SUBREGIONAL MOBILITY MATRIX
CENTRAL LOS ANGELES

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

Final Report

Prepared for:

Metro

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Final Report
Subregional Mobility Matrix
Central Los Angeles
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Prepared for:

Metro

Los Angeles County
Metropolitan Transportation Authority

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Acronyms	Definitions
AB	Assembly Bill
ADT	Average Daily Traffic
BRT	Bus Rapid Transit
CalEnvironScreen	California Environmental Health Hazard Screening Tool
Caltrans	California Department of Transportation
CEQA	California Environmental Quality Act
COG	Council of Governments
CSTAN	Los Angeles Countywide Strategic Truck Arterial Network
ITS	Intelligent Transportation Systems
LOS	Level-of-Service
LRT	Light Rail Transit
LRTP	Long Range Transportation Plan
MAP-21	Moving Ahead for Progress in the 21st Century Act

Acronyms	Definitions
Metro	Los Angeles County Metropolitan Transportation Authority
MPO	Metropolitan Planning Organization
OPR	Governor's Office of Planning and Research
PCH	Pacific Coast Highway
PDT	Project Development Team
PeMS	Caltrans Freeway Performance Monitoring System
SB	Senate Bill
SCS	Sustainability Communities Strategy
SRTP	Short Range Transportation Plan
STAA	Surface Transportation Assistance Act
TDM	Transportation Demand Management
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 (WSCCOG) (see Figure ES-1). The Gateway Cities COG is developing its own Strategic Transportation Planto 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.

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

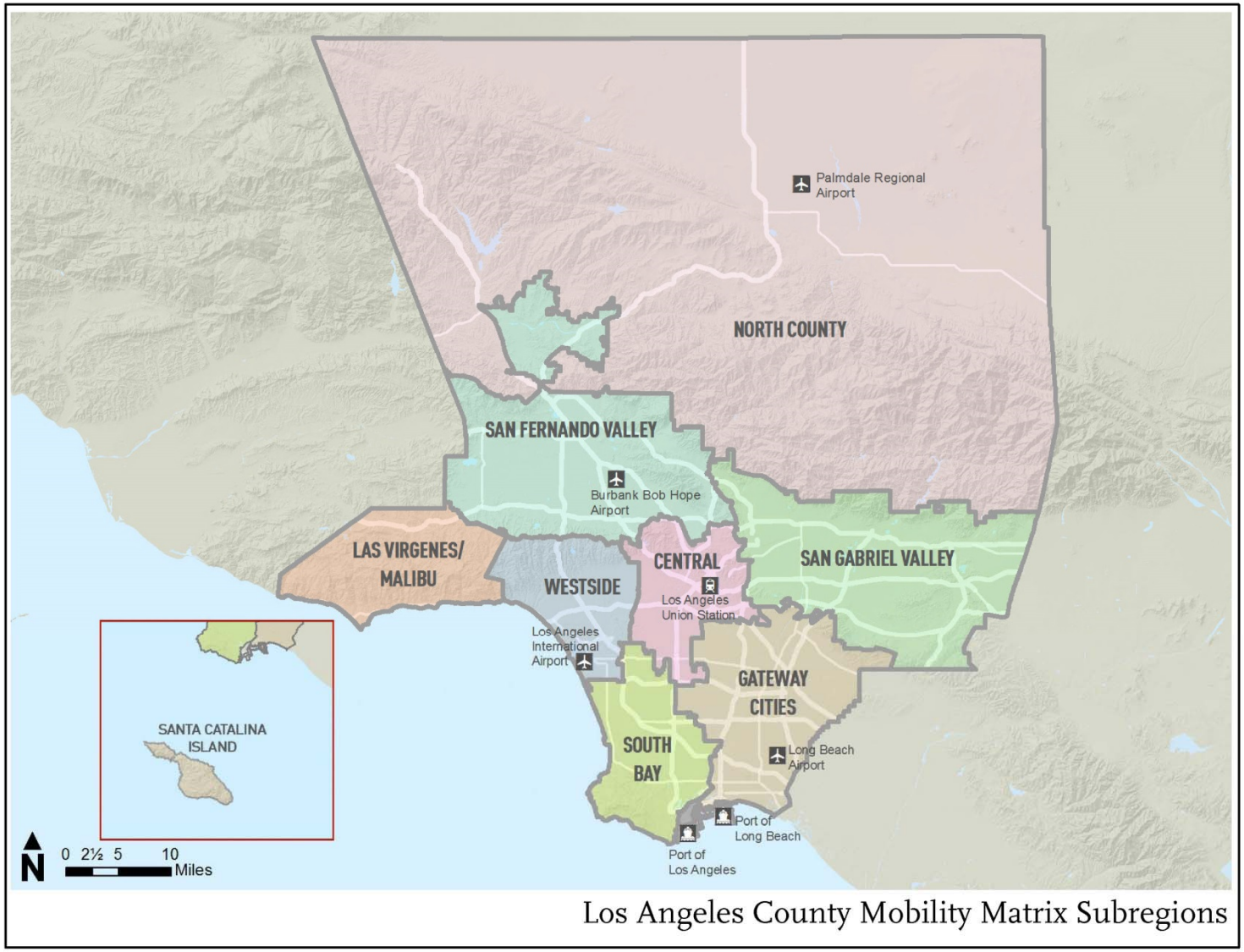
In January 2015 the Metro Board created the Regional Facilities category. Regional Facilities include projects and programs related to Los Angeles County's four commercial airports (Los Angeles International Airport, Burbank Bob Hope Airport, Long Beach Airport, and Palmdale Regional Airport), the two 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 else a Regional Facilities category was 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 Central Los Angeles Mobility Matrix, along with concurrent efforts in other Metro subregions, includes the development of subregional goals and objectives to guide future transportation investments, an assessment of baseline transportation system conditions to identify critical needs and deficiencies, and an initial screening of projects and programs based on their potential to address subregional objectives and countywide performance themes.

The Mobility Matrix includes a preliminary assessment of anticipated investment needs and project and program implementation over the short-term (0 to 10 years), mid-term (11 to 20 years) and long-term (20+ years) timeframes. The Mobility Matrix does not prioritize projects, but rather serves as a basis for further quantitative analysis to be performed during the Metro LRTP update, expected in 2017.

Figure ES-1. Los Angeles County Mobility Matrix Subregions



Process

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

- City of Los Angeles
- Los Angeles County Department of Public Works
- California Department of Transportation (Caltrans)
- Metrolink
- Southern California Association of Governments (SCAG)

The CLA 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. Coordination activities for this effort are summarized in Appendix A.

Subregional Overview

A Baseline Conditions Report was prepared for the Central Los Angeles Mobility Matrix Subregion, including assessments of existing projects and studies, demographics, land uses, population and employment change, environmental justice measures, travel markets, freeways and arterials, goods movement, active transportation facilities, and transit. The following information highlights the main findings in each category:

- The highest growth in both population and employment is projected to occur in the Downtown area, with additional concentrations of added population to the west of Downtown, north of Wilshire Boulevard and south of US-101. Lower density growth is projected in the rest of the study area.

- The study area features a large population of at-risk residents, higher than the County average. The areas in which the highest (worst) CalEnviroScreen scores are located are generally east of the I-110 in the southeastern quadrant of the Central Mobility Matrix subregion.

- About 50% of the study area is zoned residential, and 14% zoned as open and vacant land. Commercial properties constitute 14% of the study area, with major commercial activity centered in Downtown Los Angeles and along major arterials such as Wilshire Boulevard, Vermont Avenue, and Sunset Boulevard.

- In the Central Los Angeles area, trip producers and attractors are well-distributed throughout the region, consistent with the central location of the subregion and its role as a job and commercial center. Of the trips produced in the Central area, the highest volume of trips is destined for the Westside Cities Mobility Matrix subregion.

- In general, freeways experience worse congestion during the PM peak hour than the AM peak hour. The highest volume freeways include the I-110 south of I-10, I-5 east of I-710, SR-101 leaving downtown north of the I-110, and the I-5 north of SR-110.

- The overall arterial system speeds are also generally slower during the PM peak hour throughout the Central Los Angeles Mobility Matrix subregion on key arterials. Impacted roads include Santa Monica Boulevard, Wilshire Boulevard, 6th Street, Alvarado Street and Alameda Street.

- Designated truck routes are mostly concentrated in the industrial area east and south of Downtown, along with some other key routes which feed trucks to the I-10, US-101, the I-5 and the SR-2. Trucks making local deliveries can legally use the entire arterial system unless specifically prohibited by ordinance.

- The predominant type of bicycle facility in the Central Los Angeles Mobility Matrix subregion is Class III on-street bike routes, provided along many streets. Several Class II on-street bike lanes also exist within the subregion. Class I bike paths follow the Los Angeles River alignment generally to the north and west of Downtown Los Angeles.

- The study area is well-served by both bus and rail transit. Rail transit includes Metro Light Rail and subway, and Metrolink service at Union Station. Several express bus services run by Metro, Santa Monica Big Blue Bus, Culver CityBus, and other services operate within the subregion, along with a grid network of local bus services traversing the subregion as well.

Goals and Objectives

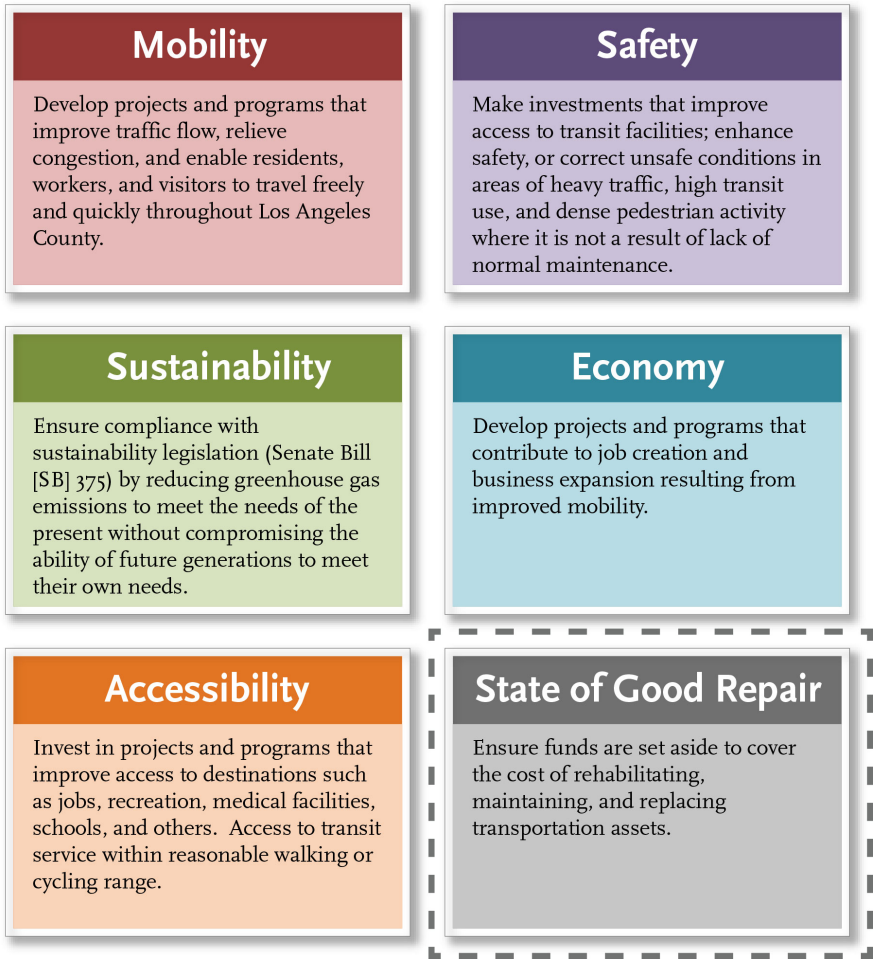
Members of the PDT helped define the goals and objectives for the Central Los Angeles Mobility Matrix Subregion. The goals are consistent with the county's overall framework, consisting of six broad themes common among all subregions (see Figure ES-2). The goals also reflect subregional priorities and are based on recent studies, the City of Los Angeles General Plan, and discussions with city staff. The Central Los Angeles PDT developed several goal statements within each overarching theme, intended to address transportation needs, to guide the evaluation of proposed projects/programs, and ultimately to inform Metro's forthcoming LRTP update.

Central Los Angeles Mobility Matrix Goal Statements:

- Provide transportation options that are competitive with driving alone.
- Create an integrated, multi-modal transportation system to provide a seamless experience for the end user.
- Make safety the first priority in transportation decision-making.
- Incentivize transportation choices that reduce GHG emissions and improve air quality.
- Coordinate transportation and land use decision-making to create a mix of land uses that allows for car-free transportation and reduces VMT.
- Maintain and repair transportation facilities for all modes to a high level.
- Utilize technology to increase access to transportation options.

- Implement universal design guidelines to create environments that are inviting and accessible to everyone regardless of age, ability, or circumstance.

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



Subregional Projects and Programs

An initial Central Los Angeles Mobility Matrix Subregion project and program list 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 204 transportation improvement projects were identified for the Central Los Angeles Mobility Matrix subregion. Many of the smaller projects were combined or grouped 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 in Central Los Angeles.

Table ES-1. Central Los Angeles Transportation Programs

Mobility Matrix Program	Total Projects
Active Transportation	63
Arterials Program	35
Goods Movement Program	11
Highway Program	26
TDM Program	18
Transit Program	51

The Central Los Angeles project list includes transportation improvement priorities identified in countywide planning documents and by local jurisdictions. Arterial improvements and programs comprise less than one-fifth of the project list, while active transportation projects make up just fewer than 30%. Transit projects make up 25% of the project list.

The Central Los Angeles Mobility Matrix includes improvements that address both existing deficiencies in the transportation system as well as anticipated future needs. The Central Los Angeles Mobility Matrix:

- Addresses subregional demand for transit travel within the Central subregion and between subregions, including projects such as the Metro Purple Line extension to the Westside Cities subregion.
- Facilitates more robust transportation system demand management through technology applications and multimodal improvements such as high-occupancy vehicle (HOV) lanes, intelligent transportation systems (ITS), and Transportation Demand Management (TDM) programs.
- Improves subregional active transportation options through projects such as bicycle routes, lanes, paths, and pedestrian treatments including first-last mile treatments around transit facilities.
- Supports the subregional and countywide priority of maintaining a state of good repair for the transportation system.

These improvements are intended to keep the multimodal transportation system functioning smoothly in the future

in order to retain and attract business and development in the subregion.

Evaluation

Each project or program was evaluated in an initial, high-level screening based on its potential to contribute to subregional goals and objectives under each of the six countywide Mobility Matrix themes identified in Figure ES-2. Due to the limited timeframe for the Mobility Matrix 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 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 large scale received a higher benefit rating. Note that cost effectiveness was not considered in the application of performance evaluation scores because of the lack of specific details and data associated with projects and programs, as described above.

The preliminary performance evaluation shown in Table ES-3 represents a collaborative effort spanning many months, and incorporates input from Metro, consultants and the Central Los Angeles PDT.

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

Table ES-3. Performance Evaluation – Summary by Subprogram

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
Active Transportation							
Bicycle Program	10	◑	◑	◑	◔	●	○
Implement the projects and programs identified in the Bicycle Plan for the City of Los Angeles	4	●	◑	●	◔	●	○
Implement Bicycle Enhanced Network and associated bicycle programs as defined in the Mobility Plan 2035	1	●	●	●	◔	●	○
Off-street Ped & Bike Connections (including parks and open space)	5	◔	●	●	○	◑	○
Implement Mayor's "Great Streets Program"	1	◑	●	●	◑	●	◑
Mobility Hubs Program	2	●	●	●	◑	●	○
First-Last Mile Program, including Metro First/Last Mile Strategic Plan	7	●	●	●	◑	●	○
Pedestrian Program, including Pedestrian Enhanced Districts as defined in Mobility Plan 2035	25	◑	●	◑	◑	●	○
Safe Routes to School Program	1	◑	●	◑	◔	●	○
Streetscape Program (landscaping, lighting, benches, etc.)	4	◔	◔	◑	◔	◑	○

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Safety and "Vision Zero" Program	2	◔	●	◑	◔	◔	◔
Arterials							
Localized Intersection Capacity Enhancements	14	◔	○	○	◔	◔	○
Complete Streets Program, including Complete Streets Enhancements along key arterials as defined in Mobility Plan 2035	5	●	●	●	◑	●	○
ITS Program	15	●	◑	◔	◔	◔	○
Implement City of LA Vehicle Enhanced Network as defined in the Mobility Plan 2035	1	◑	◑	○	◔	◔	○
Goods Movement							
Goods Movement Program	11	◔	○	○	●	○	○
TDM							
Technology Program	5	●	◑	◔	◔	○	○
Park & Ride	3	◑	○	◑	◔	◑	○
TMAs/Carpool/Vanpool Program	6	◑	○	●	◔	◑	○

SUBREGIONAL MOBILITY MATRIX – CENTRAL LOS ANGELES

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
Parking Districts/Park Once/Neighborhood Traffic Management Program	4	◔	◔	◑	◔	◑	○
Transit							
Crenshaw Blvd. Corridor Extension (beyond segment funded by Measure R) all the way to Hollywood	1	●	◔	●	◑	●	○
Burbank/Glendale LRT from LA Union Station to Burbank Metrolink Station	1	◔	○	◔	○	◔	○
"Silver" Line LRT between Metro Red Line Vermont/Santa Monica Station and City of La Puente	1	●	◔	●	◑	●	○
Vermont Corridor Subway: Vermont "Short Corridor" from Wilshire/Vermont to Exposition/Vermont	1	●	◑	●	◑	●	○
Implement Transit Enhanced Network as defined in the Mobility Plan 2035	1	●	◔	●	◑	●	○
Bus/Shuttle Program	7	●	○	●	◑	●	○
Metrolink Program	17	●	◑	●	◑	◑	◑
Rail Program (including LRTP Strategic Recommended and Unfunded projects, and other rail projects)	10	●	◔	●	●	●	○
State of Good Repair Program	3	●	●	●	◑	●	●

SUBREGIONAL MOBILITY MATRIX – CENTRAL LOS ANGELES

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LRT and Bus Station/Stop Improvement Program (Safety improvements, lighting, benches, etc.)	9	◔	●	◔	◔	●	○
Freeway							
US-101 Corridor: Add carpool lane in each direction between SR-27 (Topanga Canyon Blvd.) and SR-2 in Downtown Los Angeles	1	●	◔	◔	◔	○	○
SR-60 Carpool Lanes: US-101 to I-605	1	●	◔	◔	◔	○	○
Improve I-5/SR-2 Interchange (Rebuild or use existing ROW)	1	●	◔	◔	◔	○	◔
I-10 Carpool Lanes (Lincoln Blvd. - I-5)	1	●	◔	◑	◔	○	○
Interchange Program (including LRTP Strategic Unfunded projects and others)	4	●	◔	○	◔	◔	○
ITS Program (HOT Lanes and others)	4	●	●	◑	◔	◔	○
Main Line Program (LRTP Strategic Unfunded and others)	9	●	○	◑	◔	◔	○
Ramp Program	5	●	○	○	◔	◔	○
Regional Facilities							
Union Station Linkages Program	1	●	●	●	◑	●	○

SUBREGIONAL MOBILITY MATRIX – CENTRAL LOS ANGELES

Findings

The Central Los Angeles Mobility Matrix addresses each of the six countywide themes:

- **Mobility**. Highway programs provide high benefit for mobility in the subregion by implementing carpool lanes and improving interchanges. Arterial programs provide localized benefit by improving intersections, and provide overall mobility benefits by implementing ITS projects across the subregion. Transit expansion programs provide improvements to travel times, system reliability, and person throughput. Active transportation improvements provide high benefits to subregional mobility by providing efficient alternatives to the automobile, while individual multimodal projects close identified gaps in modal connectivity.
- **Safety**. Active transportation scores highest of all programs under the safety theme by providing protected facilities and minimizing conflict potential. Arterials, transit, and TDM programs enhance vehicular safety and improve reliability by reducing incidents in the right-of-way.
- **Sustainability**. The Mobility Matrix contributes to reduced greenhouse gas emissions, improved air quality, and greater quality of life in the study area. Active transportation and transit programs exhibit the greatest benefits by facilitating travel by modes other than single occupant vehicle and improving public health and quality of life. Other improvements such as the Arterial Complete Streets program, the TMA/Carpool/Vanpool program, and Union Station Linkages Program also perform well for sustainability by providing viable alternatives to driving alone.
- **Economy**. The Goods Movement program performs the best under the Economy theme, along with the Rail program, by increasing opportunities for economic output and job creation, access and retention.
- **Accessibility**. Active Transportation and Transit programs perform highest under the Accessibility theme by improving comprehensive, low-cost, multimodal improvements across the subregion.
- **State of Good Repair**. The Central Los Angeles Mobility Matrix includes a State of Good Repair program, which performs best under the State of Good Repair theme. Other projects that have State of Good Repair components include the Metrolink program, the Mayor's "Great Streets" program, and the Vision Zero program.

