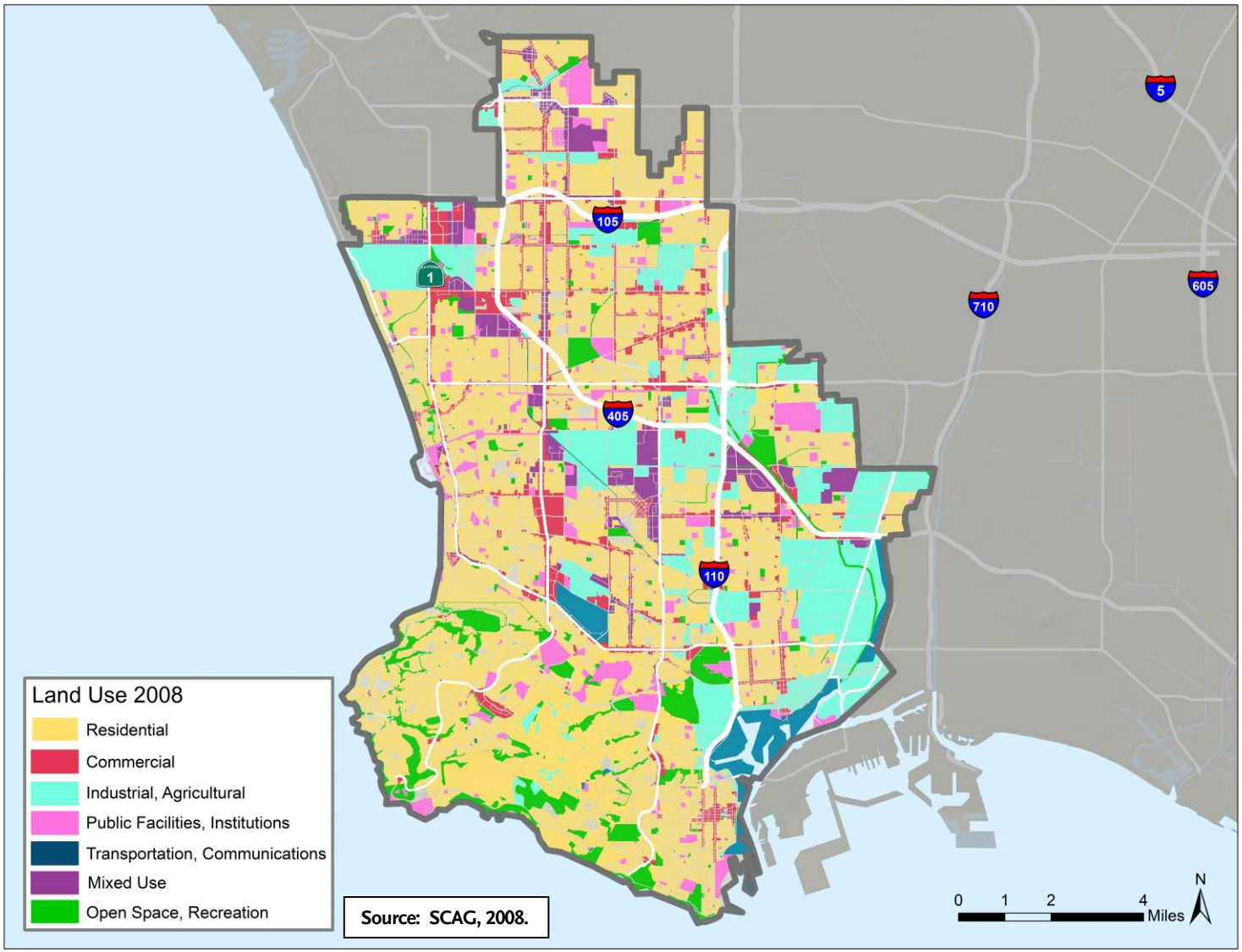
Source: Cambridge Systematics, 2014.

3.0 STUDY AREA DEMOGRAPHICS

3.1 Land Use

Figure 3-1 indicates estimated land use throughout the South Bay Cities Mobility Matrix Subregion according to 2008 Southern California Association of Governments (SCAG) figures. The majority of the study area is zoned residential, followed by significant industrial and some commercial activity. The south and west regions are predominantly residential including Manhattan Beach, Hermosa Beach, Redondo Beach, Palos Verdes Estates, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates. Industrial uses are found mostly near the Port of Los Angeles and Carson, but there are also large concentrations in El Segundo, Torrance, Gardena, and Hawthorne. The commercial uses are concentrated along the primary arterials in the study area, such as Rosecrans Avenue, Artesia Boulevard, Redondo Beach Boulevard, Hawthorne Boulevard, Western Avenue, and Pacific Coast Highway.

Figure 3-1. Land Use in South Bay Cities Mobility Matrix Subregion



3.2 Population and Employment

According to SCAG population and employment estimates and forecasts used in the Metro 2014 SRTP, the South Bay Cities Mobility Matrix Subregion is expected to grow from about one million residents in 2014 to more than 1.1 million by 2024, an increase of seven percent. Employment in the study area is expected to grow by five 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).

Table 3-1 summarizes the changes in population and employment in the South Bay cities and in the study area. Figure 3-2 shows 2014 population and employment, and Figure 3-3 shows the location of forecasted growth in jobs and residents from 2014 to 2024.

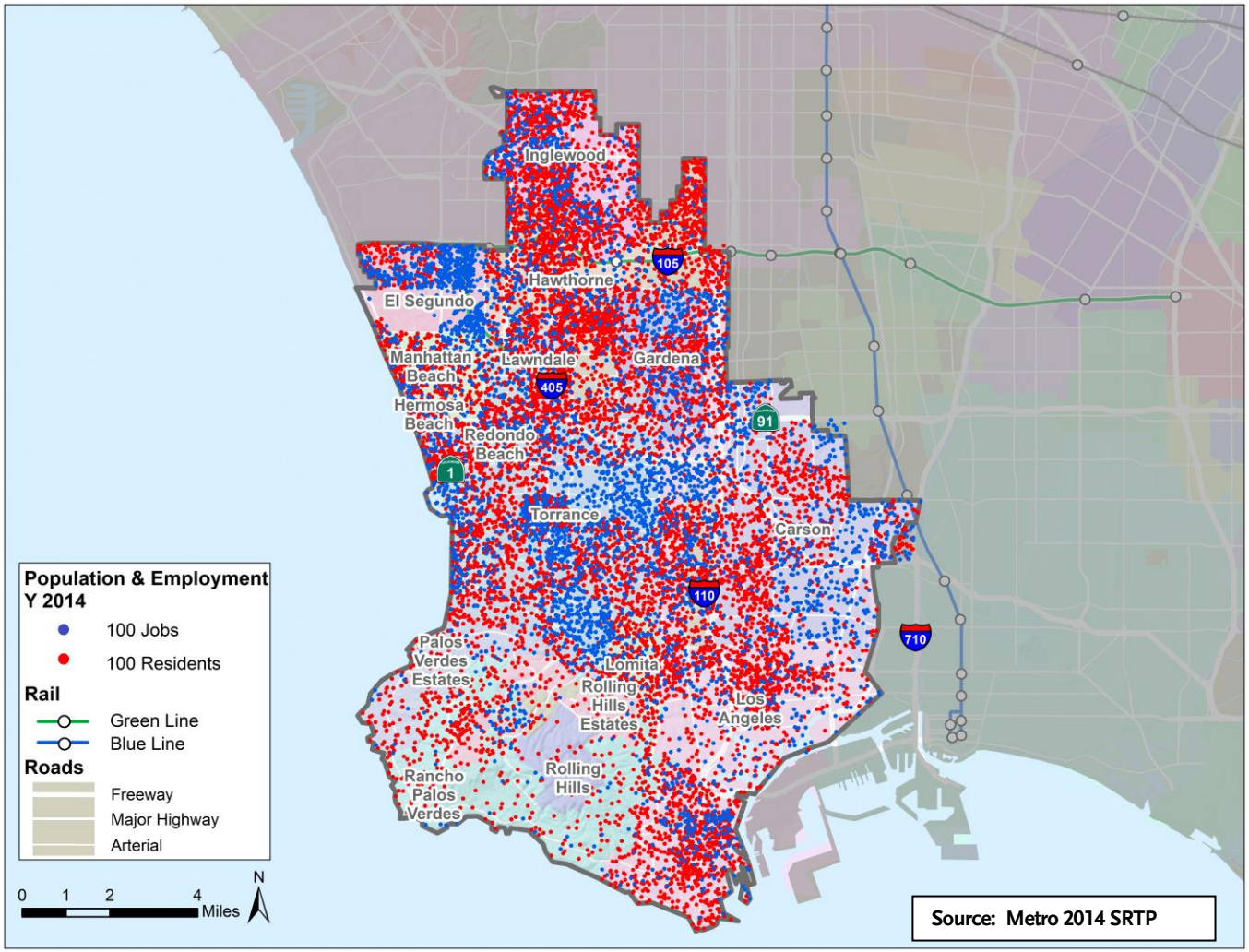
Over the next decade, population and employment is forecasted to grow across the majority of the study area. Los Angeles has the largest expected job population growth at 16 percent, adding an additional 10,000 people. Unincorporated areas (ten percent) and Carson (eight percent) follow, both still above the county average of seven percent. Los Angeles is estimated to add an additional 8,000 jobs (26 percent). Manhattan Beach follows with seven percent and most other cities are estimated to grow around five percent, which is the county average.