Implementation Timeframes and Cost Estimates

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

Due to variations in project scope and available cost data, costs estimated for use in the Mobility Matrix are not intended to be used for future project-level planning efforts. Rather, the cost ranges developed via this process constitute a high-level, rough order-of-magnitude planning estimate range for short-, mid-, and long-term subregional funding needs for the Mobility Matrix effort only. For the most part, these estimates do not include

vehicle, operating, maintenance and financing costs. More detailed analysis will be conducted in the Metro LRTP update process. A full description of the cost estimation methodology can be found in Appendix B.

Projects or programs that cross subregional boundaries may be included in multiple subregional project lists. Where the same projects or programs are included in multiple subregions, the cost estimates include the total estimated project cost, not the cost share for each subregion. The cost sharing will be determined as part of future efforts.

Finally, due to lack of available data and the short timeframe of the Mobility Matrix effort, some of the projects and programs have missing cost estimates or do not include operations and maintenance (O&M) costs. Where O&M costs were available, they were included for the applicable timeframes. O&M costs will be revisited as part of the Metro LRTP update.

What's Next

The Mobility Matrix is the first step in identifying Central Los Angeles transportation projects and programs that require funding. This important work effort serves as a "bottom-up" approach towards updating Metro's LRTP in the future.

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

- **Central Los Angeles Prioritization of Projects.** This Mobility Matrix study does not prioritize projects. Instead, it provides some of the information needed for decision makers to prioritize projects/programs in the next phase of work, and an unconstrained list of all potential transportation projects/programs in the region. In preparation for a potential ballot measure and LRTP update (as described below), members of the Central Los Angeles PDT should decide how it wants to prioritize these projects/programs assuming a constrained funding scenario.
- **Metro Ballot Measure Preparations.** Metro will continue working with the PDTs of all Subregions as it develops a potential ballot measure. Part of the ballot measure work would involve geographic equity determination, as well as determining the amount of funding available for each category of projects/programs and subregion of the County.
- **Metro LRTP Update.** The potential ballot measure would then feed into a future Metro LRTP update and be integrated into the LRTP Finance Plan. If additional funding becomes available through a ballot measure or other new funding sources or initiatives, some projects from the Mobility Matrix project list or any subsequent list developed by the subregion could be used to update the constrained project list for the LRTP moving forward.

Table ES-4. Central Los Angeles Mobility Matrix Summary of Rough Order of Magnitude Cost Estimates and Categorizations

Type / Category	Active Transportation	Arterial	Goods Movement	TDM	Transit	Caltrans	Total
Short-Term (0-10 yrs)	50 out of 62 Projects $1.8B - $2.7B	16 out of 20 Projects $84M - $125M	10 out of 11 Projects $34M - $52M	13 out of 18 Projects $145M - $231M	35 out of 46 Projects $6.0B - $8B	2 out of 4 Projects $3.5M - $5.3M	126 out of 160 Projects $9.4B - $13.1B
Mid-Term (11-20 yrs)	50 out of 62 Projects $1.4B - $2.0B	17 out of 20 Projects $80M - $116M	10 out of 11 Projects $34M - $52M	4 out of 5 Projects $13M - $24M	29 out of 40 Projects $9.5B - $24.2B	20 out of 26 Projects $2.7B - $4.0B	130 out of 164 Projects $15.0B - $32.5B
Long-Term (>20 yrs)	45 out of 56 Projects $1.3B - $1.9B	4 out of 5 Projects $6M - $7M	10 out of 11 Projects $34M - $52M	0 Projects $0	13 out of 14 Projects $13.5B - $19.8B	4 out of 4 Projects $1.9B - $2.8B	76 out of 90 Projects $16.7B - $24.7B
Total	51 out of 63 Projects $4.5B - $6.7B	29 out of 35 Projects $170M- $249M	10 out of 11 Projects $105M - $157M	13 out of 18 Projects $158M - $255M	40 out of 51 Projects $28.9B - $51.9B	20 out of 26 Projects $4.6B - $6.9B	163 out of 204 Projects $41.1B - $70.2B

Notes: Estimated costs in 2015 dollars.
Some highway and transit projects are counted in multiple timeframes, thus total project counts for those types will not match totals row.
Estimates underrepresent operations and maintenance costs due to limited project data availability. Costs also may be underestimated 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.

1.0 INTRODUCTION

1.1 Mobility Matrix Overview

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

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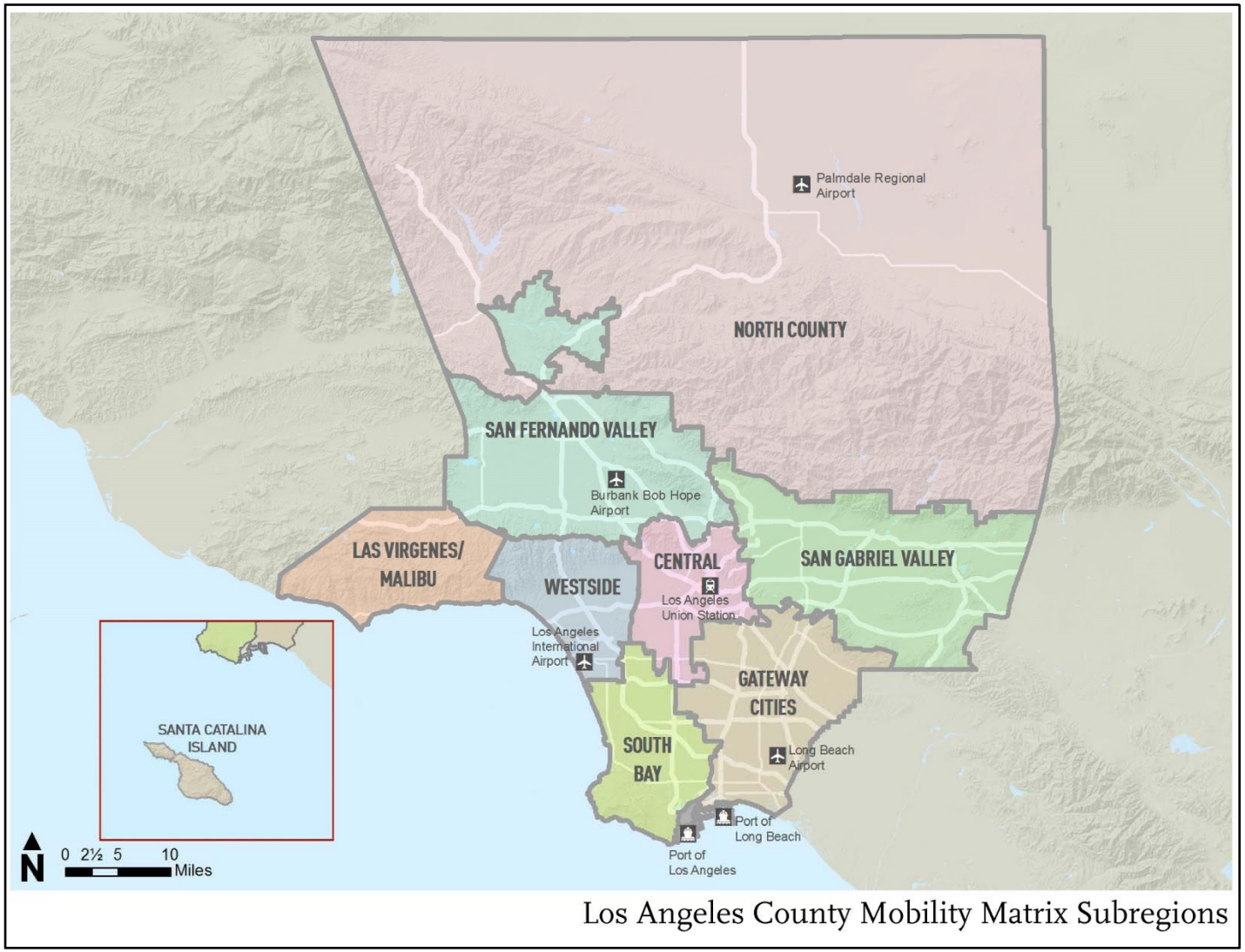
1.2 Project Purpose

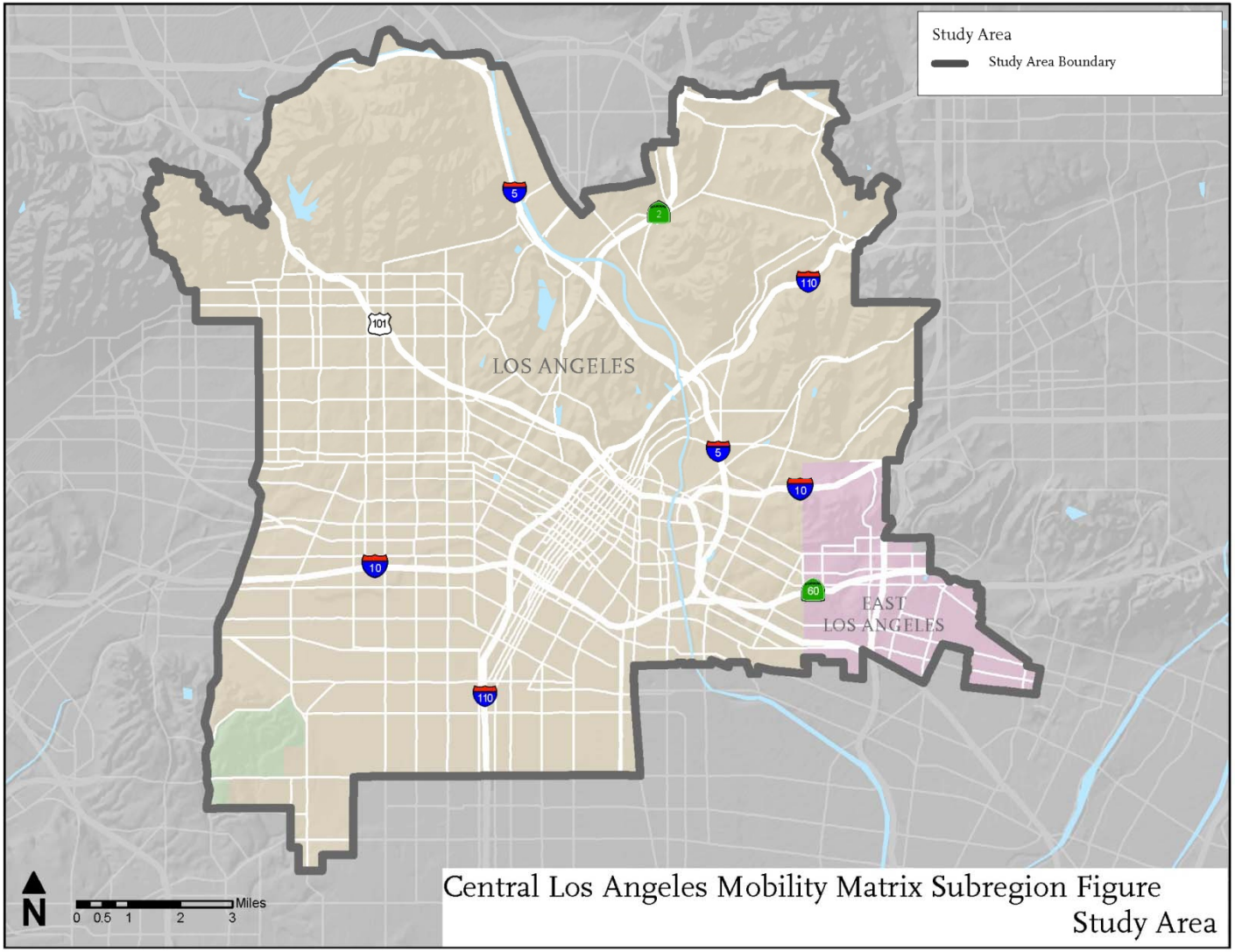
The purpose of the Central Los Angeles Mobility Matrix is to establish subregional transportation objectives and goals, and to identify, develop and evaluate projects and programs that meet these goals and objectives, to serve as a starting point for the update of the Metro Long Range Transportation Plan (LRTP) currently scheduled for adoption in 2017. This Central Los Angeles Mobility Matrix, along with concurrent efforts in other Metro subregions, includes the development of subregional goals and objectives to guide future transportation investments, an assessment of baseline transportation system conditions to identify critical needs and deficiencies, and an initial screening of projects and programs based on their potential to address subregional objectives and countywide performance themes. The Mobility Matrix includes a high-level assessment of the anticipated investment needs and project and program implementation over the short-term (0 to 10 years), mid-term (11 to 20 years) and long-term (20+ years) time frames. The Mobility Matrix does not prioritize projects, but rather serves as a basis for a Strategic Transportation Plan for future transportation investments over the next 20 plus years.

Figure 1-1. Los Angeles County Mobility Matrix Subregions



Source: Iteris, 2014; Fehr & Peers, 2014

Figure 1-2. Central Los Angeles Mobility Matrix Subregion



Source: Iteris, 2014; Fehr & Peers, 2014

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 CLA PDT consisted of representatives from the following jurisdictions and stakeholder agencies:

- City of Los Angeles
- Los Angeles County Department of Public Works
- California Department of Transportation
- Metrolink
- Southern California Association of Governments

The CLA 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. Coordination activities for this effort 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 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 project and programs.** The Mobility Matrix provides a list of subregion-approved projects and programs intended to address transportation system deficiencies and needs.
- **Draft investment needs and implementation time frames.** Based on high-level estimates of project/program readiness and project costs, the Mobility Matrix presents the subregional investment needs to be considered in the next LRTP over its 30-year time horizon.

1.5 Policy Context

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

1.5.1 Federal

- 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 (MPOs), LRTPs, and the Transportation Improvement Program (TIP).

1.5.2 State

- Assembly Bill (AB) 32, the Global Warming Solutions Act of 2006, set greenhouse gas (GHG) mitigation targets for California with a goal of reducing GHG emissions to 1990 levels by the year 2020 across all sectors.
- Senate Bill (SB) 375, the Sustainable Communities and Climate Protection Act of 2006, authorized the Air Resources Board (ARB) to set regional targets for GHG emissions reductions from passenger vehicles, and directed California MPOs to prepare a Sustainable Communities Strategy (SCS), incorporating land use, housing, and transportation strategies intended to help regions meet GHG emissions reduction targets.
- SB 743 (2013), the Jobs and Economic Improvement Through Environmental Leadership Act, directed the Governor's Office of Planning and Research (OPR) to develop a new approach for analyzing transportation impacts under the California Environmental Quality Act (CEQA). The law provides exemptions to CEQA requirements for certain types of development located in transit-priority areas that are consistent with adopted SCS or alternative planning strategies. An outcome of this Bill is the use of vehicle miles traveled (VMT) rather than level-of-service (LOS) metrics in CEQA transportation analysis. Whereas LOS evaluation prioritizes capacity expansion projects that reduce delay or congestion, VMT reduction can be attributed to projects that encourage ridesharing, transit use, transit-oriented development, and active transportation projects that contribute to the reduction of vehicle travel. In short, SB 743 allows for the use of VMT, rather than delay or congestion, to prioritize transportation investments. OPR has yet to establish comprehensive guidelines for the implementation of SB 743.

1.5.3 Local

- Mobility Plan 2035, the City of Los Angeles's revised Mobility Element, is scheduled for adoption in 2015. The plan identifies goals, objectives, policies, and programs that reflect the community's future mobility ideas and suggested strategies. The Plan identifies a layered network of arterial streets, updates Street Standards to reflect all transportation modes, produces a Streetscape Manual, revises the City's Performance and Measurement Tools, and develops an Implementation Strategy that identifies the capital and maintenance costs as well as potential funding sources for implementing new street improvements and maintaining state of good repair.

- 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 Central Los Angeles 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 Central Los Angeles Mobility Matrix Subregion objectives that guide subregional transportation investments.
- Chapter 4.0 – Subregional Mobility Matrix. An initial evaluation of subregional priority projects and programs.
- Chapter 5.0 – Implementing the Vision. A proposed categorization of project and program implementation, including short-, mid- and long-term investment needs, and a summary of next steps for the Mobility Matrix.
- Appendices – Includes a log of the PDT and outreach process; methodology memorandum, a full project list with evaluation, categorization, and cost estimates.

2.0 SUBREGIONAL OVERVIEW

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

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

- Existing projects and studies
- Demographics
- Land uses in the subregion
- Population and employment change projected from 2012 to 2024
- Environmental justice measures: socioeconomic vulnerability or physical exposure, such as low income, low education attainment, linguistic isolation, pollution exposure, hazardous waste exposure, or traffic exposure
- Travel markets: an assessment of the magnitude of trip origins and destinations to and from the subregion and within the subregion
- Goods movement: designated truck routes per the Draft City of Los Angeles Mobility Plan, Surface Transportation Assistance Act (STAA), and the Draft Countywide Strategic Truck Arterial Network (CSTAN) within the area
- Freeways: average daily traffic flow and peak hour speeds
- Arterial roadways: daily traffic flow and peak hour speeds
- Active transportation: existing and proposed bicycle routes, pedestrian facilities, and bicycle/pedestrian-involved collisions
- Transit: bus routes, passenger rail routes, Metrolink routes, and average daily boardings

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

2.1 Land Use and Demographics

About 50% of the study area is zoned residential, and 14% zoned as open and vacant land. Slightly less than half of the residential land area is zoned for single family housing, and slightly more than half is zoned for medium or high density residential. Commercial properties comprise 14% of the study area, with major commercial activity centered in Downtown Los Angeles and along major arterials such as Wilshire Boulevard, Vermont Avenue, and Sunset Boulevard. Industrial land uses are generally located between I-10, US-101 and I-5 in the eastern portion of Downtown Los Angeles, and represent 6% of the study area.

2.1.1 Population and Employment

The Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was used to assess the estimated change in population and employment in the Mobility

Matrix subregion between 2014 and 2024. This analysis provides an indication of where additional person trips may occur due to growth in the Mobility Matrix subregion. Figure 2-1 shows the forecasted change in population and employment, with each color point indicating 20 added jobs (blue dots) or 20 added residents (green dots) at that location. As shown in Figure 3-2, the highest growth in both population and employment is projected to occur in the Downtown area, generally east of SR-110, north of I-10 and south of US-101. Additional concentrations of added population are shown generally to the west of Downtown, north of Wilshire Boulevard and south of US-101. Growth is also projected in the rest of the study area, but at lower densities.

2.1.2 Environmental Justice

Concentrations of disproportionately disadvantaged and/or pollution-burdened communities were identified using the California Environmental Health Hazard Screening Tool (CalEnviroScreen). This tool aggregates variables that indicate certain types of socioeconomic vulnerability such as low income, high unemployment, low levels of educational attainment, linguistic isolation, or high rent burden, and/or physical exposure to environmental pollution and other hazards that can lead to negative public health effects. The resulting indexed score shows the communities most disproportionately burdened by multiple types of exposure and risk.

The areas in which the highest (worst) CalEnviroScreen scores are located are generally east of the I-110 in the southeastern quadrant of the Central Mobility Matrix subregion. In these areas, scores range from 51 to 90.