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

Cities	2014 Residents	2024 Residents	% Change in Population	2014 Employment	2024 Employment	% Change in Employment
Carson	91,100	98,000	8%	55,200	56,400	2%
El Segundo	16,700	16,800	1%	53,800	54,600	1%
Gardena	58,800	62,400	6%	30,800	30,900	0%
Hawthorne	87,000	92,900	7%	16,900	17,500	3%
Hermosa Beach	19,400	19,600	1%	7,000	7,300	5%
Inglewood	110,100	112,200	2%	32,900	34,400	5%
Lawndale	32,800	35,000	7%	5,900	6,100	4%
Lomita	19,700	20,600	4%	5,100	5,300	5%
Manhattan Beach	35,100	35,700	1%	15,100	16,100	7%
Palos Verdes Estates	13,300	13,300	0%	3,300	3,300	-1%
Rancho Palos Verdes	44,100	44,300	1%	9,900	10,400	5%
Redondo Beach	66,800	70,000	5%	30,300	30,900	2%
Rolling Hills	1,800	1,800	1%	-	100	2%
Rolling Hills Estates	8,200	8,400	1%	800	800	5%
Torrance	145,100	151,800	5%	105,600	109,200	3%
Los Angeles	190,700	221,500	16%	31,500	39,600	26%
Unincorporated	103,500	113,400	10%	23,900	25,400	6%
Total Study Area	1,044,000	1,117,600	7%	428,100	448,300	5%

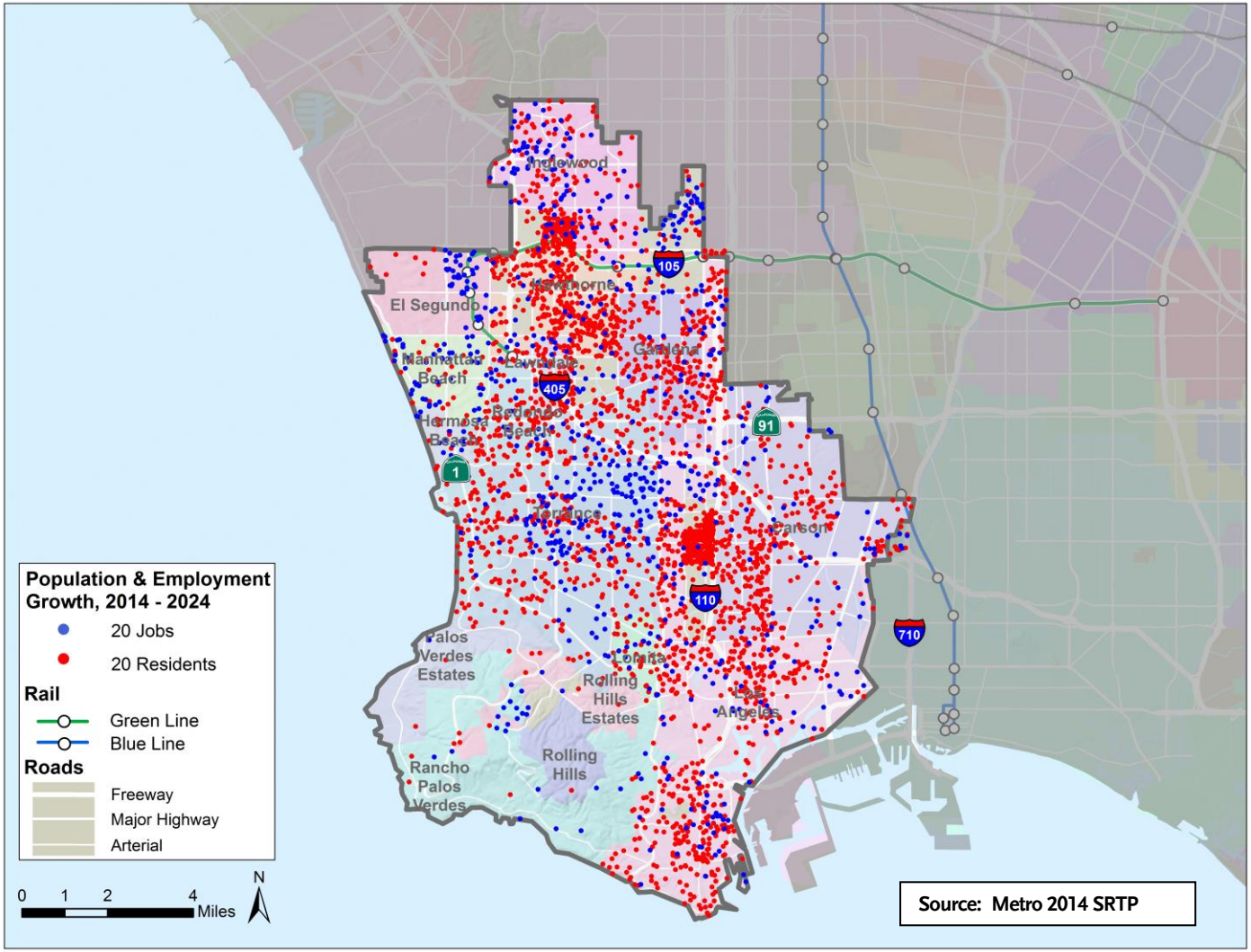
Source: Metro 2014 SRTP. Values rounded to nearest hundred.
Note: The data from the Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was formatted by Los Angeles County subregional boundaries as depicted in the Mobility Matrix work effort, which do not exactly correspond to the 2009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

Figure 3-2. 2014 Population and Employment in in South Bay Cities Mobility Matrix Subregion



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 3-3. Population and Employment Change in South Bay Cities Mobility Matrix Subregion, 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) 2012 data.

Table 3-2 provides an overview of the minority and economic characteristics for the South Bay, compared to the Los Angeles County average.

Minority population is defined as nonwhite (including Hispanic) residents. In 2012, six of the sixteen cities were above Los Angeles County's 72.2 percent average. The cities vary greatly in ethnic make-up with highest minority populations in Carson at 92.9 percent and lowest in Manhattan Beach at 21.3 percent.

Overall, the South Bay Cities Mobility Matrix Subregion has a lower population percentage living under poverty levels than the county average. In 2012, only three of sixteen cities, Hawthorne, Inglewood and Los Angeles, were above Los Angeles County's 17.1 percent average.

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

- At least eleven 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 ten percent or more of households are zero vehicle households.

Table 3-2. Summary of Ethnic and Economic Characteristics

City	Percentage Total Minority*	Median Household Income^	Percentage Population Living Below Poverty Level
Carson	92.9%	$71,653	8.5%
El Segundo	30.8%	$86,364	4.2%
Gardena	91.0%	$50,148	14.3%
Hawthorne	88.7%	$44,906	18.9%
Hermosa Beach	21.6%	$100,696	3.5%
Inglewood	96.4%	$44,558	20.1%
Lawndale	83.1%	$48,727	16.7%
Lomita	63.4%	$62,899	11.3%
Los Angeles	79.3%	$45,331	20.5%
Manhattan Beach	21.3%	$134,445	2.9%
Palos Verdes Estates	26.6%	$152,068	2.8%
Rancho Palos Verdes	43.5%	$119,778	4.0%
Redondo Beach	36.7%	$98,816	5.9%
Rolling Hills	32.3%	$213,906	1.0%
Rolling Hills Estates	34.9%	$153,986	2.4%
Torrance	59.3%	$76,082	7.4%
Unincorporated	54.8%	$97,269	8.3%
Los Angeles County	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 Hispanic or Latino

^In 2012 Inflation-adjusted dollars

The California Communities Environmental Health Screening Tool (CalEnviroScreen) was developed by the California Environmental Protection Agency (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 fourteen 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 South Bay, higher risk areas are centralized in the north and east, including the cities of Carson, Hawthorne, Inglewood, and Los Angeles. These same areas contain high transit-dependent populations.

Figure 3-4. Transit-Dependent Communities in South Bay Cities Mobility Matrix Subregion

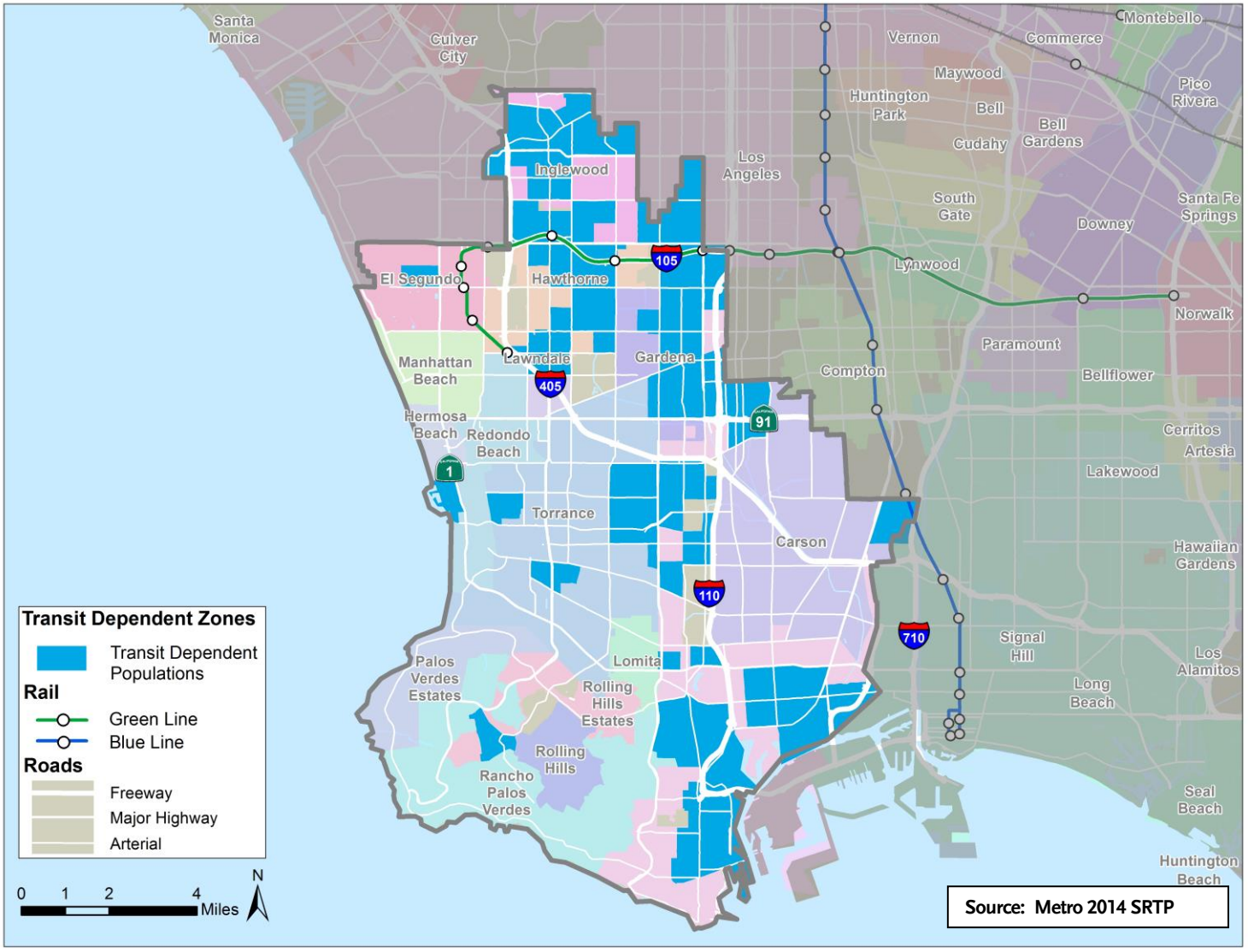
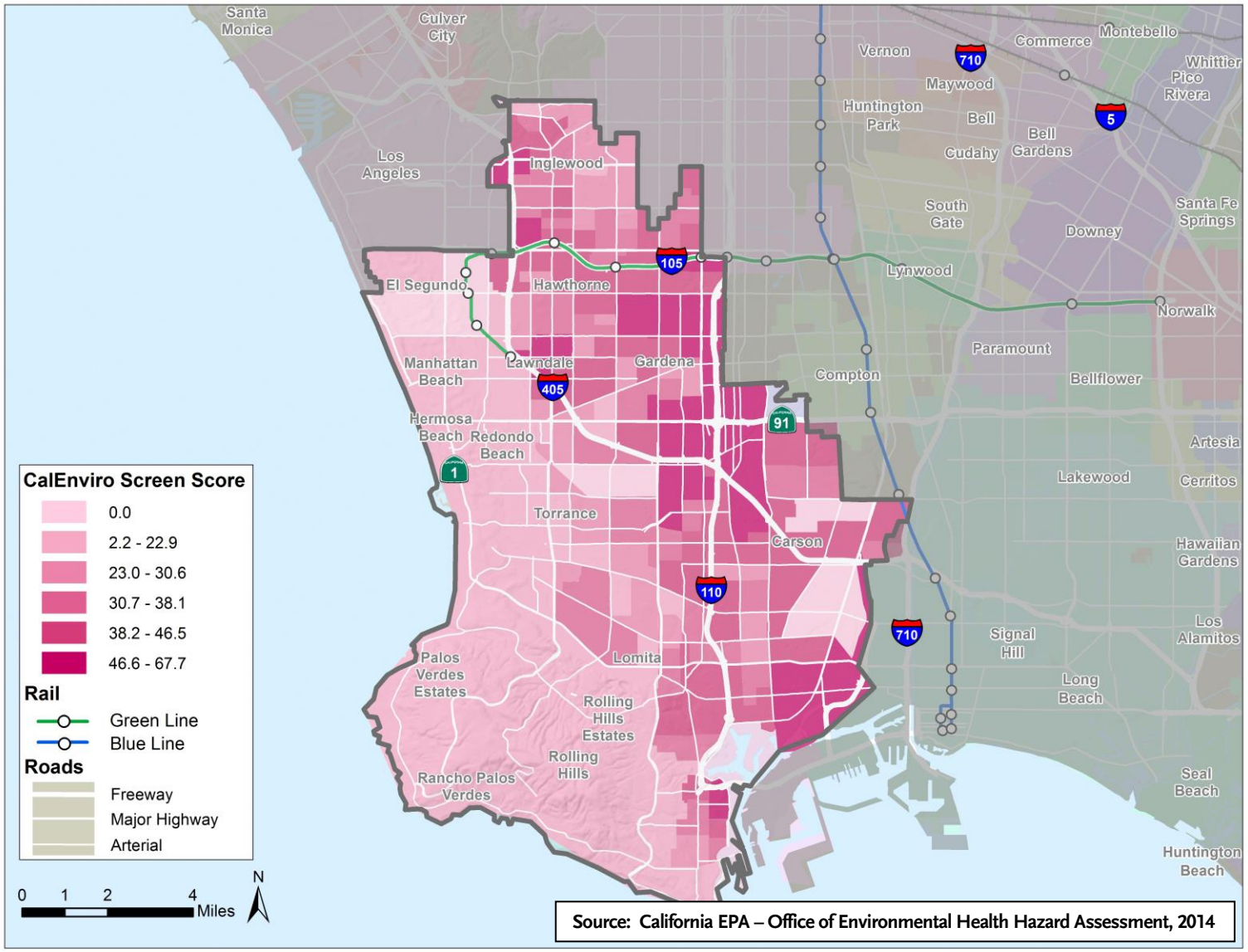


Figure 3-5. CalEnviroScreen Environmental Justice Scores in South Bay Cities Mobility Matrix Subregion



4.0 TRAVEL PATTERNS AND PREFERENCES

This section describes general travel patterns within the South Bay Cities Mobility Matrix Subregion and between neighboring Mobility Matrix subregions.

4.1 Interregional Travel Patterns

Figure 4-1 indicates estimated year 2014 average weekday person trips (all modes) between the South Bay study area and neighboring Mobility Matrix subregions based on Metro Travel Demand Model results. The South Bay's largest Mobility Matrix subregional travel market is the Gateway Cities featuring 906,800 two-way person-trips on an average weekday, followed by Central Los Angeles (583,730) and Westside (543,700).

Table 4-1 shows the daily trips produced and attracted for the South Bay study area. 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.

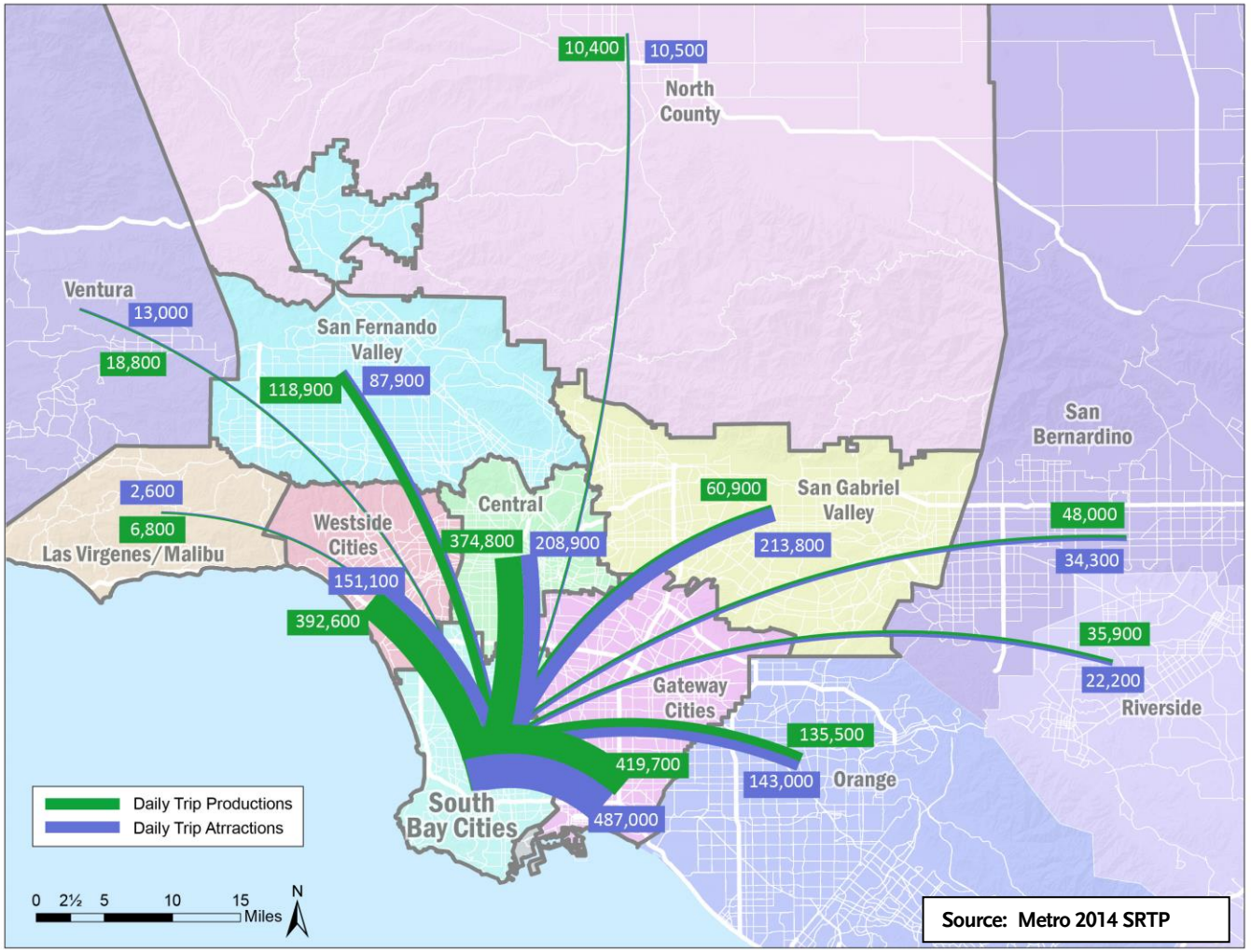
The South Bay study area produces about 4.5 million trips while attracting 4.2 million trips. More than 60 percent of the trips stay within the South Bay Cities Mobility Matrix Subregion. Outside of the South Bay, the Gateway Cities Mobility Matrix subregion is the most popular trip destination and origin, with 9.4 percent and 11.5 percent, respectively. The next most popular destination is Westside (8.8 percent) and origin is Central Los Angeles (4.9 percent).

Table 4-1. South Bay Cities Daily Trip Productions and Attractions (2014)

To/From Mobility Matrix Subregion	Trips Produced	% of Produced Trips	Trips Attracted	% of Attracted Trips
South Bay	2,851,755	64%	2,851,755	67%
Central Los Angeles	374,788	8%	208,901	5%
Gateway Cities	419,749	9%	487,007	12%
North Co.	10,395	0%	10,537	0%
San Fernando Valley	118,883	3%	87,939	2%
San Gabriel Valley	60,915	1%	213,773	5%
Malibu/Las Virgenes	6,753	0%	2,573	0%
Westside	392,561	9%	151,144	4%
Ventura Co.	18,085	0%	13,090	0%
Orange Co.	135,507	3%	142,950	3%
Riverside Co.	35,883	1%	22,245	1%
San Bernardino Co.	48,041	1%	34,269	1%
Total	4,473,315	100%	4,226,183	100.0%

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.

Figure 4-1. 2014 Average Weekday Person Trips to/from South Bay (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 – SOUTH BAY CITIES SUBREGION

4.2 Commute Travel Modes

Table 4-2 presents South Bay Cities Mobility Matrix Subregional commute travel modes by jurisdiction alongside the county average using 2012 American Community Survey data. The data refers to the principal mode of travel the commuter most often used to get from home to work during the survey period.

Table 4-2. 2012 Commute Travel Mode Share

Commute Mode	South Bay Study Area	LA County Average
Drive Alone	76.1%	72.4%
Carpool	10.3%	10.5%
Bus	5.3%	6.5%
Rail Transit (Metro)	0.1%	0.7%
Railroad (Metrolink)	0.1%	0.2%
Bicycle	0.7%	0.9%
Walk	1.9%	2.9%
Work at Home	4.1%	5.0%
Other*	1.3%	0.01%

*Motorcycle, taxi, and ferry.
Source: U.S. Census, ACS 3-year estimate, 2012.