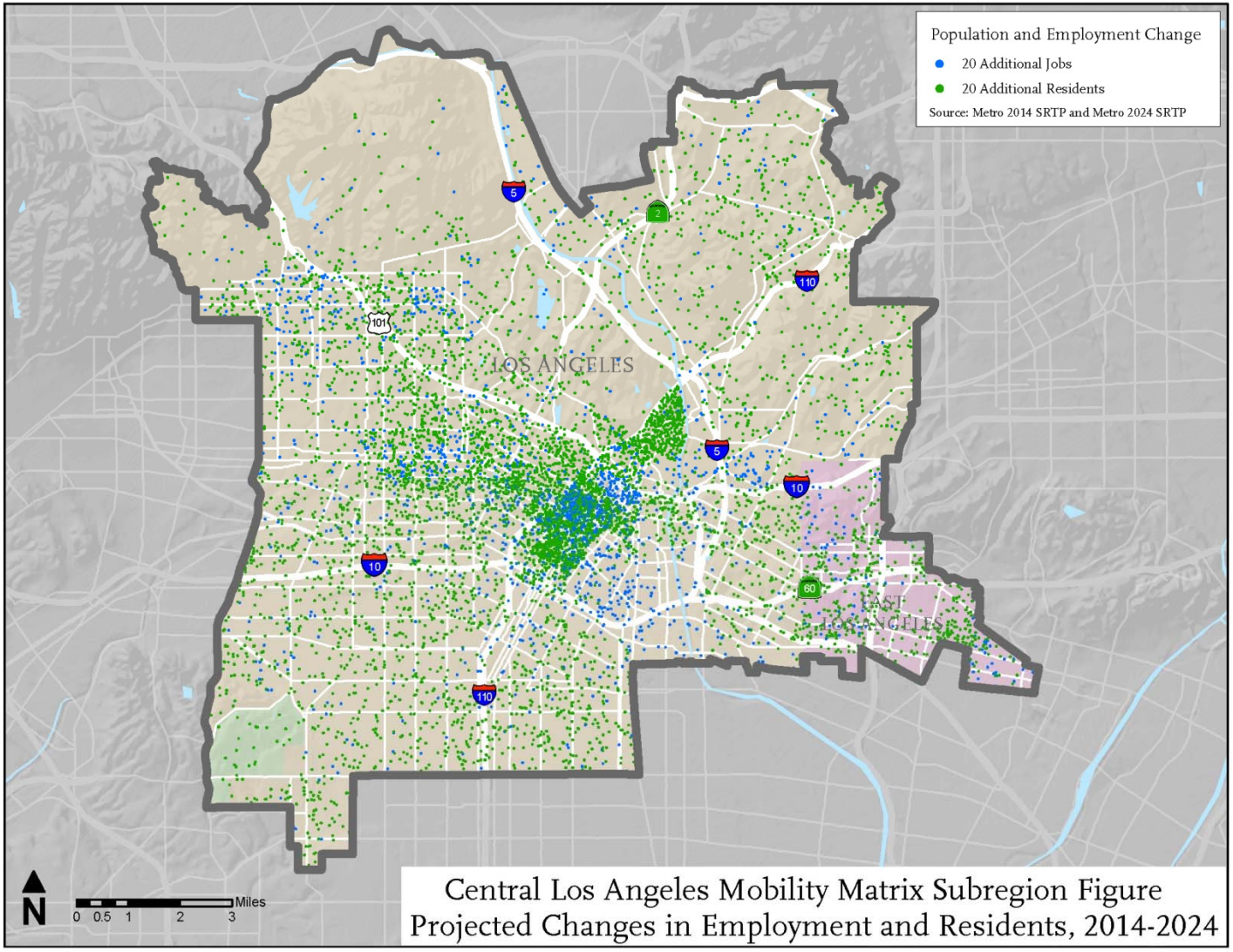
2.2 Travel Patterns

Subregional trip patterns were developed for the study area using the Metro 2014 SRTP model. The model data were summarized for two conditions: Total Daily Person Trips and AM Peak Hour Home-Based Work Person Trips. The model was used to determine the number of trips to and from the Mobility Matrix Subregion, as well as trips within the Subregion. This provides a general understanding of the major patterns of trip movements associated with people who live and work in the Central Los Angeles Mobility Matrix Subregion. Figure 2-2 illustrates the daily person trips, which include all trips made for any reason throughout the day.

Overall, based on the daily person trip patterns, 58% of all the trips produced by the Central Los Angeles Mobility Matrix subregion stay within (are attracted to) the subregion, and 56% of all trips attracted to the Central Los Angeles Mobility Matrix subregion are produced within the subregion. The percentage of internal trips varies because the overall number of attractions (inbound trips) in the Central Los Angeles Mobility Matrix subregion is greater than the productions.

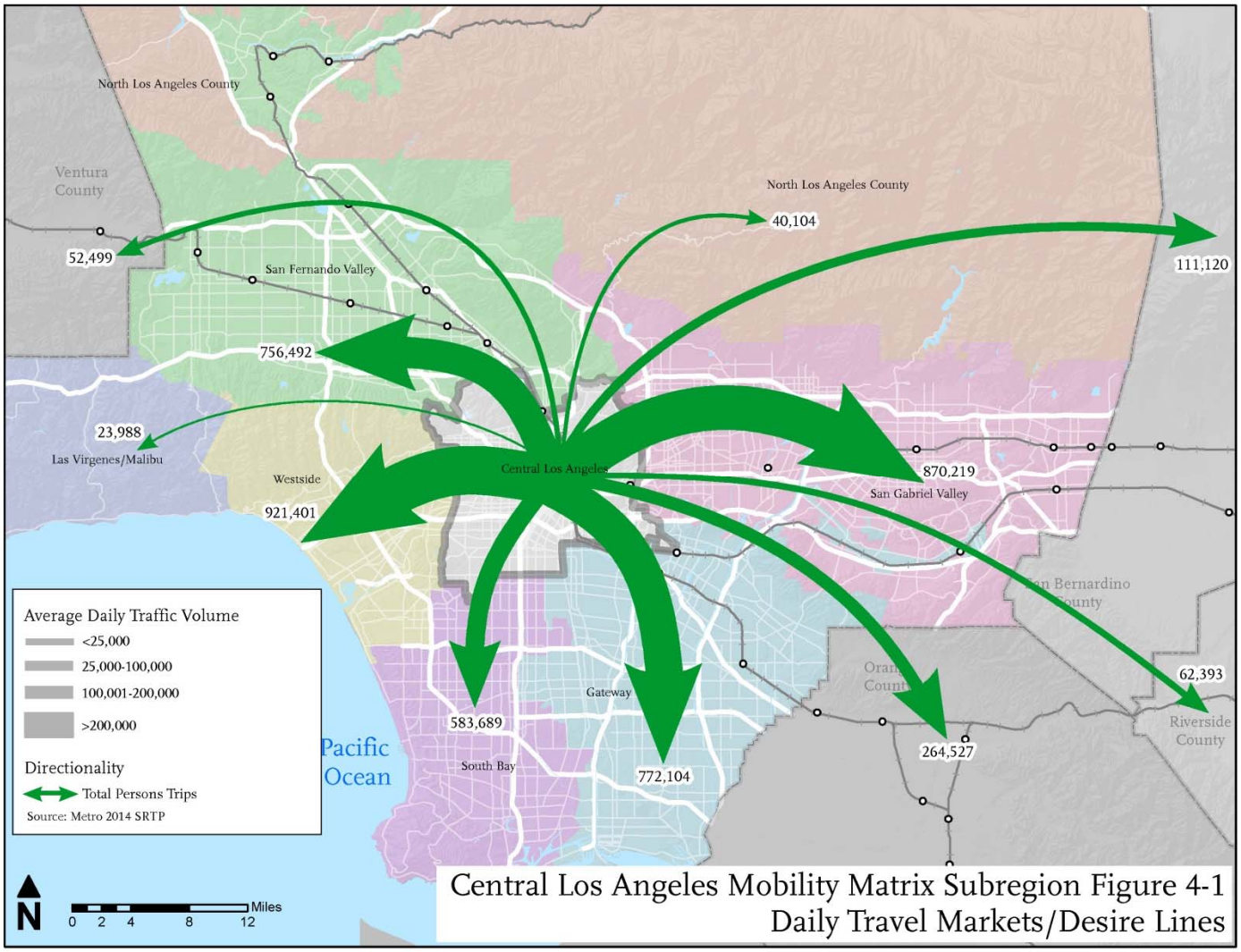
For the Central Los Angeles area, trip producers and attractors are well distributed throughout the region, consistent with the central location of the subregion and its role as a job and commercial center. Of the trips produced in the Central area, the highest volume of trips is destined for the Westside Cities Mobility Matrix subregion, where approximately 596,000 daily trips, or 12% of all trips produced by Central Los Angeles are destined on an average day.

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



Source: Iteris, 2014; Fehr & Peers, 2014; Metro 2014 SRTP

Figure 2-2. 2014 Average Daily Trips to/From Central Los Angeles Mobility Matrix Subregion



Source: Iteris, 2014; Fehr & Peers, 2014; Metro 2014 SRTP

The remaining Central area trip productions are well distributed throughout the region, with other subregions accounting for up to 4% each of the Central trips produced.

The highest number of trips attracted to the Central Los Angeles Mobility Matrix subregion come from the San Gabriel Valley (9%), followed closely by Gateway Cities (8%) and San Fernando Valley (also 8%) and Westside (6%). Of the approximate 5,065,000 total daily trips produced, and 5,295,000 daily trips attracted, almost 60%, or approximately 3,000,000 trips stay within the Central Los Angeles Mobility Matrix subregion. The other portion goes to or arrives from other areas.

2.3 Vehicle Travel

2.3.1 Freeways

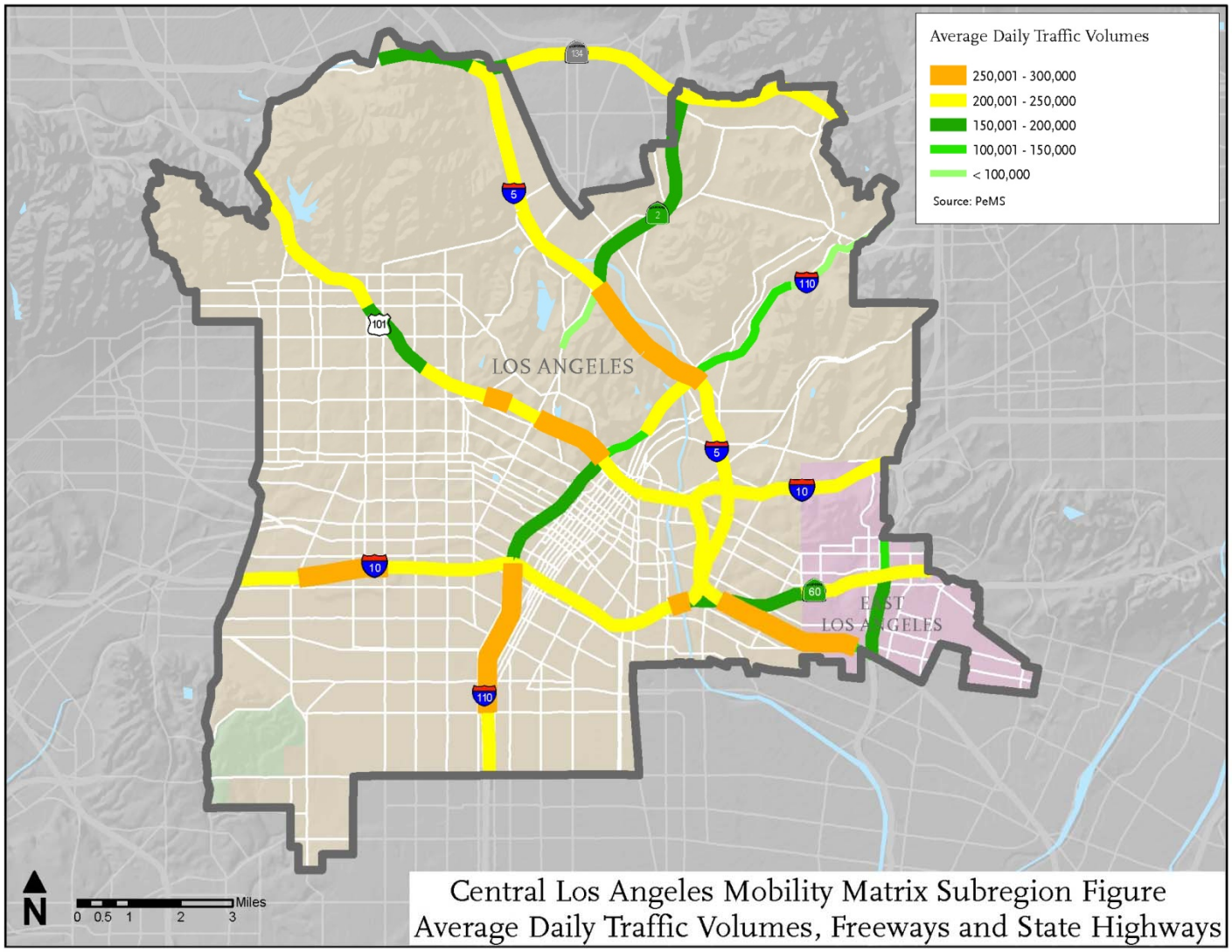
The Caltrans Freeway Performance Monitoring System (PeMS) was used to assess freeway volumes and speeds. Within the study area, Caltrans PeMS monitoring locations were available through the freeway system at various locations. October 2013 speed data were reviewed, with only typical weekdays (non-holiday Tuesdays, Wednesdays and Thursdays) as a basis for the average speed data extraction. Speeds were extracted over the 24 hours of every weekday, with the peak hours chosen based on the slowest observed speeds during the peak commute period.

The highest volume freeways in Central Los Angeles include the I-110 south of I-10, I-5 east of I-710, SR-101 leaving downtown north of I-110 and I-5 north of I-110. All of those freeway segments have volumes between 250,000 and 300,000 daily vehicles. Freeways that carry between 200,000 and 250,000 vehicles per day include I-5 from I-10 to SR-110, US-101 on the north side of Downtown, and portions of I-10 and SR-60. The remaining freeway segments, as shown in the figure, carry less than 150,000 vehicles per day. Freeway volumes in the Central Los Angeles Mobility Matrix subregion are shown in Figure 2-3.

During the AM peak hour, many of the freeways serving the Central area experience significant slowing and associated congestion, including the I-110 northbound approaching Downtown, the I-10 in both directions, the I-5 and US-101 northbound coming from the east, US-101 southbound and the I-5 southbound coming from the west/north, the SR-110 southbound from Pasadena and the SR-2 southbound. These speed patterns clearly reflect the inbound work trip patterns to the Downtown area as well as through trips from one subregion to another using the freeways that run through the Central Los Angeles Mobility Matrix subregion.

During the afternoon PM peak, a greater number of freeway segments experience significant slowing, including much of the freeway ring around Downtown with slow speeds below 30 mph (I-10, I-110, I-5, SR-101). In addition to the freeway ring around Downtown, other segments that experience very slow speeds include the I-110 south of Downtown in the outbound (southbound) direction, US-101 north of Downtown (both directions) and I-10 to the west of Downtown.

Figure 2-3. Average Daily Traffic Volumes on Central Los Angeles Mobility Matrix Subregion Freeways



Source: Iteris, 2014; Fehr & Peers, 2014; Caltrans, 2014

2.3.2 Arterial Roadways

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

Using the collected data, vehicle speeds were posted on study area arterial roadways for both the AM and PM peak hours. These are shown in Figures 5-5 and 5-6. Figure 5-5 and 5-6 show that peak hour slowing occurs during AM and PM peak hours on many of the key arterial roadways in the Central area. Roads that are particularly impacted include Santa Monica Boulevard, Wilshire Boulevard, 6th Street, Alvarado Street and Alameda Street. The overall arterial system speeds are also generally slower during the PM peak hour throughout the Central Los Angeles Mobility Matrix subregion on the key arterials.

2.3.3 Goods Movement

In the Central area, designated truck routes are mostly concentrated in the industrial area east and south of Downtown, along with some other key routes which feed trucks to the I-10, US-101, the I-5 and the SR-2. Trucks making local deliveries can legally use the entire arterial system, unless specifically prohibited by ordinance. Non-local through trucks must use the designated truck route system.

The draft CSTAN consists of much of the City of Los Angeles truck route network as identified in the draft Mobility Plan and it also includes some other key arterial routes which provide connectivity to the regional system. As expected, the CSTAN and City truck route system is concentrated in the industrial/commercial area to the southeast of Downtown. In addition, the draft CSTAN network includes other arterials that are not part of the City's truck route system in the Draft Mobility Plan, such as Washington Boulevard that parallels I-10, Santa Monica Boulevard and Highland Avenue that connect to the US-101 Freeway, Olympic Boulevard and Valley Boulevard that provide system connectivity west of Downtown and Alvarado Street and Sunset Boulevard that provide system connectivity east of Downtown.

2.4 Active Transportation

The predominant type of bicycle facility in the Central Los Angeles Mobility Matrix subregion is Class III on-street bike routes, which are provided along many streets. In the northwest portion of the study area, and near the US-101 freeway corridor, there are a number of Class III bike routes with sharrows. A limited number of Class III routes are also provided. Several Class II on-street bike lanes also exist within the subregion. Class I bike paths follow the Los Angeles River alignment generally to the north and west of Downtown Los Angeles, and a portion of the Arroyo Seco which also parallels the SR-110.

2.5 Transit

The study area is well-served by both bus and rail transit. Several express bus services run by Metro, Santa Monica Big Blue Bus, Culver CityBus, and other services operate within the subregion, along with a grid network of local bus services which serve the subregion as well. Figure 2-4 illustrates the bus transit network in the subregion as of the end of 2014.

Countywide, regional, and local bus systems provide important connections to other transit systems, such as Metrolink and Metro Rail lines, as well as access to key activity centers throughout the Central Los Angeles Mobility Matrix subregion. The following describes the bus services available in the subregion.

- Los Angeles Metro – Metro currently operates 86 bus routes within the subregion (seven commercial circulators, 17 Rapid/BRT routes, 30 local CBD routes, six limited/express route, and 26 non-CBD routes)
- Alhambra Community Transit – Alhambra Community Transit is a shuttle that operates one bus route, the Blue Route, within the subregion
- Antelope Valley Transit Authority (AVTA) – AVTA currently operates two commuter express routes, Route 795 and 786, within the subregion
- Children's Court Shuttle – Children's Court Shuttle is a free shuttle service that operates one route through the subregion
- Commerce Transit – Commerce Transit currently operates four routes, the Blue, Orange, Red and an Express route, within the subregion
- East Los Angeles Shuttle – The East Los Angeles Shuttle is a shuttle service that operates three routes within the subregion
- Foothill Transit – Foothill Transit currently operates seven bus routes within the subregion
- Gardena Bus Lines – Gardena Bus Lines currently operates one express bus route, Route 1X, within the subregion
- Glendale BeeLine – The Glendale BeeLine currently operates one route, Route 6, within the subregion
- LADOT Commuter Express – The Los Angeles Department of Transportation (LADOT) currently operates 13 Commuter Express routes within the subregion
- LADOT DASH – LADOT currently operates 26 DASH routes within the subregion
- Monterey Park Spirt Bus – The Monterey Park Spirit Bus currently operates one route within the subregion
- Montebello Bus Lines – Montebello Bus Lines currently operate seven bus routes within the subregion
- Santa Clarita Transit – Santa Clarita Transit currently operates two express routes, Route 794 and 799, within the subregion
- Santa Monica Big Blue Bus – Santa Monica Big Blue Bus currently operates four bus routes within the subregion
- Torrance Transit – Torrance Transit currently operates one bus route, Route 4, within the subregion

Other transit services available in the study area include:

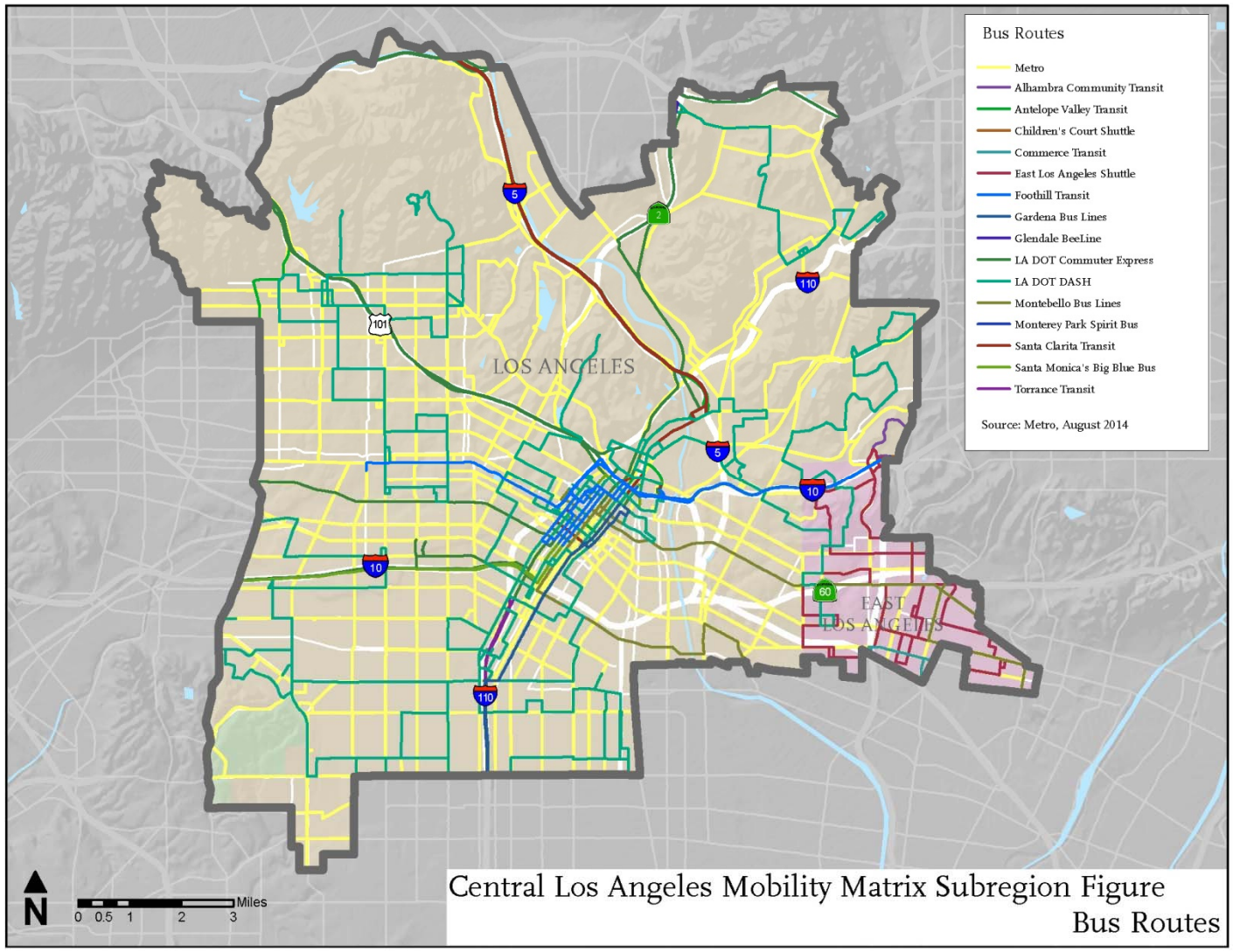
- Access Services – The Americans with Disabilities Act (ADA) complementary paratransit service for functionally disabled individuals in Los Angeles County

- CityRide – The City of Los Angeles provides dial-a-ride services offering curb-to-curb transportation for the disabled and seniors across the City of Los Angeles and in select parts of Los Angeles County

The Central area has several regionally significant fixed-guideway transit routes, including the Metro Red Line, Metro Expo Line, Metro Gold Line, Metro Purple Line, Metro Blue Line and Metrolink, shown in Figure 2 5.

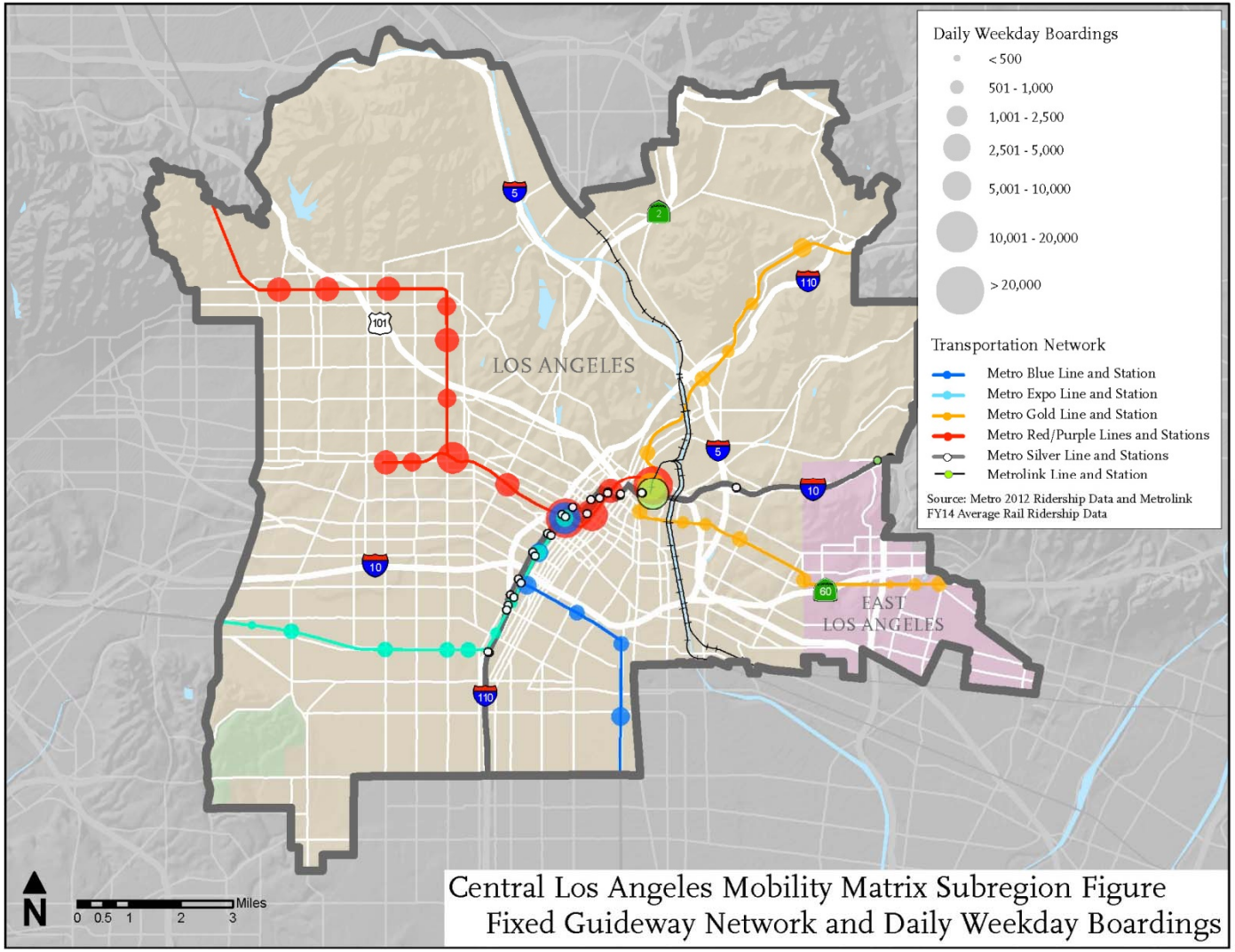
The daily weekday boarding data indicates that the highest passenger rail ridership within the Central Los Angeles Mobility Matrix subregion occurs on the Metro Red Line. Two Metro Red Line stations have over 20,000 daily boardings, including the major stations at 7th/Metro Center and Union Station. The Pershing Square station experiences daily boardings of between 10,001 and 20,000 riders, as does Wilshire/Vermont. All other Metro Red Line stops within the Central Los Angeles Mobility Matrix subregion experience between 5,001 to 10,000 daily weekday boardings. The Metro Blue Line and Metro Expo Line experience fewer boardings than the Red Line, with several stops along each route experiencing up to 2,500 daily boardings and a few experiencing between 1,001 to 2,500 daily boardings. Similarly, most of the Metro Gold Line stops experience between 501 to 1,000 boardings daily, with only the Union Station generating over 10,000 boardings per day. The Metrolink commuter rail stop at Union Station experiences from 5,001 to 10,000 boardings on a typical weekday.

Figure 2-4. Bus Service



Source: Iteris, 2014; Fehr & Peers, 2014

Figure 2-5. Fixed Guideway Network Service



Source: Iteris, 2014; Fehr & Peers, 2014

3.0 GOALS AND OBJECTIVES

This section describes the goals and objectives of the Central Los Angeles Mobility Matrix Subregion. The goals are consistent with the county's overall goals framework, which consists of six broad themes common among all the subregions. The goals also reflect the Subregion's priorities, and are based on recent studies, the City of Los Angeles General Plan, and discussions with the Central Los Angeles PDT.

3.1 Mobility Matrix Themes

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

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

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

MAP-21 called for a renewed focus on ensuring transportation infrastructure is maintained in good condition.

MAP-21 includes national performance measures for interstate highway conditions, and a requirement that state and metropolitan plans indicate how project selection helps achieve these targets. Similar requirements exist for transit funding, including transit asset management plans and system condition reporting.

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

3.2 Subregional Priorities

The PDT was asked to consider the six Mobility Matrix themes and develop goals and objectives for each theme which reflected subregional priorities. The Central Los Angeles subregion has high-density residential districts, numerous jobs centers and iconic tourist destinations of regional importance. Its gridded street network provides multiple parallel facilities to area freeways such as the I-10 and I-110, leading to widespread heavy congestion on arterials and the infiltration of cut-through traffic onto neighborhood streets. Regional commuters suffer long commute times and local residents and tourists suffer the consequences as short trips are impeded by regional traffic. Recent investments such as construction of the Expo Line and expansion of bicycle facilities will improve both regional and local transportation options, but many more improvements are needed to meet the existing and future demand for travel in and around the subregion.

The PDT expressed a strong commitment to increasing multimodal travel options, creating alternative transportation options that are competitive with the private automobile. Physical roadway improvements are not seen as a solution to congestion, but rather, the subregion is more interested in utilizing multiple strategies to enhance the efficiency of alternative transportation modes, including technology, land use planning, first/last mile strategies, and financial incentives. Overall, the PDT's goal is to continue to guide the region on transportation and environmental issues.

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

Table 3-1. Goals and Performance Measures for the Central Los Angeles Mobility Matrix Subregion

Theme	Goal	Performance Measures
Mobility	**Maximize person-throughput, rather than vehicle-throughput, on public rights of way.** Historic prioritization of vehicle throughput to the exclusion of other metrics has been detrimental to those traveling by any other mode. Emphasis should be placed on person – rather than vehicle – throughput and trip quality.	• Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability
	Provide and promote transportation options that are competitive with driving alone in terms of total trip time, costs, convenience, comfort, and safety. In order to compete with the appeal of driving, all transportation modes should aim to improve door-to-door travel time and provide an attractive, comfortable, safe user experience.	
	Create an integrated, multimodal transportation system to provide a seamless experience for the end user. Transportation systems should be seamlessly integrated through technological improvements such as real-time arrival information, intuitive wayfinding, universal fare media, and infrastructure that facilitate the physical connections between modes at transfer points.	
Safety	**Make safety the first priority in transportation decision-making.** This includes the pursuit of "Vision Zero" (no traffic fatalities in the City of Los Angeles by 2025) and the integration of performance metrics that prioritize safety improvements across all modes.	• Reduce incidents • Improve personal safety
	Create a transportation system in which the personal and physical safety of users is protected, regardless of mode. Many people drive rather than use alternative transportation because they do not feel safe riding a bicycle on streets without protected facilities, or do not take transit because they fear for their personal safety while waiting at transit stops or riding transit at night.	
	Encourage safe speeds through street design, enforcement, and technology. On roadways where speed limits are high and speeding is common, street design can be used to reduce travel speeds and narrow travel lanes. Enforcement of the speed limit will also encourage safer speeds. Technology can provide automated enforcement or real-time feedback to encourage drivers to obey the speed limit. These efforts will have the effect of slowing drivers down to speeds at which a pedestrian or bicyclist may survive if hit by an automobile.	
	Embrace technology that improves safety and limits the opportunity for human error. Autonomous vehicles and positive train control are just two examples of new technologies that reduce the opportunities for human error that often leads to collisions.	

Theme	Goal	Performance Measures
Sustainability	**Adopt metrics that evaluate projects based on their environmental, economic, and social impacts.** Sustainable systems consider the needs and constraints of the environment, the economy, and human resources in order to achieve a successful balance.	• Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life
	Incentivize transportation choices that reduce GHG emissions and improve air quality. This may include "carrots" such as free or reduced transit passes and cash-out benefits for those who walk or bicycle or carpool to work, or "sticks" such as increasing the cost to park.	
	Coordinate transportation and land use decision-making to create a mix of land uses that allows for car-free transportation and reduces VMT. Providing retail, housing, and employment opportunities close to transit allows people to choose alternatives to private vehicle travel.	
	Identify vulnerable transportation assets and make timely investments in the transportation network to mitigate climate change risk. Natural and human hazards pose a threat to the continued operation of transportation systems. In order to ensure consistent and sufficient operations during disruptions, identification of critical transportation infrastructure vulnerable to changing climate conditions can direct investments to protect it.	
Economy	**Provide transportation options that reduce health care costs related to transportation, such as obesity and asthma, and improve public health.** Health care costs related to traffic collisions, sedentary lifestyles, and asthma are all influenced by the transportation systems that are available across the region. Active transportation modes and safe facilities for all users can help improve health and reduce health care costs.	• Increase economic output • Increase job creation and retention
	Create a transportation system that enables job access and new job creation. The transportation system has the potential to create or enable jobs that would otherwise not occur, both locally and regionally, beyond the jobs associated with the construction of the project.	
	Encourage land use development around transit and mobility hubs. Land development should be encouraged around existing transit and mobility hubs where infrastructure exists that can support increased density.	

Theme	Goal	Performance Measures
Accessibility	**Integrate multimodal transportation options to maximize accessibility for transit riders.** Better connections between transit services are needed in order to reduce the reliance on automobiles.	• Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections
	Utilize technology to increase access to transportation options. A lack of reliable information about transit services and fare media, and a lack of integration between the data sources that do exist, create a burden for transit users.	
	Create inviting, barrier-free transportation facilities to provide universal access to all transportation users, regardless of age, ability, or circumstance. This includes orienting facilities to the street instead of a parking lot, providing multiple access points wherever possible, and always considering the most direct route for all users, not just private vehicle drivers.	
State of Good Repair	**Maintain and repair transportation facilities for all modes to a high level to create an attractive and comfortable multi-modal transportation system.** Transit and active transportation infrastructure should be maintained at an equally high level as infrastructure for automobiles, in order to ensure the comfort and safety of all transportation system users.	• Extend life of facility or equipment
	Mitigate the impact of heavy vehicles on roads and freeways through cooperation with the private sector and multiple agencies. Heavy vehicles such as trucks and buses can degrade the pavement quality faster than light vehicles. Partnership and cooperation with the private sector and transit agencies can help mitigate the impact of these vehicles on transportation assets.	
	Account for the lifecycle costs of transportation capital projects. In addition to the capital costs, lifecycle costs such as operations and maintenance should be considered for all transportation projects.	

4.0 SUBREGIONAL MOBILITY MATRIX

An initial Central Los Angeles 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 Dubois and Antonovich. The project and program list was then updated during the outreach process to incorporate input from the PDT members and other subregion stakeholders. Projects that were completed, under construction, or fully funded were removed from the list. The list reflects not only transportation needs within cities, but also includes many projects with wider subregional and regional impacts.

This chapter summarizes the transportation needs of the Central Los Angeles 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 204 projects and programs were identified for the Central Los Angeles Mobility Matrix Subregion. The projects are divided into six broad categories: Active Transportation, Arterial, Goods Movement, Transportation Demand Management (TDM), Transit, and Freeway. Within each category, the projects are grouped by similarity into subcategories. Several projects, such as the City of Los Angeles Bike Plan or the City of Los Angeles Mobility Element, consist of many smaller projects such as individual bicycle lane segments or individual mobility hubs. The details associated with specific projects can be found in Appendix C. 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.

Active transportation projects compose about one-third of the project/program list. Arterial projects account for approximately 20% of the list, and primarily consist of spot intersection improvements, ITS improvements, and complete streets improvements. Transit projects also make up approximately 20% of the list, including major rail projects such as the Purple Line Extension, stop and station area improvements, and Bus Rapid Transit. Freeway projects make up approximately 14% of the project list, and include ramp projects and major interchange upgrades. Transportation Demand Management projects account for approximately 10% of the project list, and include parking programs, rideshare programs, and other ITS improvements. Goods movement projects account for approximately 6% of the list, the smallest of the six categories.

A full list of the projects and programs is provided in Appendix C.

4.2 Evaluation

The evaluation was developed as a high level analysis to identify 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 evaluation and a starting point for the Metro LRTP update process. The evaluation is

qualitative in nature, due to the limited time frame for completion of the work effort and incomplete project/program details and data. The evaluation methodology shown in Table 4-1 represents a collaborative effort spanning many months, and incorporates input from all the subregional representatives across Los Angeles County.

A full description of the evaluation methodology is provided in Appendix B.