The motor vehicle is the travel mode of choice for more than 86.4 percent of the study area's commuters. Slightly more drive alone (76.1 percent) and slightly less carpool (10.3 percent) than the Los Angeles County averages. A variety of factors (e.g., few transit options, long headways and limited hours/days of service, land uses, etc.) make transit and active transportation alternatives more difficult for South Bay residents than others in the Los Angeles basin. There is a significant bus mode share at 5.3 percent, although it falls below the county's 6.5 percent average. It is also important to note that the commute travel mode does not fully represent conditions in the South Bay Cities as there are several cities within the subregion with a higher than average population over 65 years of age who do not commute to work and have different travel patterns.

4.3 Passenger Vehicle Travel Demands

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

- In 2014, over five million vehicle trips either originate or terminate in the study area, about 65 percent are trips entirely within South Bay.
- Gateway Cities is the largest neighboring travel market in 2014 with 582,800 daily trips. The next largest travel markets are Central Los Angeles and Westside.
- Between 2014 and 2024, vehicle trips in the study area are expected to grow by about 3.4 percent (an additional 180,800 trips each weekday).

Table 4-3. Mobility Matrix Subregional Vehicle Travel Volumes to/from South Bay, 2014 to 2024

Subregion	2014 Vehicle Trips	2024 Vehicle Trips	Δ Trips (2014-2024)	% Growth
Within South Bay	3,465,600	3,579,600	114,000	3%
Central Los Angeles	337,600	351,500	13,900	4%
Gateway Cities	582,800	607,500	24,700	4%
North Los Angeles	12,500	13,300	800	6%
San Fernando Valley	120,600	124,800	4,200	3%
San Gabriel Valley	152,300	158,300	6,000	4%
Las Virgenes/ Malibu	6,000	6,300	300	5%
Westside Cities	347,100	355,400	8,300	2%
Ventura Co	15,100	15,500	400	3%
Orange	165,300	169,900	4,600	3%
Riverside	26,400	27,800	1,400	5%
San Bernardino	35,900	38,000	2,100	22%
Total	**5,267,200**	**5,448,000**	**180,800**	**3.4%**

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 Through Trips

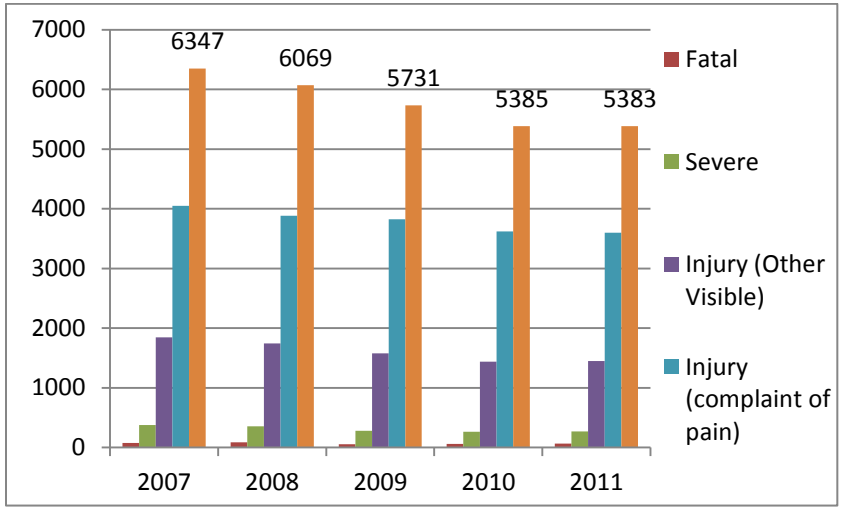
Under 2014 conditions, the Metro Travel Demand Model estimates about 266,000 vehicle trips travel through the study area on an average weekday (origins and destinations are outside of the South Bay study area, but they pass through). By 2024, the Model forecasts an eight percent growth in vehicle through trips, or about 288,000 vehicle trips passing through the study area each weekday.

4.5 System Safety

A timeline of reported collisions across all travel modes by severity in the study area can be viewed in Figure 4-2. Collision statistics are provided by the 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 transportation safety. Key findings include:

- Total collisions fell fifteen percent, from 6347 (in 2007) to 5383 (in 2011);
- Fatal crashes fell nine percent, from 75 (in 2007) to 67 (in 2011);
- Severe injury crashes fell 29 percent, from 377 (in 2007) to 269 (in 2011).

Figure 4-2. South Bay Total Collisions, 2007 to 2011



Source: SWITRS, 2014.

5.0 VEHICLE TRAVEL

5.1 Vehicle Travel Facilities

The South Bay Cities Mobility Matrix Subregion contains five primary highway corridors, including north/south corridors I-405 I-110, and SR-1/Pacific Coast Highway (PCH), and the east/west corridors of I-105 and SR-91.

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).

In addition, the South Bay Cities has been actively involved in the Regional Traffic Signal Forum Program since 1995 which has implemented Traffic Signal Synchronization and Intelligent Transportation Systems (ITS) throughout the subregion.

5.2 Driving Conditions

5.2.1 Vehicle Volumes

Since the South Bay Cities Mobility Matrix Subregion is mostly built-out, it is estimated to have moderate population growth over the coming ten years. As such, vehicle trips originating and/or terminating in the study area are forecasted to grow by more than 180,000 over the next ten years, from under 5.3 million in 2014 to over 5.4 million in 2024.

5.2.2 Driving Times

Table 5-1 presents vehicle hours traveled and average trip times between the South Bay 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 South Bay Cities 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.

Trips within South Bay itself are generally short in duration, averaging below seven minutes. Average travel times to the three largest travel markets of the South Bay are 21 minutes (Gateway Cities), 25 minutes (Central Los Angeles), and 26 minutes (Westside). The study area trip average is about 18 minutes, when weighted by vehicle trips.

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

	Vehicle Hours of Travel	Average Trip Time (Minutes)
Central Los Angeles	145,670	25
Gateway Cities	200,883	21
North County	29,269	137
San Fernando Valley	145,550	73
San Gabriel Valley	166,928	61
Malibu/Las Virgenes	8,916	93
Within South Bay	190,592	7
Westside	165,719	26
Ventura Co.	30,271	121
Orange Co.	158,763	57
Riverside Co.	57,856	134
San Bernardino Co.	66,836	113
Total	**1,367,253**	**18**

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.

5.3 Goods Movement Vehicle Travel

The South Bay 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). Figure 5-2 indicates the draft subregional CSTAN truck route network.

5.4 Local Use Vehicle Travel

As part of the Sustainable South Bay Strategy, the SBCCOG has been working with its member agencies to demonstrate the use of a variety of Local Use Vehicles (LUVs) to reduce greenhouse gas emissions, air pollution, and gasoline consumption in the subregion. Since many of the trips taken by South Bay residents and businesses are short, they can be served by using low or zero emission local use vehicles that are small, short range and low speed (e.g., Neighborhood Electric Vehicles (NEVs), Battery Electric Vehicles (BEVs), Plug-in Hybrid Electric Vehicles (PHEVs), etc.). There were six vehicles in the LUV program and five in the BEV phase. LUVs typically travel at speeds of 25 miles per hour (MPH) or less and can be driven legally on streets with a posted speed limit of 35 MPH or less. They may cross streets with higher speed limits at signalized intersections. Figure 5-3 presents the LUV roadway network in the study area.

Figure 5-1. CSAN/CMP Network of Regionally Significant Arterials in South Bay Cities Mobility Matrix Subregion

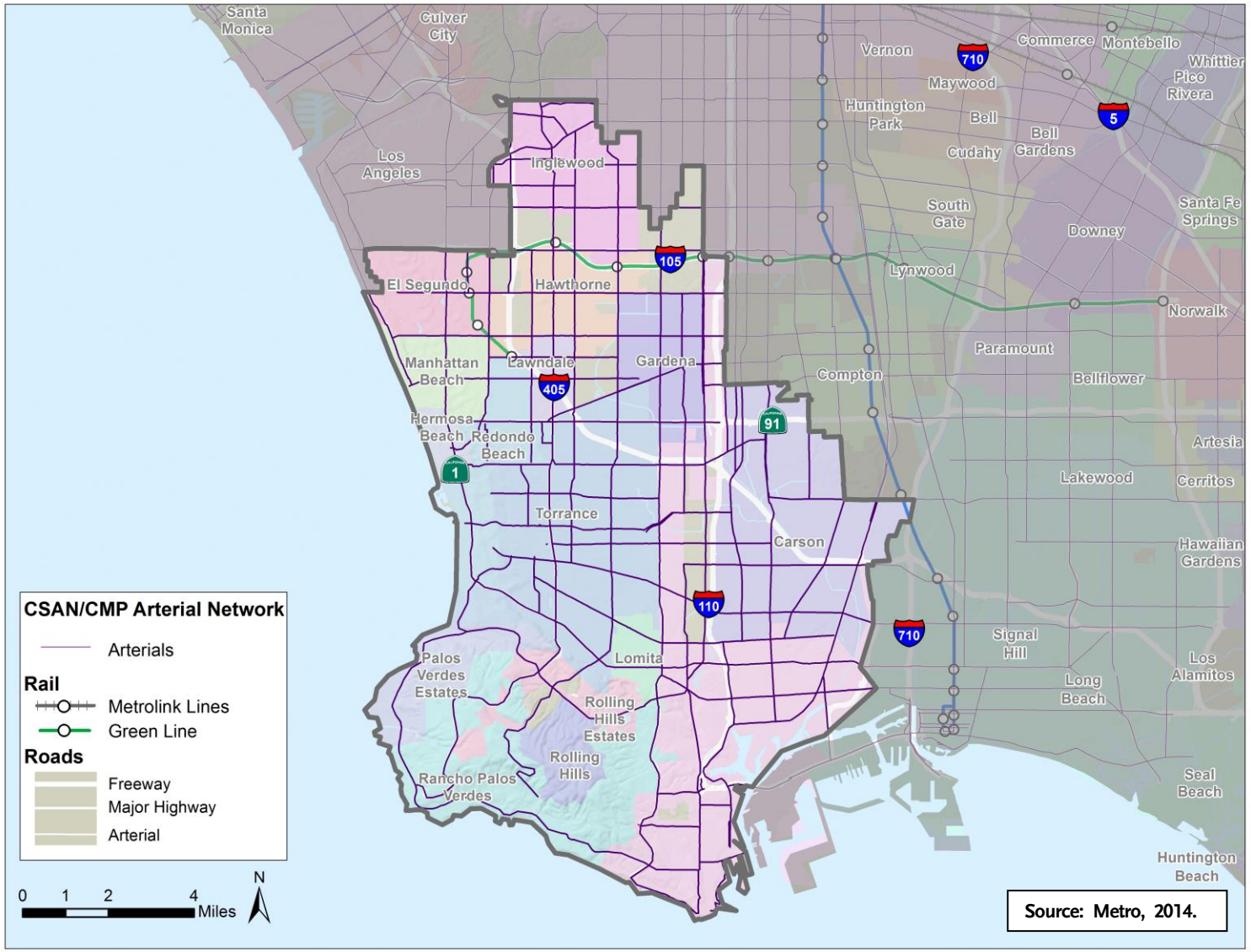


Figure 5-2. Draft Countywide Strategic Truck Arterial Network in South Bay Cities Mobility Matrix Subregion

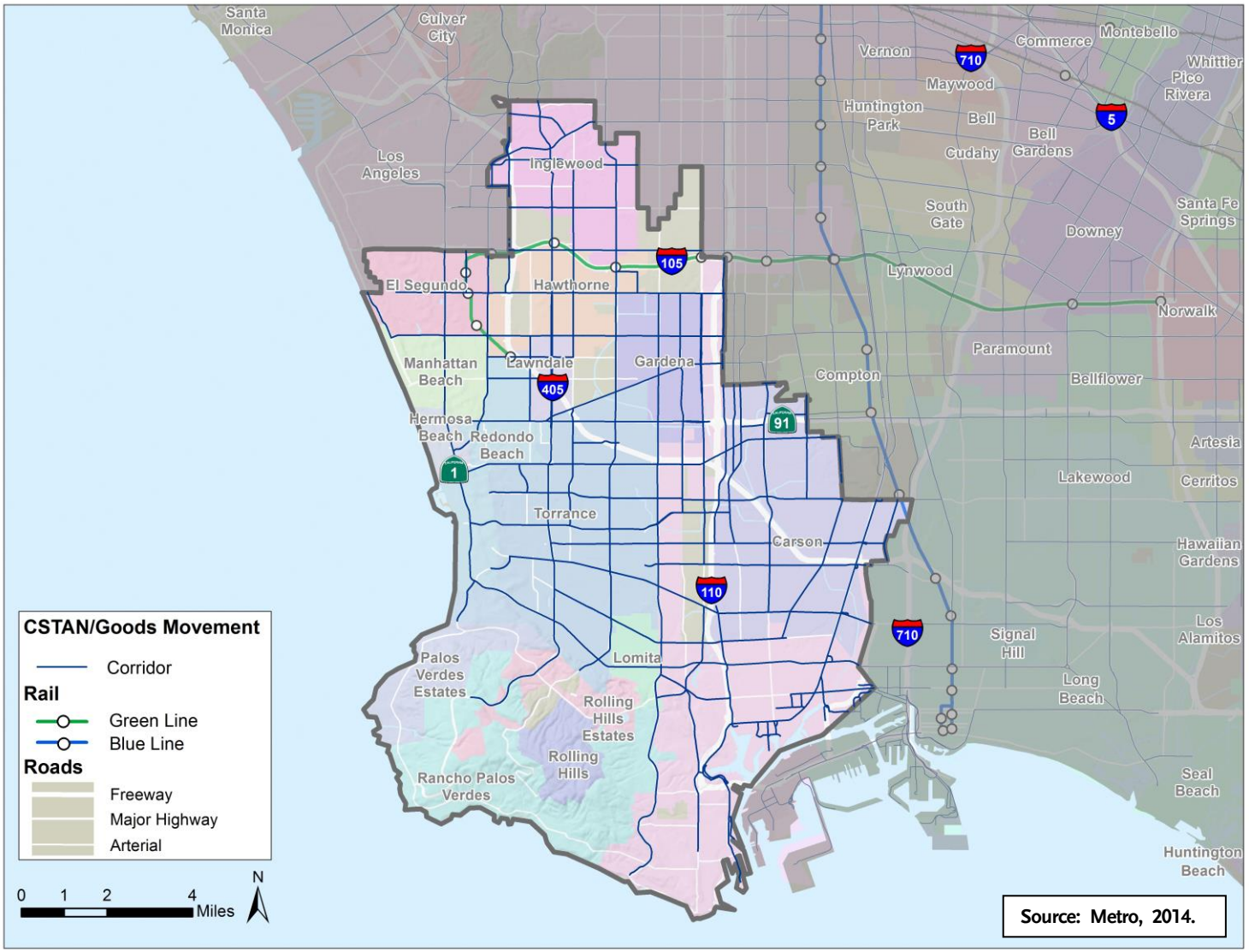
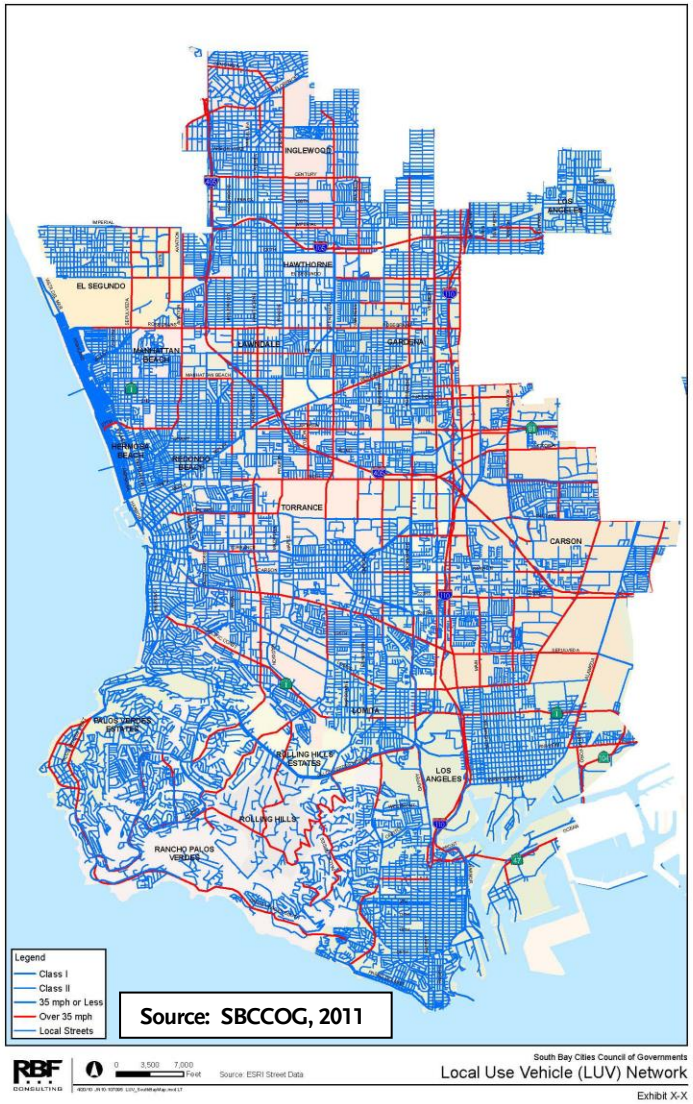


Figure 5-3. Local Use Vehicle (LUV) Network



5.5 Vehicle Safety

5.5.1 Motor Vehicle Collisions

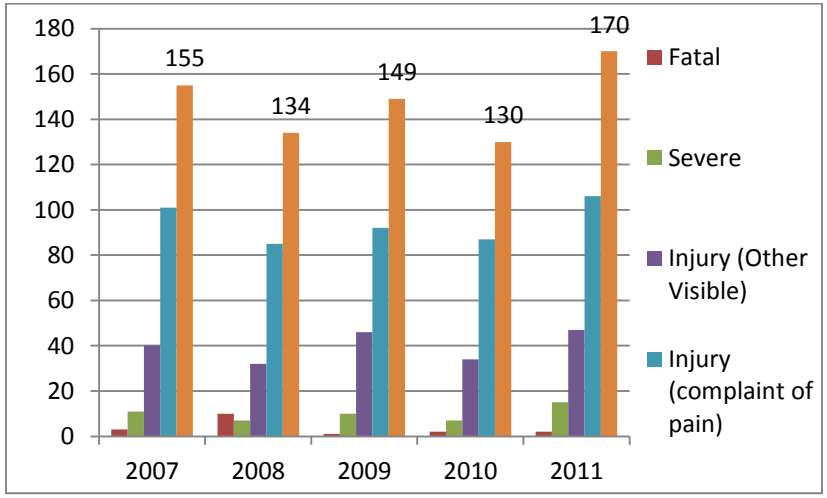
Figure 5-5 shows the location of motor vehicle collisions in the study area from 2009 to 2011. Motor vehicle collisions occur primarily on the I-110, I-105, I-405, SR-91, and SR-1 highway corridors.

5.5.2 Truck Collisions

Figure 5-4 illustrates trends in truck collisions from 2007 to 2011 for the South Bay study area. There does not appear to be a trend in collisions in the South Bay. The net change from 2007 to 2011 is a ten percent increase, from 155 to 170 truck collisions, but varies between 130 and 170 collisions over the five years.

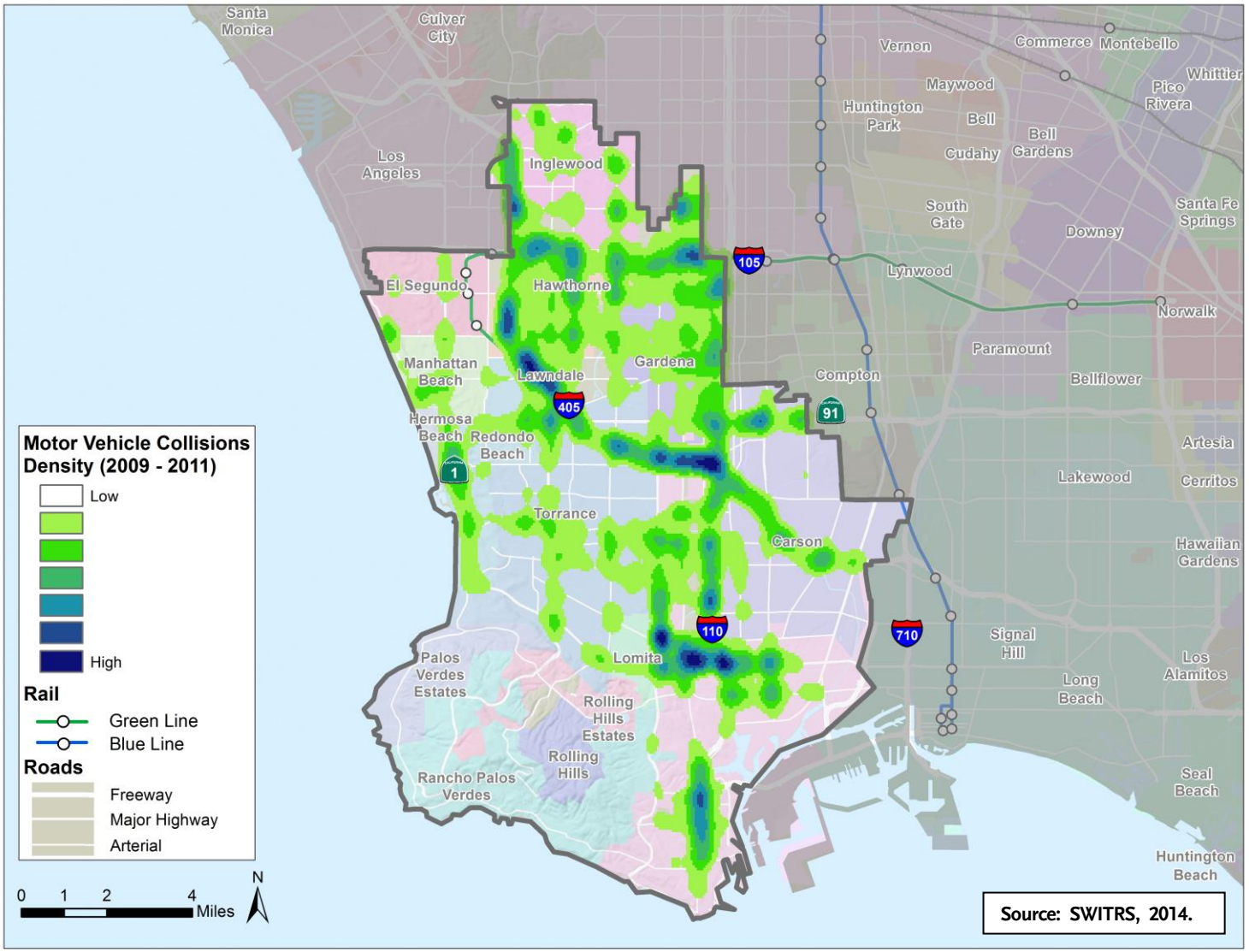
Figure 5-6 shows the location of truck collisions in the study area from 2009 to 2011, respectively. Truck collisions occur primarily on the I-110, I-105, I-405, and SR-91 highway corridors.