4.2.1 Evaluation Matrix

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

Table 4-1. Evaluation Methodology

To Achieve the following score in a single theme:	Project must meet the corresponding criterion:
● **HIGH BENEFIT**	■ Significantly benefits one or more theme goals or metrics on a 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

Table 4-2. Performance Evaluation – Summary by Subprogram

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
Active Transportation							
Bicycle Program	10	◑	◑	◑	◔	●	○
Implement the projects and programs identified in the Bicycle Plan for the City of Los Angeles	4	●	◑	●	◔	●	○
Implement Bicycle Enhanced Network and associated bicycle programs as defined in the Mobility Plan 2035.	1	●	●	●	◔	●	○
Off-street Ped & Bike Connections (including parks and open space)	5	◔	●	●	○	◑	○
Implement Mayor's "Great Streets Program"	1	◑	●	●	◑	●	◑
Mobility Hubs Program	2	●	●	●	◑	●	○
First-Last Mile Program, including Metro First/Last Mile Strategic Plan	7	●	●	●	◑	●	○
Pedestrian Program, including Pedestrian Enhanced Districts as defined in Mobility Plan 2035.	25	◑	●	◑	◑	●	○
Safe Routes to School Program	1	◑	●	◑	◔	●	○

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
Streetscape Program (landscaping, lighting, benches, etc.)	4	◔	◔	◑	◔	◑	○
Safety and "Vision Zero" Program	2	◔	●	◑	◔	◔	◔
Arterials							
Localized Intersection Capacity Enhancements	14	◔	○	○	◔	◔	○
Complete Streets Program, including Complete Streets Enhancements along key arterials as defined in Mobility Plan 2035	5	●	●	●	◑	●	○
ITS Program	15	●	◑	◔	◔	◔	○
Implement City of LA Vehicle Enhanced Network as defined in the Mobility Plan 2035.	1	◑	◑	○	◔	◔	○
Goods Movement							
Goods Movement Program	11	◔	○	○	●	○	○
TDM							
Technology Program	5	●	◑	◔	◔	○	○

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
Park & Ride	3	◑	○	◑	◔	◑	○
TMAs/Carpool/Vanpool Program	6	◑	○	●	◔	◑	○
Parking Districts/Park Once/Neighborhood Traffic Management Program	4	◔	◔	◑	◔	◑	○
Transit							
Crenshaw Bl Corridor Extension (beyond segment funded by Measure R) all the way to West Hollywood/Hollywood	1	●	◔	●	◑	●	○
Burbank/Glendale LRT from LA Union Station to Burbank Metrolink Station	1	◔	○	◔	○	◔	○
"Silver" Line LRT between Metro Red Line Vermont/Santa Monica Station and City of La Puente	1	●	◔	●	◑	●	○
Vermont Corridor Subway: Vermont "Short Corridor" from Wilshire/Vermont to Exposition/Vermont	1	●	◑	●	◑	●	○
Implement Transit Enhanced Network as defined in the Mobility Plan 2035.	1	●	◔	●	◑	●	○
Bus/Shuttle Program	7	●	○	●	◑	●	○

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
Metrolink Program	17	●	◑	●	◑	◑	◑
Rail Program (including LRTP Strategic Recommended and Unfunded projects, and other rail projects)	10	●	◔	●	●	●	○
State of Good Repair Program	3	●	●	●	◑	●	●
LRT and Bus Station/Stop Improvement Program (Safety improvements, lighting, benches, etc.)	9	◔	●	◔	◔	●	○
Freeway							
US-101 Corridor: Add carpool lane in each direction between SR-27 (Topanga Canyon Bl and SR-2 in Downtown Los Angeles.	1	●	◔	◔	◔	○	○
SR-60 Carpool Lanes: US-101 to I-605	1	●	◔	◔	◔	○	○
Improve I-5/SR-2 Interchange (Rebuild or use existing ROW)	1	●	◔	◔	◔	○	◔
I-10 Carpool Lanes (Lincoln Bl - I-5)	1	●	◔	◑	◔	○	○
Interchange Program (including LRTP Strategic Unfunded projects and others)	4	●	◔	○	◔	◔	○

ID	# Projects Included	Mobility • Improve travel times • Improve system connectivity • Increase person throughput • Increase travel by transit and active modes • Improve reliability	Safety • Reduce incidents • Improve personal safety	Sustainability • Reduce greenhouse gases • Reduce vehicle miles traveled • Improve quality of life	Economy • Increase economic output • Increase job creation and retention	Accessibility • Increase population served by facility • Increase service to transit-dependent populations • Improve first-last mile connections	State of Good Repair • Extend life of facility or equipment
ITS Program (HOT Lanes and others)	4	●	●	◑	◔	◔	○
Main Line Program (LRTP Strategic Unfunded and others)	9	●	○	◑	◔	◔	○
Ramp Program	5	●	○	○	◔	◔	○
Regional Facilities							
Union Station Linkages Program	1	●	●	●	◑	●	○

The Active Transportation projects score quite highly under the Safety, Sustainability, and Accessibility themes. The projects involving bicycle and pedestrian improvements accomplish several goals in multiple themes; this reinforces the PDT's stated commitment to improving Active Transportation facilities in the Subregion.

Arterial and Freeway projects perform well under the Mobility theme, as they primarily focus on improving system connectivity and travel time reliability. Their ratings under Safety tend to be mixed; some projects, such as active transportation projects, have clear safety benefits, but other projects, such as road widenings, may actually decrease safety for transportation network users such as pedestrians. While there are a few road widening projects that address congested intersections, they may induce demand and increase emissions. The highway projects typically had no or very low benefit for Accessibility, and most projects scored no benefit for State of Good Repair.

The Goods Movement projects score well on Economic themes. The projects are primarily composed of capacity enhancements at key goods movement corridor intersections and freeway ramps.

The TDM projects score well on Mobility and Sustainability. The TDM category includes a number of parking programs, rideshare programs, and ITS improvements.

Most of the Transit projects score highly for Mobility, Sustainability, and Accessibility. The Transit category contains several high-profile projects, such as Metro Purple Line extension, Bus Rapid Transit, and the Metro Crenshaw/LAX Line extension.

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

4.3 Findings

Overall, most projects perform very well under one or two Mobility Matrix themes, while also providing some secondary benefits in other themes. None of the projects in the Central Los Angeles Region received negative scores in any of the themes. Some projects have many Neutral/No Benefit scores, but that does not mean they do not provide benefits; rather, those projects tend to be tightly focused on one theme, such as Safety, or confer benefits for some users, while posing additional risks or impacts to other users.

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

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 Central Los Angeles project/program categories. A full description of the categorization methodology can be found in Appendix B.

Most of the projects in the Central Los Angeles Mobility Matrix Subregion fall into the short- and mid-term timeframes. The long-term projects typically consist of those which are phased over the 20-plus time period, or are major transportation or freeway infrastructure improvements. The emphasis on the shorter term is partially a result of the "bottoms-up approach", since the cities tended to submit projects for which they have immediate needs.

Table 5-1. Central Los Angeles Subregional Mobility Matrix Projects and Programs Categorization Summary

Central Los Angeles Mobility Matrix Projects and Programs	Number of Projects	Project Categories		
		Short Term (0-10 Years)	Mid Term (20 Years)	Long Term (20+ Years)
Bicycle Program	10	✓	✓	✓
2010 Bicycle Plan for the City of Los Angeles Program	4	✓	✓	✓
Bicycle Enhanced Network Program	1	✓	✓	✓
Off-street Ped & Bike Connections Program	5	✓	✓	✓
Great Streets Program	1	✓	✓	
Mobility Hubs Program	2		✓	
First-Last Mile Program	7	✓	✓	✓
Pedestrian Program	25	✓	✓	✓
Safe Routes to School Program	1	✓	✓	✓
Streetscape Program	4	✓		
Safety and "Vision Zero" Program	2	✓	✓	
Intersection Capacity Enhancements Program	14		✓	
Complete Streets Program	5	✓	✓	✓
ITS Program	15	✓		
Vehicle Enhanced Network Program	1		✓	
Goods Movement Program	11	✓	✓	✓
Technology Program	5	✓	✓	
Park & Ride	3	✓		
TMAs/Carpool/Vanpool Program	6	✓		
Parking Districts/Park Once/Neighborhood Traffic Management Program	4	✓		
Crenshaw Bl Corridor Extension	1			✓
Burbank/Glendale LRT	1		✓	✓
“Silver” Line LRT	1		✓	✓
Vermont Short Corridor Subway	1			✓
Transit Enhanced Network Program	1		✓	
Bus/Shuttle Program	7	✓	✓	
Metrolink Program	17	✓	✓	
Rail Program	18	✓	✓	✓

Central Los Angeles Mobility Matrix Projects and Programs	Number of Projects	Project Categories		
		Short Term (10 Years)	Mid Term (20 Years)	Long Term (20+ Years)
State of Good Repair Program	3	✓	✓	
LRT and Bus Station/Stop Improvement Program	9	✓		
US-101 Corridor: Add carpool lane in each direction between SR-27 SR-2	1		✓	✓
SR-60 Carpool Lanes: US-101 to I-605	1		✓	✓
Improve I-5/SR-2 Interchange	1		✓	✓
I-10 Carpool Lanes (Lincoln Bl - I-5)	1		✓	✓
Interchange Program	4		✓	
ITS Program	4	✓	✓	
Main Line Program	9		✓	
Ramp Program	5		✓	
Union Station Linkages Program	1		✓	✓

5.2 Cost Estimates

This section contains the Central Los Angeles 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 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 project/program 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. A full description of the cost estimate methodology can be found in Appendix B.

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.

Due to lack of available data and the short timeframe of the Mobility Matrix effort, some of the projects and programs have missing cost estimates or do not include operations and maintenance (O&M) costs. Where O&M costs were available, they were included for the applicable timeframes. O&M costs will be revisited as part of the LRTP update. It should be noted that for this reason, the cost established may be understated.

Table 5-2 shows the estimated cost ranges for each Central Los Angeles 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.

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

Table 5-2. Central Los Angeles Mobility Matrix Rough Order of Magnitude Cost Estimate Ranges and Categorizations (2015 Dollars)

Central Los Angeles Mobility Matrix Projects & Programs	Total Projects	Projects with Costs	Short Term (0 to 10 Years)		Mid Term (11 to 20 Years)		Long Term (20 plus Years)	
			Low	High	Low	High	Low	High
Bicycle Program	10	7	$7,715,400	$12,332,100	$7,715,400	$12,332,100	$7,715,400	$12,332,100
City of LA Bike Plan Program	4	4	$323,083,200	$484,624,800	$323,083,200	$484,624,800	$323,083,200	$484,624,800
Bike Enhanced Network Program	1	1	$368,280,000	$552,420,000	$368,280,000	$552,420,000	$368,280,000	$552,420,000
Off-street Ped & Bike Connection Program	5	4	$475,926,000	$713,476,500	$475,926,000	$713,476,500	$475,926,000	$713,476,500
Great Streets Program	1	1	$5,725,000	$8,585,000	$5,725,000	$8,585,000		
Mobility Hubs Program	2	2			$39,980,000	$59,970,000		
First-Last Mile Program	7	3	$11,774,400	$17,661,600	$11,774,400	$17,661,600	$11,774,400	$17,661,600
Pedestrian Program	25	22	$23,265,000	$35,310,000	$23,265,000	$35,310,000	$23,265,000	$35,310,000
Safe Routes to School Program	1	1	$28,492,200	$41,989,200	$28,492,200	$41,989,200	$28,492,200	$41,989,200
Streetscape Program	4	3	$492,890,000	$739,330,000	N/A	N/A	N/A	N/A
Safety and Vision Zero Program	2	2	$8,820,000	$13,030,000	$8,820,000	$13,030,000	N/A	N/A
Intersection Capacity Enhancement Program	14	12	$57,522,300	$86,285,100	$57,522,300	$86,285,100	$57,522,300	$86,285,100
Complete Streets Program	5	4	N/A	N/A	$68,560,000	$96,940,000	N/A	N/A
ITS Program	15	12	$5,577,000	$7,481,100	$5,577,000	$7,481,100	$5,577,000	$7,481,100
Vehicle Enhanced Network Program	1	1	$78,610,000	$117,910,000	N/A	N/A	N/A	N/A
Goods Movement Program	11	10	N/A	N/A	$5,850,000	$11,700,000	N/A	N/A
Technology Program	5	4	$34,468,500	$51,701,100	$34,468,500	$51,701,100	$34,468,500	$51,701,100
Park & Ride	3	3	$13,120,000	$23,925,000	$13,120,000	$23,925,000	N/A	N/A
TMAs/Carpool/Vanpool Program	6	4	$28,800,000	$46,320,000	N/A	N/A	N/A	N/A
Parking Districts/Park Once/ Neighborhood Traffic Mmgt Program	4	2	$88,250,000	$134,870,000	N/A	N/A	N/A	N/A
Crenshaw Bl Corridor Extension	1	1	$15,000,000	$25,500,000	N/A	N/A	N/A	N/A
Burbank/Glendale LRT	1	1	N/A	N/A	N/A	N/A	$2,336,400,000	$6,365,700,000

Central Los Angeles Mobility Matrix Projects & Programs	Total Projects	Projects with Estimated Costs	Short Term (0 to 10 Years)		Mid Term (11 to 20 Years)		Long Term (20 plus Years)	
			Low	High	Low	High	Low	High
"Silver" Line LRT	1	1	N/A	N/A	$2,837,285,000	$3,089,755,000	$2,837,285,000	$3,089,755,000
Vermont Short Corridor Subway	1	1	N/A	N/A	N/A	N/A	$1,701,000,000	$1,929,000,000
Transit Enhanced Network Program	1	1	N/A	N/A	$60,960,000	$12,802,160,000	N/A	N/A
Bus/Shuttle Program	7	3	$135,255,000	$202,880,000	$135,255,000	$202,880,000	N/A	N/A
Metrolink Program	17	15	$581,691,183	$872,536,774	$78,474,760	$117,712,140	$143,355,720	$215,033,580
Rail Program	10	9	$5,276,703,300	$6,892,686,900	$5,276,703,300	$6,892,686,900	$5,276,703,300	$6,892,686,900
State of Good Repair Program	3	3	$1,226,400,000	$1,839,600,000	$1,226,400,000	$1,839,600,000	N/A	N/A
Transit Station/Stop Improvement Program	9	9	$109,390,000	$187,870,000	N/A	N/A	N/A	N/A
US-101 Corridor Carpool Lanes: SR-27 to SR-2	1	1	N/A	N/A	$666,665,000	$1,000,000,000	$666,665,000	$1,000,000,000
SR-60 Carpool Lanes: US-101 to I-605	1	1	N/A	N/A	$184,400,000	$276,600,000	$184,400,000	$276,600,000
Improve I-5/SR-2 Interchange	1	1	N/A	N/A	$26,000,000	$39,000,000	$26,000,000	$39,000,000
I-10 Carpool Lanes: Lincoln Bl to I-5	1	1	N/A	N/A	$1,012,000,000	$1,518,000,000	$1,012,000,000	$1,518,000,000
Interchange Program	4	4	N/A	N/A	$208,000,000	$312,000,000	N/A	N/A
ITS Program	4	2	$3,500,000	$5,250,000	$3,500,000	$5,250,000	N/A	N/A
Main Line Program	9	6	N/A	N/A	$463,560,000	$695,340,000	N/A	N/A
Ramp Program	5	4	N/A	N/A	$132,800,000	$199,200,000	N/A	N/A
Union Station Linkages Program	1	1	N/A	N/A	$ 39,980,000	$ 59,970,000	N/A	N/A

Notes: Estimated costs in 2015 dollars.

NA – Not applicable

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

Type / Category	Active Transportation	Arterial	Goods Movement	TDM	Transit	Caltrans	Total
Short-Term (0-10 yrs)	50 out of 62 Projects $1.8B - $2.7B	16 out of 20 Projects $84M - $125M	10 out of 11 Projects $34M - $52M	13 out of 18 Projects $145M - $231M	35 out of 46 Projects $6.0B - $8B	2 out of 4 Projects $3.5M - $5.3M	126 out of 160 Projects $9.4B - $13.1B
Mid-Term (11-20 yrs)	50 out of 62 Projects $1.4B - $2.0B	17 out of 20 Projects $80M - $116M	10 out of 11 Projects $34M - $52M	4 out of 5 Projects $13M - $24M	29 out of 40 Projects $9.5B - $24.2B	20 out of 26 Projects $2.7B - $4.0B	130 out of 164 Projects $15.0B - $32.5B
Long-Term (>20 yrs)	45 out of 56 Projects $1.3B - $1.9B	4 out of 5 Projects $6M - $7M	10 out of 11 Projects $34M - $52M	0 Projects $0	13 out of 14 Projects $13.5B - $19.8B	4 out of 4 Projects $1.9B - $2.8B	76 out of 90 Projects $16.7B - $24.7B
Total	51 out of 63 Projects $4.5B - $6.7B	29 out of 35 Projects $170M- $249M	10 out of 11 Projects $105M - $157M	13 out of 18 Projects $158M - $255M	40 out of 51 Projects $28.9B - $51.9B	20 out of 26 Projects $4.6B - $6.9B	163 out of 204 Projects $41.1B - $70.2B

5.3 Financing the Transportation System

5.3.1 2009 Long Range Transportation Plan and Identified 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 sub regions through the Mobility Matrices process. As with past LRTPs, this update will include recommendations for constrained (funded) projects as well as strategic (unfunded) projects that could be built if additional funding becomes available, consistent with adopted Metro Board priorities and actions. The LRTP update will revise funding recommendations for various major transportation programs, including funds available to the Call for Projects by funding category, Regional Rail/Metrolink, Access Services and other programs. The Plan will also address state of good repair needs, new requirements for sustainability, and other initiatives and policies not anticipated in the 2009 LRTP.

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

5.4 What's Next?

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

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

- **Central Los Angeles Subregion Prioritization of Projects** – This Mobility Matrix study does not prioritize projects. Instead, it provides some of the information needed for decision makers to prioritize projects/programs in the next phase of work, and an unconstrained list of all potential transportation projects/programs in the region. In preparation for a potential ballot measure and LRTP update (as described further below), the Central Los Angeles subregion should decide how it wants to prioritize these projects/programs assuming a constrained funding scenario.
- **Metro Ballot Measure Preparations** – Metro will continue working with the PDTs of all the Subregions; as it starts developing a potential ballot measure. Part of the ballot measure work would involve geographic equity determination, as well as determining the amount of funding available for each category of projects/programs and subregion of the County.
- **Metro LRTP Update** – The potential ballot measure would then feed into a future Metro LRTP update and be integrated into the LRTP Finance Plan. If additional funding becomes available through a ballot measure or other new funding sources or initiatives, the list of projects developed through the Mobility Matrix and any subsequent list developed by the subregion could be used to update the constrained project list for the LRTP moving forward.

6.0 APPENDICES

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

Appendix A: Meeting Matrix

Appendix B: Methodologies

Appendix C: Project Detail Matrix

Appendix D: Baseline Conditions Report

SUBREGIONAL MOBILITY MATRIX
CENTRAL LOS ANGELES

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

Meeting Matrix

Prepared for:

Metro

Prepared by:

Fehr & Peers
600 Wilshire Boulevard
Suite 1050
Los Angeles, CA 90017

March 2015

Meeting Matrix

Subregional Mobility Matrix
Central Los Angeles
PS-4010-3041-U-01

Prepared for:

Los Angeles County
Metropolitan Transportation Authority

Prepared by:
Fehr & Peers

In Association With:
Iteris, Inc
Arrellano Associates, LLC

Quality Review Tracking

Version	Date	Reviewer	Reviewer Signature
Internal Review Draft	2/5/15	FP Reviewer: Rachel Neumann	RMN
Draft		FP Reviewer: John Muggridge	

The following matrix documents coordination meetings and calls with cities, Project Development Team (PDT) members, and others as part of the Central Los Angeles Subregional Mobility Matrix Study.

Meeting Type	Date/Time	Meeting Location	Discussion Points
PDT Meeting #1	08/28/14 10:00 to 11:30 AM	Fehr & Peers, Wilshire Conference Room, 600 Wilshire Bl., Suite 1050, Los Angeles	■ Provide Mobility Matrix background and process overview ■ Agree on PDT, Metro, and Project Team roles ■ Identify common Subregional Issues and shared Objectives ■ Obtain input on the Preliminary Project List ■ Agree on a regular meeting schedule
PDT Meeting #2	09/24/14 10:00 to 11:30 AM	Fehr & Peers, Wilshire Conference Room, 600 Wilshire Bl., Suite 1050, Los Angeles	■ Obtain Project Development Team (PDT) feedback on the updated preliminary project list ■ Conduct an initial discussion about Subregional goals and objectives ■ Discuss initial approaches and options for performance metrics
PDT Meeting #3	10/22/14 10:00 to 11:30 AM	Fehr & Peers, Wilshire Conference Room, 600 Wilshire Bl., Suite 1050, Los Angeles	Obtain consensus and feedback on the following issues: ■ Goals, Objectives, and Performance Measures ■ List of projects and programs ■ Preliminary Baseline Conditions ■ Regional Category of the Mobility Matrix
PDT Meeting with Mayor's Office	11/07/14	Los Angeles City Hall	Obtain approval of: ■ Preliminary Project List ■ Goals and Objectives

Meeting Type	Date/Time	Meeting Location	Discussion Points
PDT Meeting #4	11/20/14 2:00 PM to 3:30 PM	Fehr & Peers, Wilshire Conference Room, 600 Wilshire Bl., Suite 1050, Los Angeles	■ Provide an update on the relationship between the Mobility Matrix, LRTP Update, and Ballot Measure processes Obtain feedback and consensus on the following issues: ■ Updated Project and Programs List ■ Review Goals and Objectives ■ Initial discussion of Performance Measures and Project Categorization ■ Review Baseline Conditions Report
One-on-one meeting with PDT members	01/12/15 1:30 to 3:00 PM	Los Angeles Department of Transportation	Review of: ■ Initial Performance Analysis Results ■ Cost Estimation
PDT Meeting #5	01/22/15 10:00 AM to 11:30 AM	Fehr & Peers, Wilshire Conference Room, 600 Wilshire Bl., Suite 1050, Los Angeles	Obtain feedback and consensus on the following issues: ■ Baseline Conditions Report ■ Updated Project and Programs List ■ Performance Analysis ■ Project Categorization ■ Cost Estimation Overview ■ Relationship to Ballot Measure/Metro LRTP
One-on-one meeting with PDT members	01/28/15 1:30 to 2:30 PM	Los Angeles Department of Transportation	Review of: ■ Cost Estimation ■ Caltrans Projects
PDT Meeting #6	02/19/15 10:00 AM to 11:30 AM	Fehr & Peers, Wilshire Conference Room, 600 Wilshire Bl., Suite 1050, Los Angeles	■ TBD
PDT Meeting with Mayor's Office	March 2015	Los Angeles City Hall	Approve Final Report

SUBREGIONAL MOBILITY MATRIX
CENTRAL LOS ANGELES

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

Methodologies

Prepared for:

Metro

Prepared by:

Fehr & Peers
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Methodologies

Subregional Mobility Matrix
Central Los Angeles
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Prepared by:
Fehr & Peers

In Association With:
Iteris, Inc
Arellano Associates

Quality Review Tracking

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Draft		FP Reviewer: John Muggridge	

Table of Contents

1.0 INTRODUCTION

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

2.0 PROGRAM EVALUATION METHODOLOGY OVERVIEW

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

2.1 Background & 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.

2.2 Countywide Mobility Matrix Themes

Six broad themes guide the development of the Mobility Matrices, as shown in Figure 2-1. 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 2-1. 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.

2.3 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.

2.4 Subregional Performance Metrics

The Mobility Matrix processes also included the development of subregional performance metrics associated with the six countywide themes identified in Section 1.2. These performance metrics are intended to inform future evaluation through the 2017 LRTP update process.

2.5 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 1-1 represents a collaborative effort spanning many months, and incorporates input from subregional representatives across the County.

Projects and programs were evaluated based on submitted project descriptions and attributes, and the potential of these to address subregional goals related to the Countywide Mobility Matrix Themes reported in Section 1.2.

Table 1-1. 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

2.0 PROJECT CATEGORIZATION METHODOLOGY OVERVIEW

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

2.1 Background & 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.

2.2 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 in 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.

2.3 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.

2.4 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.

3.0 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.

3.1 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.

3.2 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.

3.2.1 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.

3.2.2 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.

3.2.3 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.

3.2.4 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:

1. 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.

2. 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.

3. 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.

3.2.5 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.

3.2.6 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.

3.2.7 Metro Cost Estimating Department Reviewed Major Cost Estimates

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

SUBREGIONAL MOBILITY MATRIX
CENTRAL LOS ANGELES

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

Project Detail Matrix

Prepared for:

Metro

Prepared by:

Fehr & Peers
600 Wilshire Boulevard
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Quality Review Tracking

Version	Date	Reviewer	Reviewer Signature
Internal Review Draft	2/5/15	FP Reviewer: Rachel Neumann	RMN
Draft		FP Reviewer: John Muggridge	

The following matrix documents the Preliminary Project List as developed for the Central Los Angeles subregion during the Mobility Matrix process.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	Bicycle Program	85	LA County	Arroyo Seco Bike Trail- Bike Trail Class 1 Facility/Connector from Av 26 to San Fernando Rd
		381	LA City	Expo Line Non-Revenue Connector Enhancements: Install bike lanes and other bike/ped amenities to enhance the quality of the corridor for pedestrians, cyclists and transit users.
		548	LA City	Angeles Vista Rd - Slauson Av to Vernon Av: Bike and ped improvement projects paralleling an existing roadway facility.
		790	LA City	Priority Bikeways: Mark bikeways in the West Adams-Baldwin Hills-Leimert Community Plan with appropriate signage
		795	LA City	Reclaimed Land for Bikeways: Coordinate with other agencies to designate and develop mountain bike trails in the Kenneth Hahn State Recreation Area that complement and connect to the Baldwin Hills Park Master Plan trail system
		1909	LA City	Expand bicycle networks and link them to those of neighboring areas
		1931	LA City	Downtown Bicycle Service Center: The project would include the development, implementation and management of a Bicycle Service Center in Downtown Los Angeles at or near 1st & Main.
		3112	LA City	Pedestrian/Bicycle facilities, landscape, and artwork enhancements adjacent to I-5 & I-10 & LA River
		3595	LA County	Establish a County-wide bike share program that interacts with the Metro transit system.
		3629	LA County	Local Bikeways
	2010 Bicycle Plan for the City of Los Angeles	2042	LA City	Implement the projects identified in the City of LA Bicycle Plan
		3551	LA City	Implement the programs identified in the Mobility Plan 2035
		3552	LA City	Implement the programs identified in the City of LA Bicycle Plan

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	2010 Bicycle Plan for the City of Los Angeles	3612	LA City	Completion of the LA River Bike Path project to connect Downtown Los Angeles to the San Fernando Valley
	City of LA Bicycle Enhanced Network	3162	LA City	Implement Bicycle Enhanced Network as defined in the Mobility Plan 2035
	Off-street Ped & Bike Connections Program	36	LA City	Park 101 - Freeway Cap Park - Los Angeles St Bridge over US-101: Replace with longer bridge for increased lateral underclearance; cover NB on-ramp with a portal frame for increased open space for proposed park
		87	LA City	Hollywood Central Park: US-101- Decking over 101 Fwy between Bronson Av and Vermont Av for pedestrian linkage and open space
		412	LA City	Los Angeles St Park (Los Angeles St between 7th and 8th Sts): Implement pedestrian and bike enhancement such as hardscaping, signage, trees, trellis structures, park furniture, secure bike parking, bike share kiosks, lighting, etc. to promote multi-modal access to transit system
		1903	LA City	Rails-to-trails conversions incorporating bike/ped paths and greenways in place of abandoned, or, alongside active rail lines as well as other underutilized easements and rights-of-way
		1929	LA City	Taylor Yard State Park is now known as Rio de Los Angeles State Park. This project would connect the two communities on opposite sides of the LA River with a bike connection via a bridge over the river. The park is at N. San Fernando Rd & Macon St (east of the LA River) to the LA River Greenway Trail (west of the LA River).
	Great Streets Program	762	LA City	Implement Mayor's "Great Streets Program": Revitalize up to 40 neighborhood streets to become more pedestrian-friendly
	Mobility Hubs Program	3529	LA City	Implement Mobility Hubs: Install a full-service mobility hub at or adjacent to Metro Stations & satellite hubs strategically located surrounding each station, including secure bike parking, car share, bike share, and ride share (including casual carpooling) to bridge the first/last mile gap of a transit user's commute.
	First-Last Mile Program	698	LA City	Develop a System-wide Urban Greening Plan to improve placemaking, increase environmental stewardship, and create livable streets around transit stations with funds awarded by the State Strategic Growth Council.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	First-Last Mile Program	767	LA City	Access Management: Creation of adequate drop-off areas for schools, day care, health care, and other uses with intensive passenger drop-off demand
		3530	LA City	Implement pedestrian and bicycle connectivity improvements at every existing and planned Metro rail and subway station by providing enhanced sidewalk amenities such as landscaping, shading, lighting, directional signage, shelters, curb-extensions, mid-block crosswalks, ADA ramps, lead-pedestrian interval signal phases, etc.
		3553	LA City	Implement the Metro First/Last Mile Strategic Plan
		3621	LA City	Implement the City of Los Angeles First & Last Mile Transit Plan
		3630	LA City	Enhanced Pedestrian Access to Metro Stations
	Pedestrian Program	342	LA City	Cesar Chavez Streetscape Improvements: Improve ped connectivity to transit stops along Cesar Chavez including enhanced X-walks, medians, lighting, bus stop amenities, curb cuts, information kiosks, street trees, etc.
		346	LA City	Crenshaw Exposition Light Rail Station TOD Accessibility: Installation of pedestrian/transit connectivity improvements from Coliseum St to 30th St
		391	LA City	Fashion District East Gateway Plaza (8th St and San Pedro St): Enhance the skewed alignment of this intersection and implement pedestrian enhancements such as plaza/pocket park at triangular median of intersection and sidewalk improvements that facilitate access to transit
		392	LA City	Fashion District Freeway Underpass Enhancements (16th St between San Pedro and Central Av): Improve pedestrian access from Blue Line stations on Washington Bl (San Pedro and Grand) to Fashion District by implementing lighting, public art, and signage on five freeway undercrossing (Main, Los Angeles, Maple, San Pedro, and Griffith)

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	Pedestrian Program	393	LA City	Fashion District Streetscape Phase III: Pedestrian environment improvements and enhancements to improve ped access to transit systems within the Fashion District Area; Phase III streetscape improvements will extend and increase pedestrian usage into, out of, and through downtown Los Angeles and the Fashion District. Typical improvements include new sidewalks, curb ramps, enhanced crosswalks, street furniture, pedestrian lighting, tree maintenance, and decorative tree wells/covers. Pedestrian environment improvements and enhancements at Pico Bl, San Pedro St and Maple Av and at San Pedro St, Pico Bl and Washington Bl.
		394	LA City	Fashion District West Gateway Plaza: Enhance the skewed alignment of this intersection (Pico Bl and Main St) and implement pedestrian enhancements such as plaza/pocket park at triangular median of intersection and sidewalk improvements that facilitate access to transit
		395	LA City	Fletcher Dr Transit & Ped Improvement Project (Fletcher Drive between La Clede Av and San Fernando Road): Enhance pedestrian access to transit by installing bus stops, access ramps, lighting and curb extensions.
		397	LA City	Grand Av Pedestrian Enhancements: Enhance pedestrian access to transit through new sidewalks, street trees, crosswalks, street furniture, bulb-outs and other amenities (also enhances efficiency & safety of corridor) on Grand Avenue between Washington Bl and Martin Luther King Jr. Bl.
		408	LA City	La Cienega Bl Pedestrian Enhancement (La Cienega Bl between Melrose Av and Waring Av): Enhance pedestrian environment and access to transit through street trees, controlled crosswalks, street furniture, bulbouts and other amenities (also enhances efficiency & safety of corridor)
		411	LA City	Los Angeles Neighborhood Initiative - Green St Project along 4th St between Matthews St and Mott St: Planting drought-tolerant and native plants and trees, rain gardens, swales, the installation of permeable pavement and new curbs and enhance sidewalks to improve pedestrian access to transit systems
		414	LA City	Main St Transit/Pedestrian Enhancement - 2nd to 4th St: Enhance the public right-of-way for pedestrians and transit users with improved lighting, shade, trees, and curb extensions.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	Pedestrian Program	417	LA City	Olympic Bl Pedestrian Circulation Project: Install bus shelters, benches, trash receptacles, security lighting, decorative crosswalks, and sidewalk improvements on Olympic Bl between Crenshaw Bl and Vermont Av
		423	LA City	San Pedro Street Pedestrian Enhancements: Enhance ped access to transit via sidewalk repair, ADA curbs, crosswalks, bulb-outs, storm drain repair, bioswales, and pedestrian signage at key intersections (enhance access to Ricardo Lizarraga School)
		424	LA City	Sepulveda Bl Pedestrian Improvements: Implement sidewalk and streetscape improvements, bus stop lighting at transit stops, and enhanced crosswalks on Sepulveda Bl between 76th St and 80th St
		435	LA City	Washington Bl Streetscape Improvement (Washington Bl between 110 Fwy and Normandie): Improve ped connectivity to transit stops at key intersections along Washington (@Vermont, Normandie & Hoover) including enhanced crosswalks, medians, lighting, bus stop amenities, information kiosks, street trees, etc.
		766	LA City	Pedestrian Access: Implementation of several Community Plan Implementation Overlay sub-districts that contain enhanced pedestrian standards as well as include preliminary streetscape plans that enhance the public realm for peds as well as other non-vehicular modes of transportation
		792	LA City	Priority Pedestrian Routes: Implement streetscape plans for Crenshaw Bl (between Santa Monica Freeway and Florence Av. as well as within the district boundaries of the following CPIO areas: Crenshaw/Expo TOD, La Brea/Farmdale TOD, Jefferson/La Cienega TOD, Venice/National TOD, Crenshaw/Slauson TOD, West Bl TOD, and Hyde Park Industrial Corridor
		1900	LA City	Develop a prioritized list of pedestrian crossing improvements through pedestrian safety audits throughout the community. Include enhanced features such as bulb-outs, landscaped median refuges and audio/visual warnings where appropriate.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	Pedestrian Program	1930	LA City	Taylor Yard Bicycle/Pedestrian Bridge Construction: Per MOU between Metro & LADOT, provide a safe and convenient bicycle and pedestrian link between the LA River Bikeway (on west bank) and the Rio de Los Angeles State Park (on east bank). The project includes the construction of a ped/bikeway bridge to connect the LA River Bike Path to communities and bike infrastructure on the east bank. The project includes a minimum 400' long bridge over the River and an at-grade crossing of the existing UP emergency spur tracks. Scope may be expanded to include bike lanes along Taylor Yard Access Road to San Fernando Road, or to provide linkage to the bike trails in the State Park.
		3060	LA City	Construct crosswalk bump-outs and related streetscape improvements on Temple St between Hoover St & Glendale. Project will provide for various streetscape improvements.
		3089	LA City	Implement the Broadway Streetscape Master Plan on Broadway between 1st Street and Olympic Bl.
		3544	LA City	Implement Pedestrian Enhanced Districts as defined in Mobility Plan 2035.
		3622	LA County	Pavement Preservation
		3623	LA County	Sidewalk, Curb, Parkway Preservation; Repair and Reconstruction
		3624	LA County	Pedestrian Improvements
	Safe Routes to School Program	3535	LA City	Implement Los Angeles Safe Routes to School Initiative to provide targeted safety improvements at schools with high collision rates. Improvements may include new traffic signals, curb extensions, wider sidewalks, new crosswalks, traffic calming measures, etc.
	Streetscape Program	808	LA City	Implement streetscape plans for Neighborhood Districts along Robertson and Washington Bl, as well as Leimert Park Village and the Crenshaw/Slauson Area, as well as the Transit Oriented Development Areas along the Mid-City Exposition and Crenshaw/LAX transit Corridors
		1910	LA City	Implement streetscape plans for areas of high pedestrian and commercial activity and mixed-use boulevards well-served by transit, as well as the Transit Oriented Development Areas along Metro's Expo, Blue and Green LRT Corridors, such as Washington Bl from Figueroa St to Central Av.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Active Transportation	Streetscape Program	1935	LA City	Av 26 to Gold Line Cypress Station Ped Connection: St tree installation, bio-retention planters, bike lanes, lighting, access ramps, enhanced crosswalks, and bulb-outs. Av. 26 between Pasadena Av & San Fernando Rd
	Vision Zero and Safety Program	3534	LA City	Implement roadway enhancements that enhance mobility and safety for all and strive toward the City of LA "Vision Zero" goal of zero traffic fatalities by 2025.
	Complete Streets Program	1936	LA City	Beverly Bl – Vermont to Commonwealth: Bike lanes, curb extensions, signs and decorative sidewalks
	Rail Program	3610	LA City	Implement pedestrian safety and accessibility improvements at and adjacent to freight and LRT rail crossings including.
Arterial	Streetscape Program	340	LA City	Central Av Streetscape Enhancements: Enhance ped access to transit through new sidewalks, ADA ramps, street trees, crosswalks, street furniture, bulb-outs, other amenities
	Vision Zero and Safety Program	3611	LA City	Identify and implement pedestrian safety and bicycle countermeasures at the 10 corridors with the highest severe injuries and collisions.
	Capacity Enhancement Program	33	Multi Jurisdiction	College St Bridge over 110 Fwy – Replace with wider bridge to improve capacity. Raise the superstructure to resolve underclearance deficiency
		51	LA City	Santa Fe Av (8th St to Olympic Bl): Widen to increase capacity and access to I-10 ramps
		452	LA City	Fletcher St Bridge/LA River: Widen to increase capacity and improve access to I-5 Fwy; add bike lanes and sidewalks
		454	LA City	Grand Avenue bridge widening over US-101 Fwy: Widen the existing bridge to provide dual left-turn lane onto the 101 and 110 fwy on-ramps; add through lane and right turn lane; widen sidewalk.
		459	LA City	Widen Mission Road (Griffin Av to Marengo St) to provide an additional through lane in each direction, and install new pedestrian signal at Sichel St

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Arterial	Capacity Enhancement Program	460	LA City	Widen N Spring St (Rondout St to Baker St) from 44 ft to 80', consisting of: two vehicle travel lanes in each direction with left hand turn lanes into the park, bike lanes, widened sidewalks/new sidewalks where none exist, curb and gutters, catch basins, new street trees, street lighting, on-street parking, signalized crosswalks, landscaped medians, and decorative native landscaping. Sidewalks will be widened to 16', 8' on-street parking lanes, 5' bike lanes in each direction, two 12' vehicular travel lanes in each direction.
		465	LA City	Valley Bl Rail Corridor Improvements: Enhance traffic flow and pedestrian crossing safety at railroad crossings through spot roadway widening, sidewalk improvements, and upgrade the signal systems and railroad crossing equipment along Valley Bl.
		474	LA City	Fairfax/Olympic/San Vicente Intersection Enhancement: Enhance the operational efficiency and safety of this chronically congested intersection by increasing the storage for left-turning vehicles, by upgrading the traffic signal equipment, installing left-turn phasing, etc.
		475	LA City	Laurel Canyon Bl & Mulholland Dr: Widen the west side of Laurel Canyon Bl s/o Mulholland Dr to carry 2 southbound lanes through the intersection
		476	LA City	Olympic Bl and Soto St Intersection Widening: Improvements to the intersection by increasing the curb return radius of all four corners and Olympic Bl approaches, improve the roadway, provide ADA compliant access ramps, sidewalks, upgraded traffic signals and street lighting and street trees. ROW required.
		3087	LA City	Improve Glendale Bl/fly rat 2 terminus reconfigure/redesign, traffic mgmt. Neighborhood safety measures (tea21- #413).
		3105	LA City	Normandie Av & Pico Bl intersection improvements: reconstruct and widen the NW corner of the intersection. Remove the traffic island s/o the intersection on Normandie Av.
		3486	LA City	Capacity enhancements at San Fernando Rd West/Brazil St and San Fernando Rd West/Doran St. Widen and improve north and south sides of Brazil St and Doran St to create additional lanes, curb and gutter in each direction; increase curb returns to facilitate truck movements