Figure 5-4. Trends in Collisions Involving Trucks, 2007 to 2011



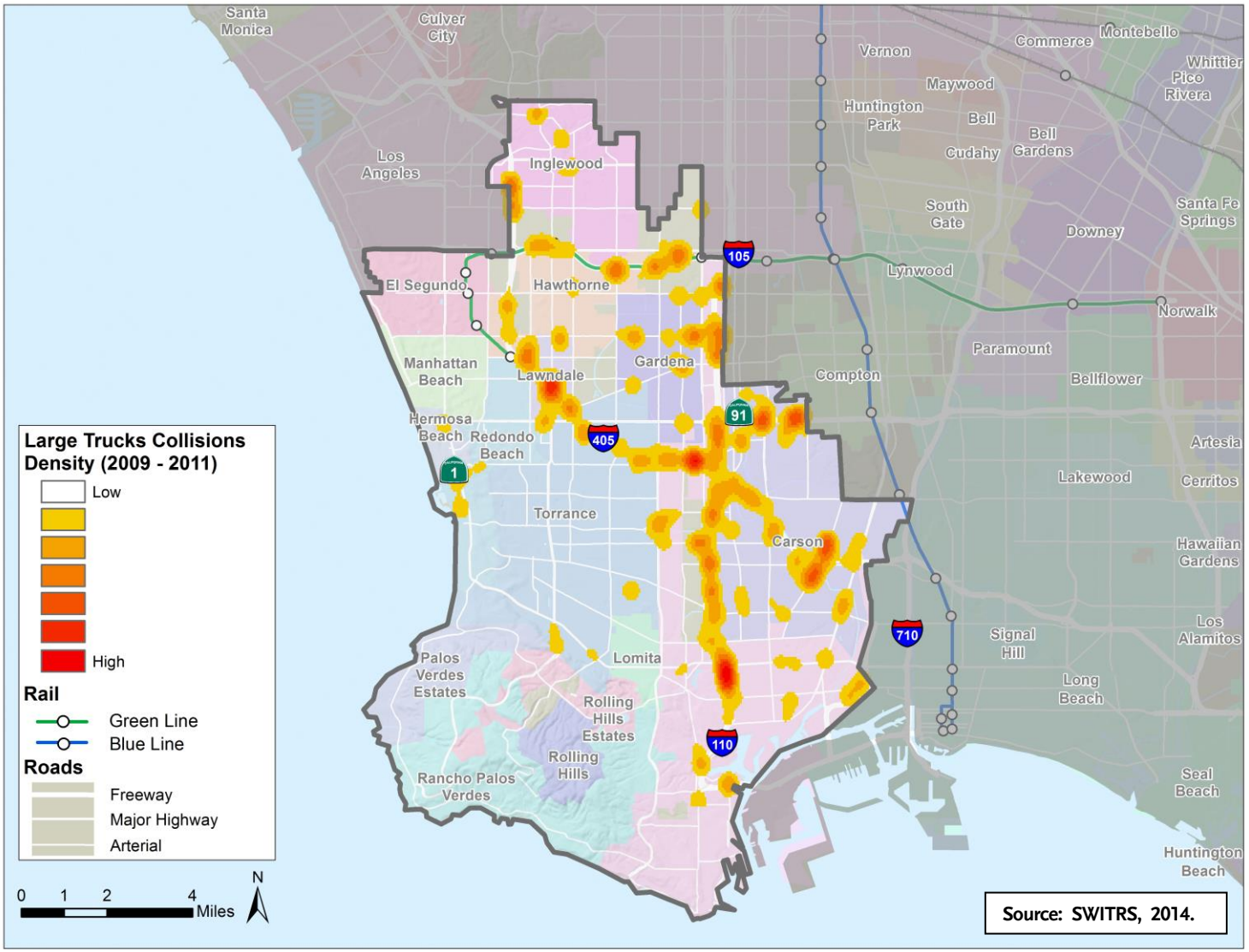
Source: SWITRS, 2014.

Figure 5-5. Motor Vehicle Collisions in South Bay Cities Mobility Matrix Subregion, 2009 to 2011



SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES SUBREGION

Figure 5-6. Truck Collisions in South Bay Cities Mobility Matrix Subregion, 2009 to 2011



SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES SUBREGION

6.0 TRANSIT

The South Bay Cities Mobility Matrix Subregion features rail service by Metro and a diverse set of local, rapid, and express bus services from several providers. A variety of factors (e.g., few transit options, long headways, limited hours and weekend service, land uses, etc.) make transit alternatives more difficult for South Bay residents than other areas in the Los Angeles basin. Transit commute trips account for 5.4 percent of regional commute trips, lower than the county average of 7.2 percent.

Table 6-1 indicates transit mode share by jurisdiction, alongside drive alone commute mode share.

Table 6-1. Transit Commute Mode Share, 2012

Commute Mode	South Bay Study Area	Los Angeles County Average
Bus	5.3%	6.5%
Rail Transit	0.1%	0.7%
Drive Alone	76.1%	72.4%

Source: ACS, 2014

6.1 Rail Transit

The Metro Green Line is the primary rail transit serving the South Bay study area (see Figure 6-1 for passenger rail service within the study area). The rail line has stops in Vermont/Athens (unincorporated area), Hawthorne, El Segundo, and reaches the end of the line in Redondo Beach. Service runs daily with Friday and Saturday service extended until 2 a.m. Frequency ranges from six to eight minutes during peak hours and every 20 minutes during off-peak hours.

In addition, a short portion of the Blue Line which runs between Los Angeles and Long Beach travels through the City of Carson and serves the South Bay.

6.2 Bus Service

There are eight primary bus service providers in the study area with approximately 75 routes (see Figure 6-2).

The most extensive bus network is provided by Metro, with 36 lines serving the South Bay and connecting the subregion to the rest of the county. These lines include the Silver Line Bus Rapid Transit (BRT) corridor.

The City of Los Angeles Department of Transportation (LADOT) operates the following routes:

- Commuter Express: Financial District to Redondo Beach, Hermosa Beach, Manhattan Beach, El Segundo, Rancho Palos Verdes, and Rolling Hills Estates.
- Commuter Express: Long Beach to Los Angeles (San Pedro).
- DASH: Local bus in Los Angeles (San Pedro).

The following list describes key municipal bus transit systems offered in the South Bay study area:

- **Beach Cities Transit.** Two local routes serving Redondo Beach, Hermosa Beach, Manhattan Beach, El Segundo, and Torrance with connections to the Metro Green Line and LAX.

- **Carson Circuit Transit.** Eight local routes with connections to Torrance, Gardena, Long Beach and Metro Blue Line.
- **Gardena Municipal Bus Lines.** Four local routes with connections to Hawthorne, Compton, LAX, and the Metro Green Line. One limited-stop route to downtown Los Angeles.
- **Lawndale Beat.** One residential local route and one express route with connections to Metro Green Line.
- **Palos Verdes Peninsula Transit.** Nine local routes serving Palo Verdes Estates, Rancho Palos Verdes, Rolling Hills, and Rolling Hills Estates.
- **Torrance Transit.** Ten lines in South Bay including one limited-stop rapid line with connections to Carson, downtown Los Angeles, Long Beach, the Metro Green Line, and LAX.

There are a few additional routes that briefly enter the edge of the study area. Long Beach Transit connects Long Beach to Los Angeles. Compton Renaissance System connects Compton to Carson. Metro bus routes 102 and 204 also briefly travel through the South Bay study area.

Some other bus transit services in the study area include:

- **Amtrak Bus Service**. Serves San Pedro several times a day from Bakersfield via Union Station in Los Angeles.
- **Access Services.** The ADA complementary paratransit service for functionally disabled individuals in Los Angeles County.
- **Dial-A-Ride.** A variety of dial-a-ride services in the South Bay offer curb-to-curb paratransit service for the disabled and seniors.
- **San Pedro Downtown Trolley.** A free rubber tired trolley that serves downtown San Pedro and the San Pedro Waterfront.

Figure 6-1. Metro Green Line Average Weekday Boardings, 2014

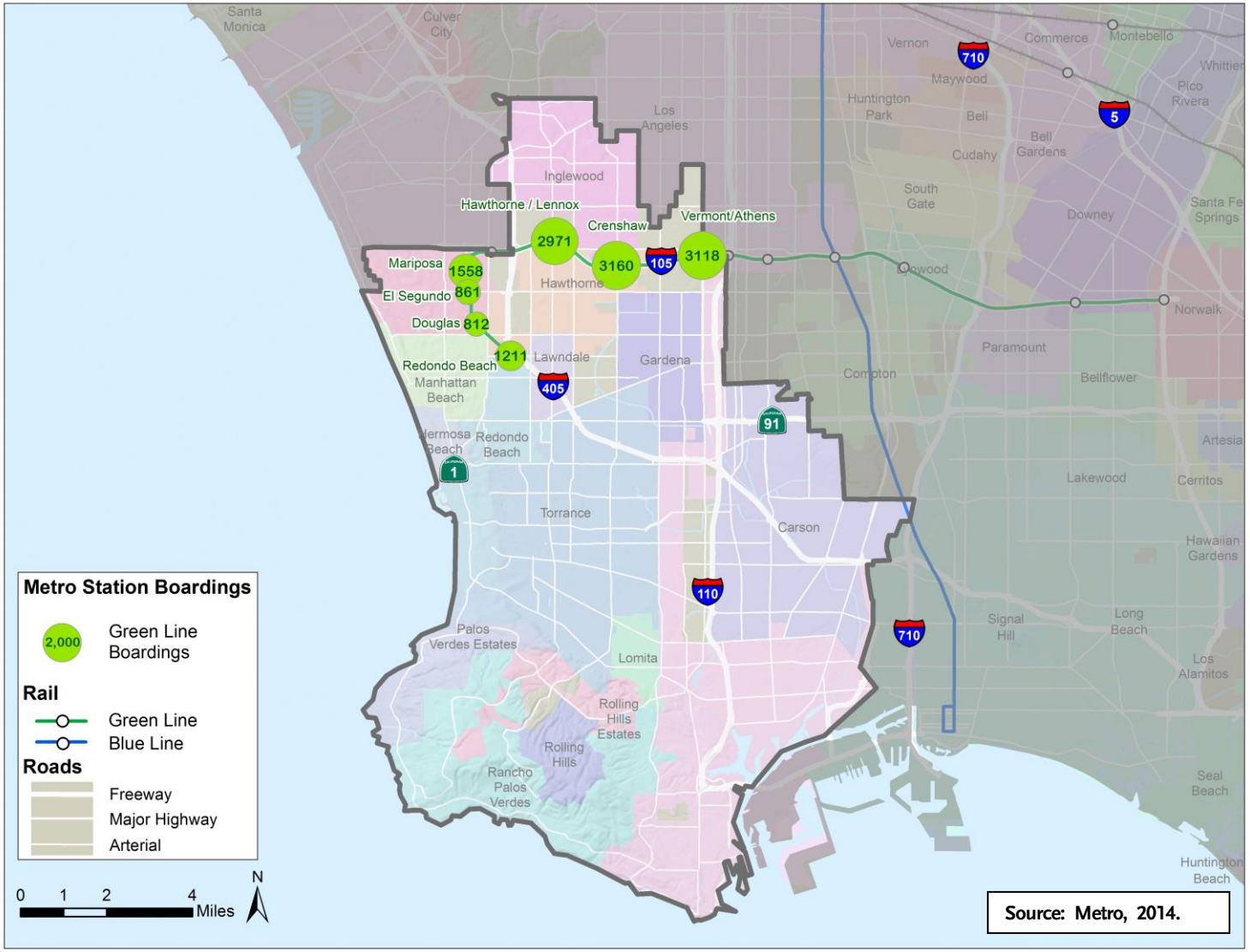
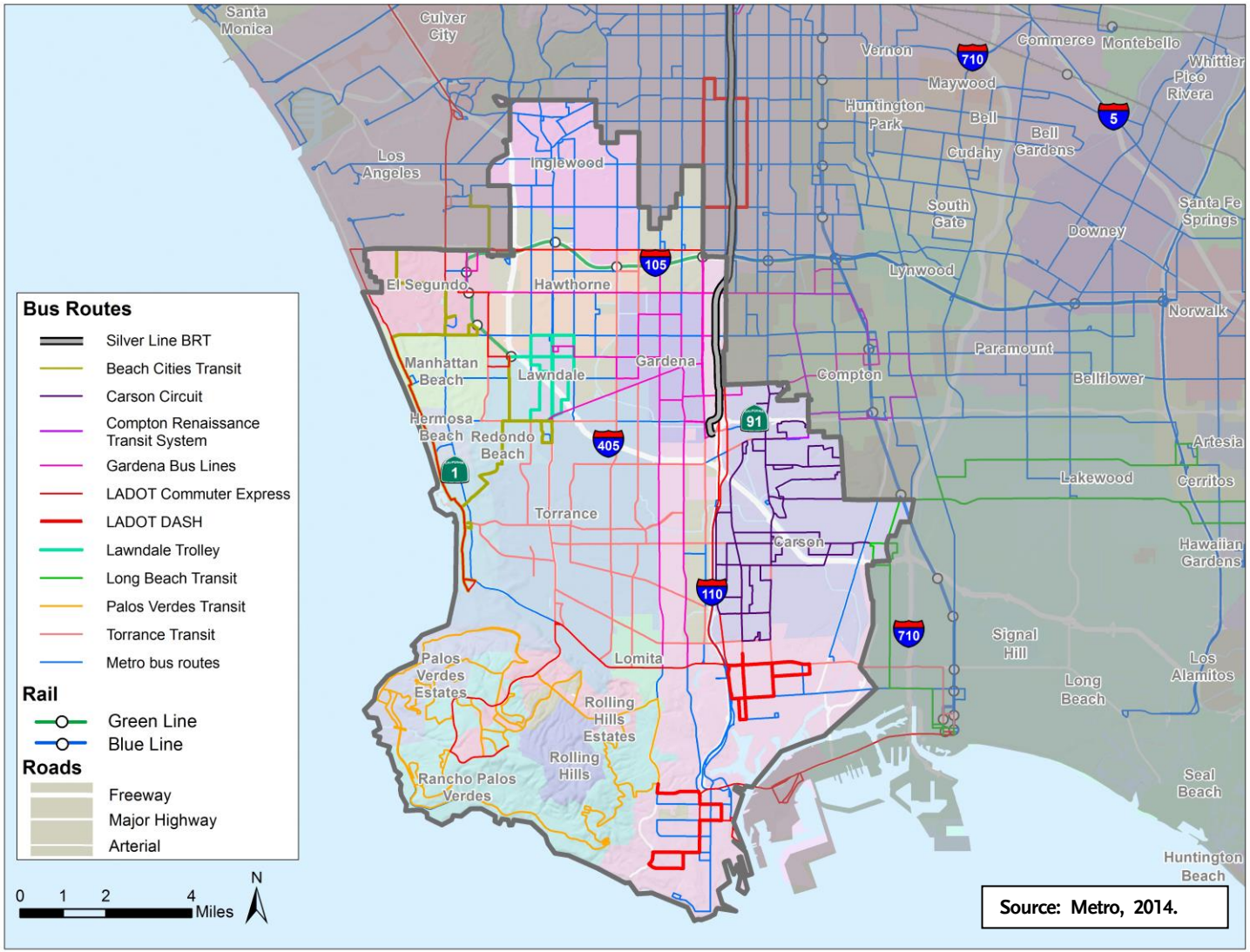


Figure 6-2. South Bay Bus Service



7.0 ACTIVE TRANSPORTATION

Bicycle infrastructure in the South Bay Cities Mobility Matrix Subregion includes a range of facilities from shared roads to bike paths. 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 networks. Safety performance is included in this section for both modes.

The South Bay Cities shares a common vision of building upon and expanding active transportation facilities and improving access to transit and activity centers for nonmotorized modes. The overall goal is to promote residents to walk, bike, or take transit rather than drive. The Sustainable South Bay Strategy involves an increasing reliance on a robust bundle of mobility services plus zero emission private vehicles, including those specialized for inter-neighborhood trips at slow speeds. The strategy also supports active transportation options. In addition, the South Bay Bicycle Coalition advocates to increase cycling access and create a safe environment for kids to bike to school and a comprehensive network that support bicycle commuters.

7.1 Commute Mode Share

Together, bicycling and walking currently represent approximately 2.6 percent of all commute trips in the study area. Over three-quarters of South Bay commuters drive alone to work.

Table 7-1. Commute Mode Share in Study Area

Mode	Mode Share
Bicycling	0.7%
Walking	1.9%
Drive Alone	76.1%

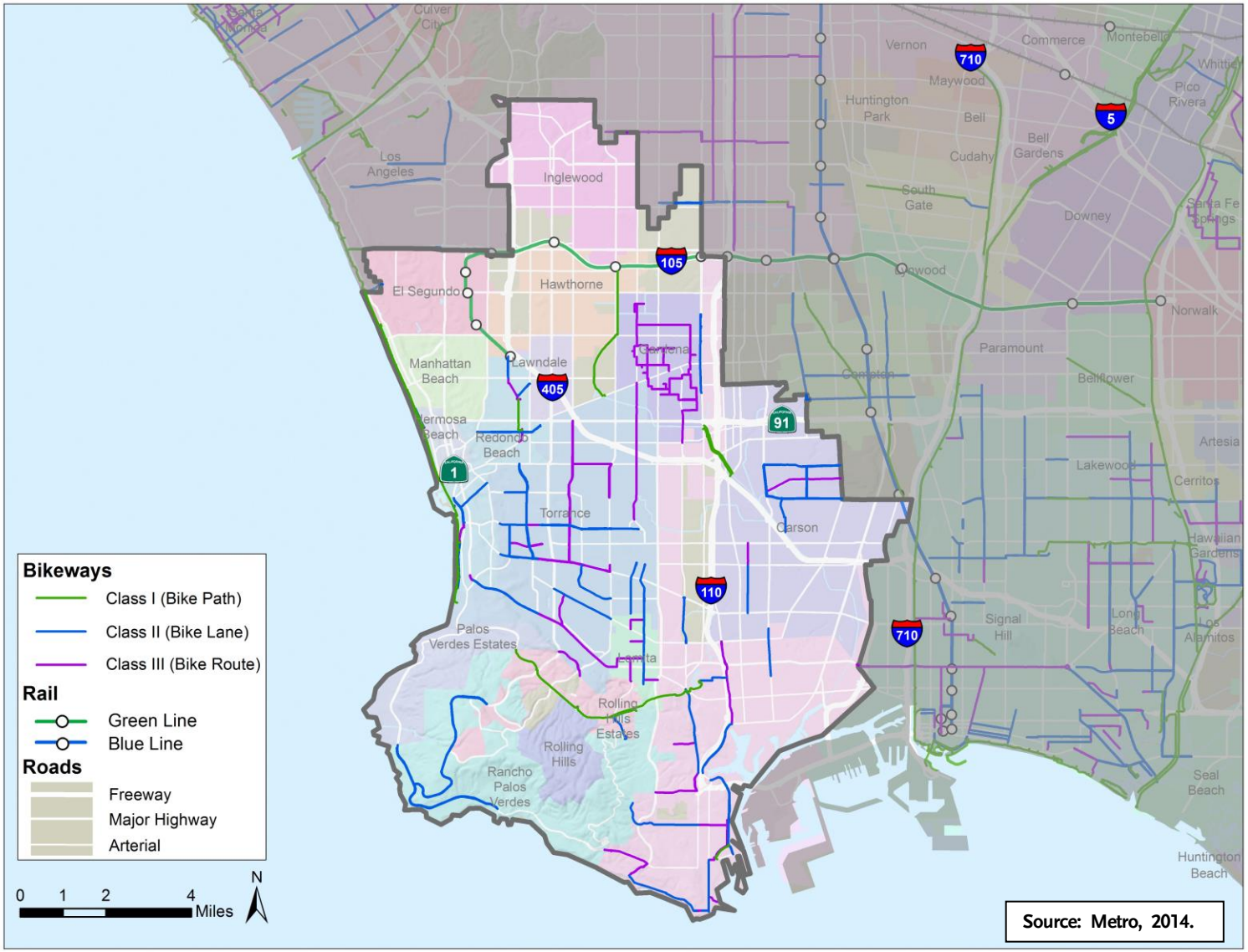
Source: ACS, 2012 (three-year estimate).