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Arterial	Capacity Enhancement Program	3625	LA County	Bridge Rehabilitation
	Complete Streets Program Complete Streets Program	1897	LA City	Implements "complete streets" by adopting a Generalized Circulation System, Modified St Designations, and Priority Sts that focus the priorities for street investments on the following modes of travel: pedestrians, bicycles, transit and motorized vehicles.
		1923	LA City	Slauson Av from Vermont to Crenshaw Av. reconstruction; bike lanes, ped improvements, street trees, median enhancement
		3533	LA City	Implement Complete Streets Enhancements along key arterials as defined in the Mobility Plan 2035
		3626	LA County	Aesthetics - Beautification
	ITS Program	60	LA County	TSM Improvements - 1st St - Indiana St to Mednik Av
		61	LA County	TSM Improvements - Beverly Bl - Pomona St to Painter Av
		62	LA County	TSM Improvements - City Terrace Dr - Indiana St to Eastern Av
		63	LA County	TSM Improvements - Floral Av - Eastern Av to Mednik Av
		64	LA County	TSM Improvements - Olympic Bl - Indiana St to Concourse Av
		65	LA County	TSM Improvements - Slauson Av - Compton Av to Stamy Rd
		66	LA County	TSM Improvements - Union Pacific Av- Indiana St to Marianna
		67	LA County	TSM Improvements - Washington Bl - Grande Vista Av to Sorensen Av
		68	LA County	TSM Improvements: Whittier Bl - Indiana St to Paramount Bl
		493	LA City	Hollywood Event Management: To better manage vehicle and bus flow during commonly occurring special events, implement enhanced incident management strategies such as changeable message signs, CCTV cameras, traffic signal upgrades, wayfinding signage, real-time bus information.
		495	LA City	Traffic Signal System Upgrades: Implement traffic signal system upgrades throughout subregion including signal controller upgrades, left-turn phasing at key intersections, sensor loops, additional CCTV cameras to improve LADOT's ability to monitor and respond.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Arterial	ITS Program	697	LA City	Develop a Sustainable Transportation Demonstration Program to support city partners in implementing innovative capital or operational improvements that apply guidance from the policy. Seek funding from SCAG, AQMD, State Strategic Growth Council, and federal/state grants.
		786	LA City	Priorities for Capacity Enhancements: Provide information to motorists about alternative routes and modes of travel using changeable message signs, highway advisory radio, or other appropriate traffic management techniques.
		1906	LA City	Encourage coordination between public and private entities responsible for the safety and maintenance of the freight and LRT rights-of-way as well as the roadway along Long Beach Bl in order to improve safety as well as beautification of the corridor.
		3627	LA County	Traffic Signal Improvements
	Vehicle Enhanced Network	3160	LA City	Implement Vehicle Enhanced Network as defined in the Mobility Plan 2035.
Freeway	US-101 Corridor Carpool Lanes: SR-27 to SR-2	4	Caltrans	US-101: In each direction, add carpool lanes between SR-27 and SR-2, and restripe for mixed-flow lanes between SR-27 and Ventura Cty Line
	SR-60 Carpool Lanes: US-101 to I-605	6	Caltrans	SR-60 Carpool Lanes: US-101 to I-605
	Improve I-5/SR-2 Interchange	17	Caltrans	Improve I-5/SR-2 Interchange
	I-10 Carpool Lanes: Lincoln Bl to I-5	101	Caltrans	I-10 Carpool Lanes: Lincoln Bl to I-5
	Interchange Program	14	Caltrans	I-10- Improve I-110 interchange
		15	Caltrans	US-101- Improve I-110 interchange
		79	Caltrans	I-10- Improve I-10/SR-60/I-5 interchange
		84	Caltrans	I-5- Improve I-5 and SR-110 interchange
	ITS Program	78	Caltrans	Implement Countywide High Occupancy Toll (HOT) Lanes Network
		224	Caltrans	I-10- Install CCTV and other communications systems

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Freeway	ITS Program	225	Caltrans	I-10- Upgrade Surveillance System
		3021	Caltrans	I-10 and I-110 "HOT" express lanes toll system operations, maintenance, marketing and data collection
	Main Line Program	1	Caltrans	US-101- Widen Edgeware bridge on SB US-101 between Glendale Bl on-ramp and US-101/I-110 interchange to provide auxiliary lanes
		8	Caltrans	I-5- Add HOV lane in both directions between SR-134 and I-110
		9	Caltrans	US-101- Add HOV lanes in both directions between 170 and 110 Fwy
		75	Caltrans	I-5- Construct SB auxiliary lane on I-5 from Ditman Av to Calzona St
		76	Caltrans	I-5- Construct SB auxiliary lane on I-5 from Marietta St to Lorena St
		77	Caltrans	US -101- Add NB and SB auxiliary lanes from Glendale Bl to Cahuenga Bl
		288	Caltrans	I-10 - I-10 Busway
		3027	Caltrans	To extend the I-110 north from its current terminus at I-10 into Downtown Los Angeles via Central City west area. The Adams/Figueroa flyover study, PSR, will investigate how the construction of a new structure connecting the I-110 northbound HOV lane off-ramp directly to Figueroa Street.
		3037	Caltrans	Route 710: study to evaluate technical feasibility and impacts of an alternative to close 710 fwy gap. this study includes environmental studies
	Ramp Program	81	Caltrans	I-10- Modify EB off-ramps at Western Av, Arlington Av, Crenshaw Bl
		82	Caltrans	I-10/US-101- Widen Cesar Chavez Av over crossing over I-10 and relocate NB 101 Fwy ramps at Cesar Chavez Av
		466	Caltrans	Van Ness Av Widening - US 101 Fwy SB off-ramp to Sunset Bl
		472	Caltrans	Crenshaw Bl & I-10 WB On-Ramp: Widen SB Crenshaw Bl to provide a SB right-turn only lane and redesign the WB off-ramp to reduce congestion and improve intersection operation
		3487	Caltrans	Project Rte: I-110 - Between US-101 and I-10, reconfigure freeway ramps to provide additional northbound and southbound lanes in the downtown area
Goods Movement	Goods Movement Program	47	LA City	Main & Daly- Capacity enhancement at Daly St and Main St. Increase curb returns at NW and SW corners of Daly and Main to facilitate truck movements

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Goods Movement	Goods Movement Program	70	LA City	Alameda Corridor North- between SR-2 and SR-134 – Grade separation (trench) for commuter and freight rail lines
		447	LA City	Alameda St from US-101 to I-10: Widen to 70 ft and remove embedded rails and ties, install left turn channelization and widen curb returns to reduce congestion and improve truck movement
		448	LA City	Alameda St Goods Movement (Downtown): Alameda St. from I-10 to Seventh St - project includes rehabilitation of the roadway, removing embedded rails and ties, installing left turn channelization, spot widening where needed to accommodate truck traffic
		473	LA City	Enterprise St at Mateo St (near WB I-10 off-ramp): Widen Enterprise St at Mateo St (near WB-10 off-ramp) to improve truck movement at curb returns
		477	LA City	Widen to improve truck movement (right-of-way required) at intersection of Olympic Bl and Alameda St
		478	LA City	Widening curb return to improve truck movement through the intersection of Olympic Bl and Santa Fe Av.
		479	LA City	Widening curb return to improve truck movement through the intersection of Porter St and Santa Fe Av
		779	LA City	On-site Loading: Collaborate with business owners/operators in industrial districts to identify deficiencies in access, loading and parking on street
		2982	LA City	Grade separation crossing safety improvements along a 35 mile rail corridor through San Gabriel Valley, East LA, and Pomona
		3068	LA City	East downtown truck access improvements: widenings, improvements, striping, at and near Alameda St & Washington Bl in eastern downtown LA
TDM	Technology Program	57	LA City	Citywide – Vehicle Infrastructure Integration – Integrate vehicle navigation system with Intelligent Transportation System (ITS)
		494	LA City	Hollywood ExpressPark: Implement an on-street intelligent parking program that includes vehicle sensors, dynamic demand-based pricing and a real-time parking guidance system to reduce VMT, congestion and to improve flow for cars/buses.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
TDM	Technology Program	784	LA City	Performance-Based Parking Supply: Where parking needs assessments indicate excess potential, implement a parking program similar to the Eagle Rock Community Pilot Project that encourages use of "pooled" parking resources to satisfy parking requirements for change of use projects.
		3091	LA City	(ITS) PHASE III. Complete the main communication infrastructure system of the ITS Communication Master Plan by closing all gaps in the existing fiber communication network. As stated in the project description, this project targets critical existing gaps within the city's ITS Fiber Master Plan.
		3531	LA City	Expansion of the ExpressPark program throughout parking-congested areas in the City of Los Angeles. This on-street intelligent parking program includes vehicle sensors, dynamic demand-based pricing, and real-time parking guidance to reduce VMT and congestion.
	Park & Ride Program	482	LA City	Western/Expo Park-and-Ride Facility: The park and ride facility will service the Expo Western Station by providing vehicle and bike parking
		483	LA City	Wilshire Park-and-Ride Facilities: Provide parking for transit users at or near existing and planned metro rail station along Wilshire Bl.
		3557	LA City	Expand the park & ride network in Los Angeles County to meet the current and latent demand of discretionary transit riders to use regional public transportation services.
	TMAs/Carpool/Vanpool Program	88	LA City	Citywide: Add/expand park-and-ride facilities
		89	LA City	Citywide: Create a Transportation Management Association to champion TDM programs
		772	LA City	Alternatives to Automobile: Coordinate with other agencies that conduct demonstration programs for Local Use Vehicles and identify areas where these vehicles can be used to reduce greenhouse gas emissions, air pollution and gasoline consumption.
		1898	LA City	Alternative Traffic Evaluation & Mitigation Programs: Develop alternative traffic mitigation programs such as credits for integrating flex-bike and car share options into new development at transit nodes. Coordinate with LADOT to develop and implement alternative methods to evaluate impacts to the circulation system such as vehicle miles traveled (VMT).

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
TDM	TMAs/Carpool/Vanpool Program	2998	LA County	LA County rideshare services; provide commute info, employer assistance and incentive programs through core & employer rideshare services & MTA incentive programs
		3001	LA City	I-10 Express Lanes formation of new vanpools and enhanced transit service including security, marketing, and maintenance
	Parking Districts/Park Once Program	1901	LA City	Parking - Commercial Vehicles: Establish overnight parking regulations for commercial, recreational and other nonconforming vehicles in residential and commercial neighborhoods.
		1902	LA City	Creation of parking districts and/or development of shared central parking structures in areas of high parking demand in order to alleviate the need to address all required parking on-site.
		1911	LA City	Implement preferential parking districts and neighborhood traffic management programs to protect residential areas from the intrusion of "through traffic" and speeding where warranted and supported by the community.
		3554	LA City	Implement Park Once / Universal Valet Parking Programs throughout major retail centers in the City, as appropriate, including the use of City owned parking facilities
	Mobility Hubs Program	86	LA City	Citywide- Enhance/expand/coordinate pedestrian, bicycle, and transit information and amenities
Transit	Crenshaw Line extension to Hollywood	22	Multi Jurisdiction	Crenshaw Bl Corridor Extension (beyond segment funded by Measure R) all the way to Hollywood
	Burbank/Glendale LRT	21	Multi Jurisdiction	Burbank/Glendale LRT from LA Union Station to Burbank Metrolink Station
	"Silver" Line LRT	24	Multi Jurisdiction	"Silver" Line LRT between Metro Red Line Vermont/Santa Monica Station and City of La Puente
	Vermont Corridor Subway	25	LA City	Vermont Corridor Subway: Vermont "Short Corridor" from Wilshire/Vermont to Exposition/Vermont
	City of LA Transit Enhanced Network	3161	LA City	Implement Transit Enhanced Network as defined in the Mobility Plan 2035.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Transit	Bus/Shuttle Program	793	LA City	Priority Transit Routes: Coordinate CityRide transit services and Los Angeles County ACCESS transit services with social service centers
		1907	LA City	Initiate shuttle bus programs to serve transit stations
		2999	LA City	12 buses for the I-10 El Monte Busway, HOT lane
		3002	LA City	I-10 HOT Lane Operations - New transit services
		3555	LA City	Purchase new DASH shuttle buses and expand LADOT DASH operations to enhance intra-community "first mile/last mile" transit connections to regional transit centers.
		3628	LA County	Local Public Transit
		1904	LA City	Coordinate with local and regional public transit operators to provide expanded public transit options in corridors with high travel demand, as funding permits
	Metrolink Program	19	Multi Jurisdiction	Project Rte: I5 - Expand Metrolink service and capacity on existing trains at various locations to be determined
		20	Multi Jurisdiction	Increase Metrolink service between Moorpark and Union Stn
		72	LA City	N. Main St- N Main St Grade Separation with LA River/Metrolink/Union Pacific Railroad
		3640	LA City	Metrolink EMF Additional Storage Tracks: Increase storage capacity at EMF by extending the length of the existing storage tracks and adding a middle crossover.
		3641	LA City	Metrolink Locomotives (for base case growth of locomotives and cars: This is the amount needed for the "organic" growth (irrespective of 30 min. service) and is not counted as part of the 30 min. growth scenario.
		3642	LA City	Metrolink Another CMF level facility for heavy maintenance (for 30 min. service expansion): Need 100% size of CMF in approximately 2017. Will include the administrative offices from existing CMF, a run-through progressive car and loco shop, S&I, storage tracks, fuel system, train wash, shop machinery, and expanded warehouse capacity.

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Transit	Metrolink Program	3643	LA City	Metrolink Locomotives (for 30 min. service Expansion): To get to a 30 minute headway, 26 additional locomotives will be needed. The cost of rail cars is assumed to be $7 M/unit. For the "base case" (i.e. non 30 min. service), another 26 locomotives would be needed. The costs for the base case are shown separately.
		3644	LA City	Metrolink Rail Cars (for 30 min. service expansion): To get to a 30 min. headway, 90 additional rail cars will be needed. The cost of passenger car is assumed to be #3M/unit. For the "base case" (i.e. non 30 min. service), another 90 passenger cars would be needed. The costs for the base case are shown separately.
		3645	LA City	Metrolink Reconfiguration of existing CMF (for 30 min service expansion): Relocate admin office to new CMF location and improve capacity by building a run-through progressive car and loco shop at existing CMF
		3651	LA City	Cameras at Metrolink Grade Crossings: Install cameras at grade crossings
		3652	LA City	N. Main St/Albion Street: Metrolink Grade crossing improvements
		3653	LA City	North Main Street Metrolink Crossing Improvements: Signage and striping (crossing within 2100 ft of school), possibly install 3rd active gate to NW quad, possible RT turn restriction for business parking in NW quad due to geometry, sight distance and lack of active protection; 4 quad gates
	Rail Program	23	Multi Jurisdiction	Metro Purple Line Extension West Hollywood Extension
		27	Multi Jurisdiction	West Santa Ana Branch ROW Corridor LRT Alternative based on SCAG Alternatives Analysis study.
		30	Multi Jurisdiction	SR-134 East-West Transit Corridor Connecting North Hollywood, Burbank, Glendale and Pasadena
		96	Multi Jurisdiction	Harbor Subdivision Transit Corridor (connection from Crenshaw Bl to Downtown Los Angeles)

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Transit	Rail Program	498	LA City	Downtown Streetcar: Restore the historic streetcar in Downtown LA servicing key destinations; provide 7 to 15 minute headways; include late evening service; estimated daily ridership is 10,000.
		499	LA City	Hollywood-Mid City Major Investment Study: Prepare engineering feasibility and investment study that evaluates commuter rail alternatives, potential rail linkages and enhanced rail services within Hollywood and Mid-City
		500	LA City	South Los Angeles Major Investment Study: Prepare engineering feasibility and investment study that evaluates commuter rail alternatives, potential rail linkages and enhanced rail services within South Los Angeles
		3137	LA City	Metro Gold Line Eastside Transit Corridor Phase 2 - Extension from its existing terminus at Atlantic Station in East Los Angeles farther east
		3613	LA City	Extend Metro Red/Purple Lines to the Arts District with one new station
	State of Good Repair Program	3556	LA City	Convert existing transit fleet in Los Angeles County to meet goal of 25% zero-emission or near zero-emission buses by 2025
		3558	LA City	Program to purchase new transit operations / maintenance facilities, and upgrade existing facilities, with the capacity to accommodate new zero emission and near zero emission buses.
		3559	LA City	Program to maintain a state of good repair for public transit programs including the replacement and refurbishment of transit vehicles, facilities, and other transit infrastructure.
		3646	LA City	Metrolink Rehab -Short Term: Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		3647	LA City	Metrolink Rehab -Mid Term: Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		3648	LA City	Metrolink Rehab -Long Term: Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Transit	State of Good Repair Program	3649	LA City	Metrolink Rehab - Expansion (for 30 min. service on all Metrolink lines): Includes rehab of rail, ties, OTM, structures, communication, Central Train Control (CTC), grade crossing signals, facilities & equipment, vehicles, rolling stock (locomotives & cars)
		3650	LA City	Metrolink Bring 1 grade crossing to new SCRRA Standards (including active warning devices and civil improvements) 5 xings/yr * 5 years * $2M per xing = $50M Systemwide*: Bring 1 grade crossing to new SCRRA Standards (including active warning devices and civil improvements) 5 xings/yr * 5 years * $2M per xing = $50M Systemwide*
	Transit Station/Stop Improvement Program	501	LA City	Vernon Av Rapid Transit Enhancements (between Normandie Av and Alameda St): Install bus shelters and lighting, crosswalk enhancements, relocate bus stops to the far-side stops, add streetscape amenities to enhance ped\transit user environment
		1942	LA City	Central City Community Bus Stop Improvements including design and installation of bus stop improvements along major transit corridors in neighborhoods just west of downtown Los Angeles, including Temple/Beaudry, Westlake/MacArthur Park, and Pico Union. Improvements will enhance the local environment for passengers boarding and alighting buses serving 24 MTA bus lines, 1 LADOT DASH route and Foothill Transit line 480/481 along Wilshire Bl. Improvements include: bus stop lighting and/or ped-cale lighting, benches, trash receptacles, route and/or time table displays, shade structures and street trees.
		1943	LA City	Vermont Av Bus Stop Improvements - Exposition to Wilshire: Installation of bus shelters and pedestrian security lighting.
		2988	LA City	Downtown Transit Mall Enhancements, such as opening a transit customer service center
		3000	LA City	El Monte Busway Improvements, incl. bike lockers, ticket vending machines at busway stations and up to 30 bus bays; Improvements at the Union Station terminus include passenger station rehabilitation and upgrades and improved pedestrian connection to Patsaouras Plaza/Union Station

Program	Subprogram	MM Project ID	Jurisdiction[1]	Description
Transit	Transit Station/Stop Improvement Program	3072	LA City	Enhance Byzantine Latino Quarter transit plazas at Normandie and Pico, and Hoover and Pico, Los Angeles by improving streetscapes, including expanding concrete and paving
		3103	LA City	Metro Gold Line at-grade crossing mobility enhancements. Deployment of ITS at signalized intersections adjacent to Metro Gold Line at-grade crossings to provide adaptive traffic signal control to improve mobility and enhance safety.
		3593	LA City	Improve and retrofit Metro Pico Station to enhance safety and to better serve the heavy ridership demand that occur after major events at LA Live.
		3594	LA City	Improve and retrofit three Expo Line Stations (Jefferson/USC, Expo Park/USC, and Expo/Vermont) to enhance safety and to better serve the heavy ridership demands that occur after major events at USC and the Los Angeles Memorial Coliseum.
	First-Last Mile Program	18	LA City	Eastside Light Rail Access (Gold Line) - Improvements to first/last mile connections to stations, including bicycle and pedestrian infrastructure such as bicycle lanes, bicycle racks, curb extensions, crosswalks, enhanced pedestrian lighting, and tree canopies for key pedestrian corridors.
Regional Facilities	Union Station Linkages Program	3532	LA City	Implement Union Station Linkages Plan (NOTE: Union Station is a Regional Facility)

[1] "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
CENTRAL LOS ANGELES SUBREGION

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

Baseline Conditions

Prepared for:

Metro

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January 2015

Baseline Conditions

Subregional Mobility Matrix
Central Los Angeles
PS-4010-3041-U-01

Prepared for:

Los Angeles County
Metropolitan Transportation Authority

Prepared by:
Fehr & Peers

In Association With:
Iteris, Inc.

Quality Review Tracking

Version	Date	Reviewer	Reviewer Signature
Internal Review Draft	11/14/14	Rachel Neumann	
Draft	11/17/14	John Muggridge	

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List of Terms and Acronyms

Acronyms	Definitions
Caltrans	California Department of Transportations
COG	Council of Governments
EJ	Environmental Justice
ITS	Intelligent Transportation Systems
LRTP	Long Range Transportation Plan
Metro	Los Angeles County Metropolitan Transportation Authority
SB	Senate Bill
CLA	Central Los Angeles

1.0 INTRODUCTION

1.1 Study Background

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

In February 2014, the 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 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, Central Los Angeles subregional boundaries were revised to reflect a simplified border with the Westside Cities COG, in which the border roughly follows La Brea Avenue from north to south. Additionally, 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 to reflect a proposed change to the Metro Subregional Planning Area Boundary for the South Bay Cities to align with the South Bay Cities Council of Government Boundaries. The border between the WCCOG and the SBCCOG was revised to transfer the portion of the City of Los Angeles south of Marina Del Rey and surrounding LAX to the WCCOG for the same reason.

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. The subregional boundaries as defined for the Mobility Matrices, with the exception of the change reflecting the new South Bay Mobility Matrix subregion, will be used in the analysis of existing conditions, as of the end of 2014. The change to the South Bay Mobility Matrix subregion occurred following the analysis included in this report, and will only be reflected in future reports.