7.2 Bicycle/Pedestrian Facilities

Figure 7-1 shows 2014 bicycle facilities by class type. In Class III, bicycles share the facility with motor vehicles (i.e., sharrows). In Class II, there is a designated lane, but no or limited protection from motor vehicle traffic (i.e., bike lane with/without buffered protection). In Class I, bicycles are completely separated (i.e., bike trails or protected bike lanes).

Bicycle facilities are concentrated in Gardena, Torrance, and Los Angeles, although most are of Class II and III. A few Class I bicycle facilities exist, including one through Rolling Hills Estates (see Figure 7–1). Individual cities have bike plans and will continue to expand facilities. The South Bay Bicycle Master Plan (published in August 2011) also exists to help guide the development and maintenance of bicycle facilities in parts of the South Bay.

Figure 7-1. 2014 Bikeways in South Bay Cities Mobility Matrix Subregion

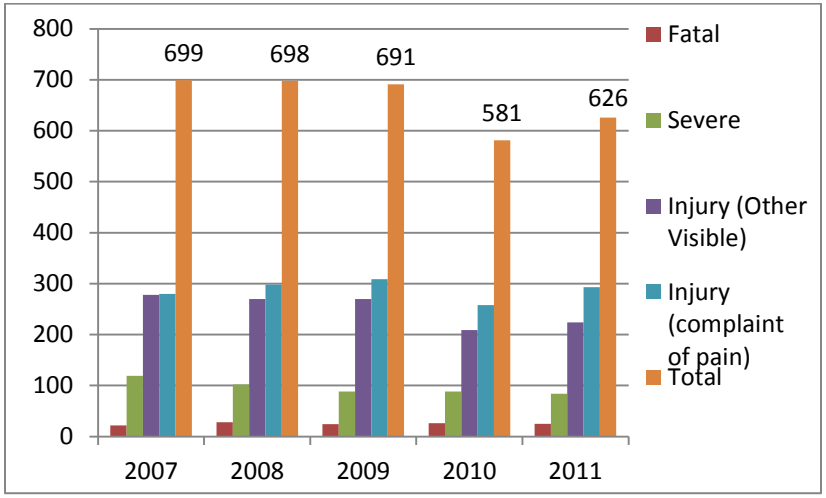


SUBREGIONAL MOBILITY MATRIX – SOUTH BAY CITIES SUBREGION

7.3 Safety

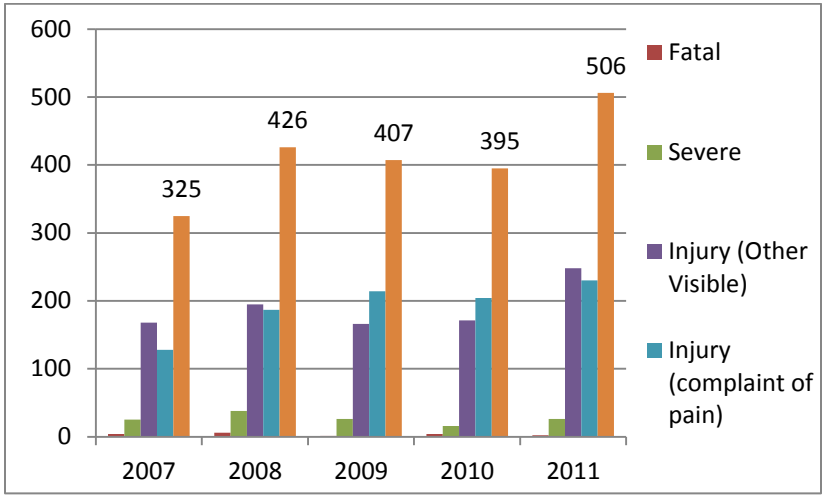
Figures 7-2 and 7-3 illustrate pedestrian and bicycle collision trends from 2007 to 2011, respectively. Pedestrian collisions have decreased about ten percent, from 699 to 626. Bicycle collisions have increased by more than 50 percent, from 325 to 506. Pedestrian collisions consistently outnumber bicycle collisions over the five-year period. Most collisions resulted in moderate or minor injuries, but about six percent of total collisions resulted in severe injuries, and 0.8 percent of total collisions were fatal.

Figure 7-2. Trends in Pedestrian Collisions, 2007 to 2011



Source: SWITRS, 2014.

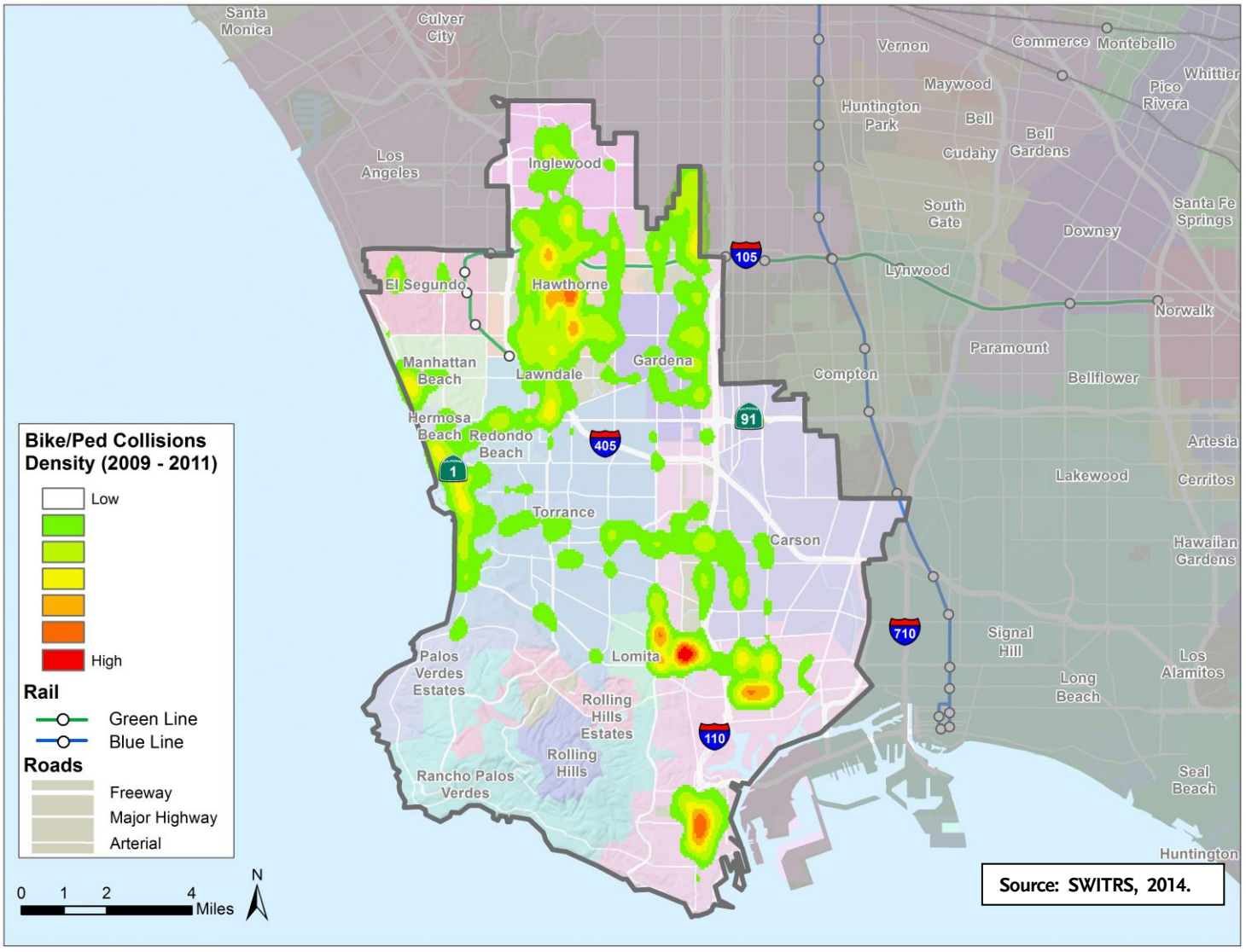
Figure 7-3. Trends in Bicycle Collisions, 2007 to 2011



Source: SWITRS, 2014

Figure 7-4 indicates bicycle and pedestrian collisions by location in the South Bay study area from 2009 to 2011. As a note, higher density collisions areas are not necessarily correlated with higher severity collisions (i.e., fatalities also occur in low density areas).

Figure 7-4. Bicycle and Pedestrian Collisions in South Bay Cities Mobility Matrix Subregion, 2009 to 2011



8.0 CONCLUSIONS & NEXT STEPS

This report identifies several key findings regarding the transportation system for the South Bay Cities Mobility Matrix Subregion, including but not limited to:

- Both population and employment are expected to rise in the South Bay Cities study area, with seven and five percent increases respectively over the next decade. This growth is on par with the average growth forecast for all of Los Angeles County.
- Over 65 percent of the study area's vehicle trips occur within the South Bay and average less than seven minutes in driving time. The largest subregion travel markets are Gateway Cities, Central Los Angeles, and Westside, and average travel times for these range from 21 to 26 minutes. Total vehicle trips are forecasted to grow by 3.4 percent by 2024.
- There are approximately 75 bus routes that serve the South Bay study area, but transit ridership at 5.3 percent is still below county average.
- Overall vehicle collisions have steadily decreased over the last several years. Collisions involving pedestrians have fallen, while collisions involving trucks and bicyclist have risen.

The final subregional Mobility Matrix report, expected in February 2015, includes a high-level evaluation of the projects and programs proposed by the subregion. This effort is intended to serve as critical input for the Metro Long Range Transportation Plan process.