The City of Los Angeles Departments of Transportation and Planning, in partnership with other municipal, county, and state agencies, develops and implements subregional policies and plans that are unique to the Central Los Angeles (CLA) Mobility Matrix subregion, and voluntarily and cooperatively resolves differences among the participating agencies. An overview of the Metro Mobility Matrix subregional boundaries including all the changes described in the preceding paragraph is shown in Figure 1-1, while a detailed view

of the CLA Mobility Matrix subregion not including the changed boundary with the South Bay Mobility Matrix subregion is presented in Figure 1-2. The long-term goal for the CLA is to build consensus on a vision for a future transportation system that embraces efficiency and innovation for continuous improvement of the quality of life in the subregion. To accomplish this goal, a mobility matrix will be developed for the CLA Mobility Matrix subregion that identifies and applies screening criteria to corridors in the subregion to develop a framework for potential transportation improvements.

1.2 Report Purpose and Structure

This document establishes baseline conditions in the CLA Mobility Matrix subregion. It includes a list of projects recently completed, under construction, or funded, and an overview of the study area's demographics, as well as develops a high-level inventory of the transportation facilities being evaluated, including freeways, arterials, transit, bike/pedestrian, and goods movement.

Section 2.0 describes the existing projects and plans in the Mobility Matrix subregions as of the end of 2014, and their relationship to the Mobility Matrix goals. The demographics of the study area are covered in Section 3.0. Section 4.0 contains an overview of existing travel patterns as of the end of 2014. Sections 5.0, 6.0, and 7.0 analyze the freeways and arterials, the bicycle and pedestrian facilities, and transit service in the area. Finally, Section 8.0 provides a summary and a discussion of next steps.

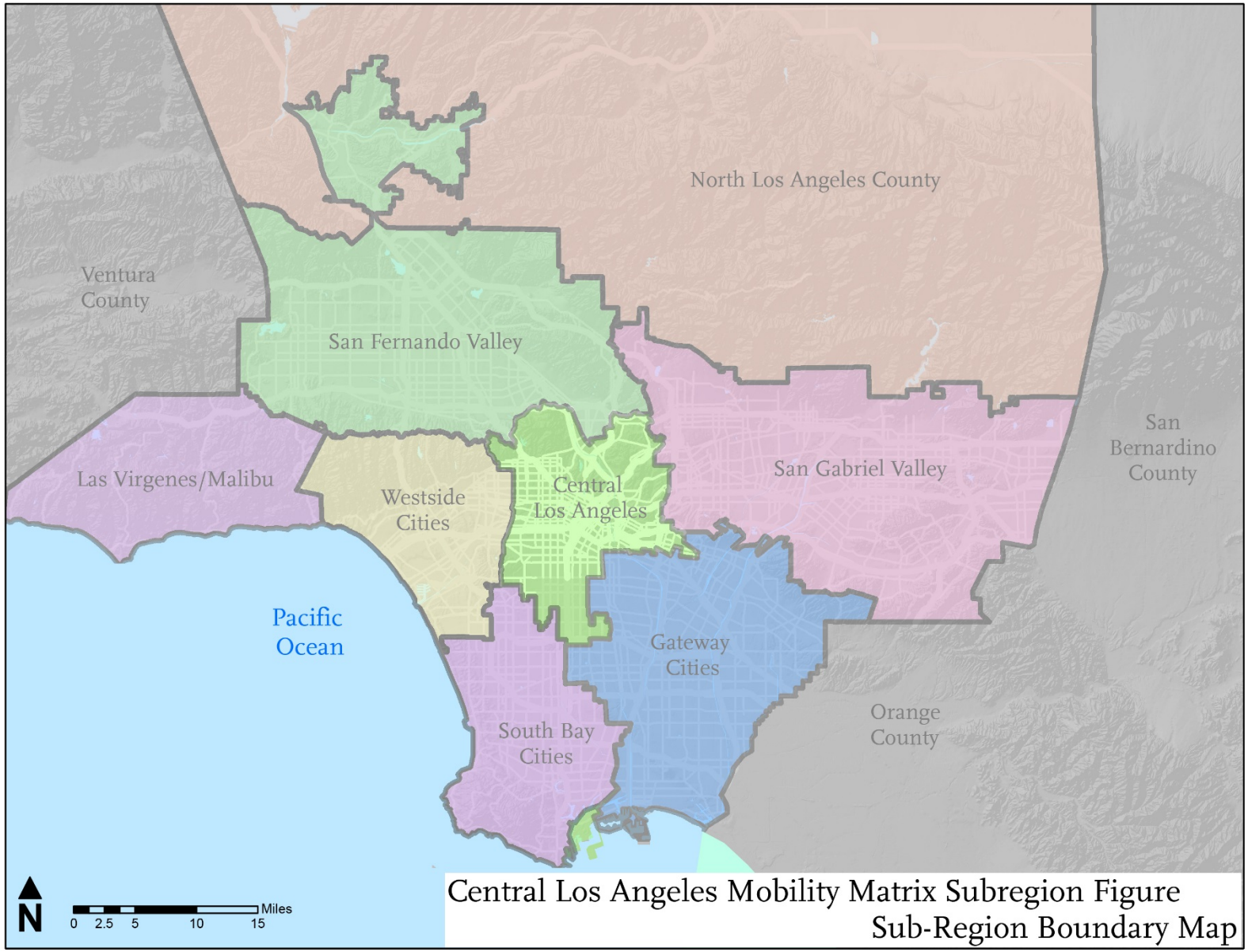

Figure 1-1: Sub-Regional Boundary Map

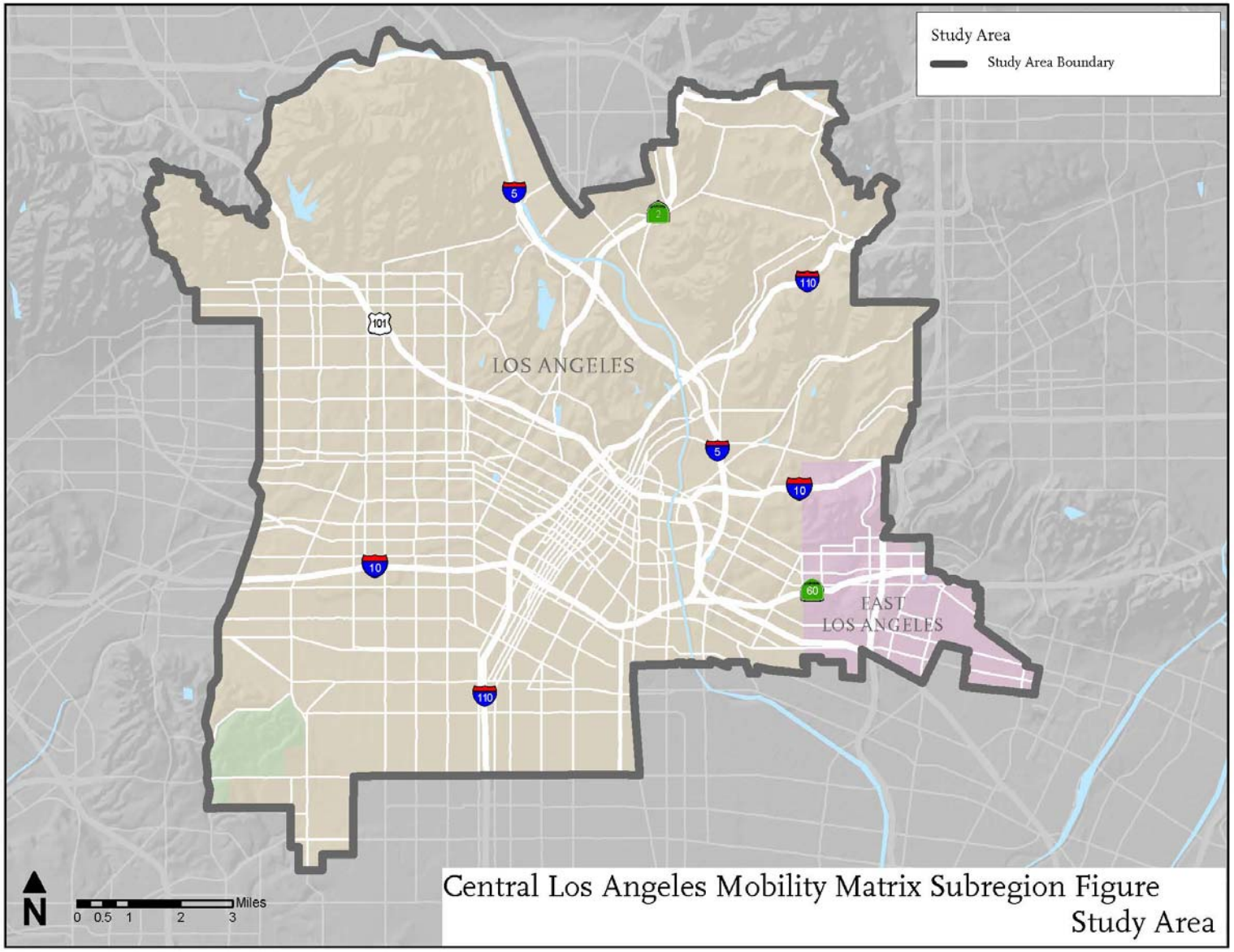

Figure 1-2: Study Area

2.0 EXISTING PROJECTS AND STUDIES

As part of the Mobility Matrix process, a list of transportation improvements needed to address subregional needs (the Project List) was developed. The Project List includes projects drawn from a variety of sources, including General Plans, Metro's Call for Projects, other adopted or draft regional/local planning documents, as well as new projects developed specifically through subregional input to the Mobility Matrix process.

The status of projects included on the Project List was confirmed after meeting with representatives from each partner agency in Central Los Angeles. This section describes those projects from the initial Project List identified by Central Los Angeles Mobility Matrix subregional representatives as having been recently completed or funded. These projects are listed in Table 2-1. List of Completed or Funded Projects. This section also includes a summary of projects that were removed from the Project List due to either financial constraints or inconsistency with current agency goals.

Table 2-1. List of Completed or Funded Projects

City/Corridor	Project	Status	Ref. ID
City of Los Angeles	Improve transit services by increasing frequency, signal priority, dedicated transit lanes and high-capacity buses between SR-1 and I-5, parallel to I-10.	Complete	93
	Add local community transit service connections to Metro Red Line stations between US-101/SR-134/SR-170 interchange and Downtown Los Angeles, at Hollywood/Western, Vermont/Santa Monica/LACC, Vermont/Beverly, and Westlake/MacArthur Park.	Complete	95
	Widen Western Blvd. to add northbound and southbound left turn lanes at Exposition Blvd.	Complete	480
	Conduct a First-Last Mile Strategic Plan to explore opportunities to increase ridership through access improvements adjacent to transit stops.	Complete	700
	Coordinate with Metro and SCAG on the development of the Regional Transportation Plan, Sustainable Communities Strategy, and the Long Range Transportation Plan.	Complete	1179
	Continue to work with Metro to complete the Union Station Master Plan.	Complete	1184
	Construct Expo Light Rail Phase I from Downtown Los Angeles to Culver City.	Complete	1247
	Construct Virgil Village Complete Street Project to transform Virgil Ave into a multi-modal, mixed-use thoroughfare by implementing complete streets elements, including a transit plaza, pocket park, bicycle amenities, improved crosswalks, stormwater filtration and street trees.	Complete	1939
	Establish a Bicycle Plan Implementation Team comprised of City staff, members of the Bicycle Authority Committee, as well as representation from the bicycling community to provide implementation support and oversight of ongoing programs.	Complete	2038
	Rehabilitate and widen 4-lane Spring St bridge over the LA River, adding sidewalks and upgrading bridge railings.	Under construction	3106
	Demolish existing Soto St bridge over Mission Rd and Huntington Dr, realigning street to increase traffic flow and adding a bike lane.	Under construction	3120
	Replace DASH buses to ease overcrowding and increase capacity on 6 high-performing DASH routes.	Fully funded	2995
	Replace seismically/structurally deficient 6th St viaduct with new viaduct.	Fully funded	3053
	Replace Riverside Dr viaduct with two through lanes flaring to four lanes at San Fernando Road with a new roundabout, adding bike lane, to increase circulation.	Fully funded	3155
	Environmental and engineering work for California High Speed Rail Phase 1.	Fully funded	3132

City/Corridor	Project	Status	Ref. ID
City of Los Angeles	Construct Regional Connector to allow through movements of Blue, Expo, and Gold line trains from Alameda/1st St to 7th St/Metro Center.	Fully funded	3141
	Implement intermodal linkage and pedestrian enhancements from Trade Tech to Expo Light Rail at 23rd St and Flower St.	Fully funded	413
	Design and construct bike routes with appropriate signage and striping to access Metro Gold Line stations on Eastside light rail.	Fully funded	2996
	Landscape, streetscape and passenger amenity improvements at and adjacent to LACC to improve pedestrian mobility and accessibility to multimodal connections.	Fully funded	3003
	Design and construct bus stop and pedestrian improvements that will increase the usage and capacity of pedestrian facilities along a 0.4 mile stretch of Main Street.	Fully funded	3005
	Lengthen the Olive/Pico bus zone by enlarging the island where multiple agency bus stops are located, install lighting, and construct a concrete bus pad.	Fully funded	3010
	Complete Angels Walk Crenshaw to promote pedestrian activity within the project limits with a guidebook and 15 on-street information markers (historic stanchions) at strategic locations.	Fully funded	3041
	Complete Angels Walk Highland Park to promote pedestrian activity within the project limits with a guidebook and 15 on-street information markers at strategic locations.	Fully funded	3042
	Reconstruct a 5-legged signalized intersection at Cesar Chavez Ave / Lorena St / Indiana St into a modern roundabout. The construction of the roundabout will reduce the complexity of the intersection and will improve traffic flow and safety.	Fully funded	3056
	Install pedestrian / transit rider amenities including bus stop gardens, new pedestrian lighting, street trees, and wayfinding signage at three intersections along the Cesar Chavez transit corridor.	Fully funded	3057
	El Pueblo pedestrian improvements including wayfinding elements of enhanced pedestrian facilities to improve and assist pedestrian movement in the El Pueblo district in Downtown LA.	Fully funded	3070
	Design and construct pedestrian related streetscape improvements within 1/4 mile from each of 3 light rail stations along Exposition Blvd. between Crenshaw & Jefferson.	Fully funded	3074
	Construct streetscape improvements enhancing the pedestrian environment to facilitate increased pedestrian usage between LA Fashion District's core and the 7th St transit corridor.	Fully funded	3077
	Installation of electronic, direction and parking availability signs with internet connectivity to provide advance and real-time information intended to increase transit ridership.	Fully funded	3084

City/Corridor	Project	Status	Ref. ID
City of Los Angeles	Design and install pedestrian and transit user enhancements, extending the original Hollywood pedestrian/transit improvement project to include Highland Ave and Vine St.	Fully funded	3085
	Create an extension of the entrance to the Metro Red Line Station at Vermont/Willowbrook Ave to LACC campus.	Fully funded	3099
	Provide vibrant landscaping and historically-inspired gateway markers on a blighted transportation corridor, enhancing the driving and transit environment in West Adams.	Fully funded	3100
	Improve 8 bus stops along Broadway-Bernard St to Solano Ave with street furniture and landscaping, increasing accessibility, transfers and transit use.	Fully funded	3119
	Install wifi internet on the Gold Line trains, poles and stations, through the Eastside Extension, Chinatown and Little Tokyo/Arts District.	Fully funded	3126
	Complete Angels Walk Boyle Heights to promote pedestrian activity within the project limits with a guidebook and 15 on-street information markers at strategic locations.	Fully funded	3040
	Complete Angels Walk Silver Lake to promote pedestrian activity within the project limits with a guidebook and 15 on-street information markers at strategic locations.	Fully funded	3043
	Improve pedestrian linkages in Arts District / Little Tokyo Gold Line Station area by installing enhancements including sidewalk /path paving; ped lights; street trees/planting; district signage; entry elements; street furniture; crosswalk paving; and bike parking.	Fully funded	3044
	Improve Boyle Heights / Chavez Ave streetscape to enhance the use of public transit, provide new pedestrian amenities and safe access to Metro Gold Line stations on 1st street.	Fully funded	3051
	Install transit information monitors, variable message signs, interactive kiosks & parking availability signage along Broadway corridor to Olympic.	Fully funded	3065
	Widen the intersections of Vermont Ave & Martin Luther King, Jr Blvd. & Figueroa St & Martin Luther King Jr. Blvd. to provide exclusive right turn lanes.	Fully funded	3076
	Implement a pilot shared fleet vehicle program that includes, bikes, alternative green vehicles for first & last miles from Union Station to and from other Downtown locations.	Fully funded	3079
	Upgrade and replace under capacity communication system hardware in order to provide a viable and cost effective communication link between traffic corridors and the LA County information exchange network.	Fully funded	3090

City/Corridor	Project	Status	Ref. ID
City of Los Angeles	Increase pedestrian safety and access by providing improved crosswalks, new bus shelters and street trees to enhance connectivity between transit and area landmarks, in the Boyle Heights community.	Fully funded	3097
	Improve pedestrian access to the new Expo station on Vermont Ave by installing sidewalks, landscaping and lighting along Menlo Ave and MLK Jr. Blvd, plus a median on MLK Jr. Blvd.	Fully funded	3102
	Design and construct pedestrian and safety enhancements intended to increase the usage of public transportation and create a link to Metro Expo station at Western and Expo.	Fully funded	3125
	Construct a new grade separation over UPRR and Metrolink & LA River while preserving the existing historic N. Main St. Bridge. Bike lanes will be added at the shoulders of the bridge. Other work components include realigning Albion Street and modifying the intersections of North Main and Mesnagers Street at the west end.	Fully funded	3152
	Implement Bike Friendly Streets (BFS) with traffic calming measures and shared lane markings to feed neighborhood streets into the regional transportation network. BFS would provide enhanced bike access to arterials and the transit systems	Fully funded	348
	Implement a series of streetscape improvements designed to enhance connectivity and community access to the new Florence/West Boulevard Station on Metro's planned Crenshaw Transit Corridor Light Rail Line. Elements include stamped crosswalk legs, street furniture such as benches, trash receptacles and bicycle racks, pedestrian security lighting, bicycle sharrows, landscaping and wayfinding signage.	Fully funded	1933
Highway Projects	Add HOV lane in both directions on I-5 between SR-134 and I-110.	Complete	8
	Add HOT lanes on the I-10 between Alameda St/Union Station to I-605 and on I-110 from 182 St/Artesia Transit Center to Adams Blvd.	Complete	3024
	Construct auxiliary lanes in both directions from 8th Street to I-110/I-10 connector along I-110, and modify ramps by converting the existing southbound auxiliary lane to an optional lane. Add storage lane on the Harbor Freeway mainline from north end of 12th St to north end of 7th St, and reconstruct ramp.	Complete	3026

2.1 Completed or Fully Funded Projects

2.1.1 City of Los Angeles

A total of 48 projects were identified by the City of Los Angeles as completed or fully funded. These projects include arterial capacity enhancements, bridge improvements, and active transportation improvements such as pedestrian amenities and bicycle facilities.

Of the 48 projects, two are under construction at the time of writing and nine have been completed.

2.1.2 Highway Projects

A total of three projects were identified by the City of Los Angeles or Caltrans as complete. These include HOV/HOT lanes along the I-5, and I-10 freeways, and the construction of auxiliary lanes along I-110 freeway.

2.2 Other Projects

2.2.1 Inconsistent with City's Current Goals and Objectives

A total of 13 projects were removed from the Draft Project List, despite existing in previous plans and documents, due to inconsistency with the City of Los Angeles' current goals and objectives. Many of these plans and documents have been superseded by more recent planning documents that align with the current policy direction for the City.

These projects include arterial widening along Beaudry Avenue, Figueroa Street, Fletcher Drive, Melrose Avenue, San Fernando Road, Sunset Boulevard, Van Ness Street, and Monterey Road. The projects also include the construction of additional lanes on segments of US-101 and SR-2 state highways.

2.2.2 Insufficient Resources

Two projects were excluded from the Draft Project List, despite existing in previous plans and documents, due to limited financial resources or constrained right-of-way. These projects include the construction of a 4-lane tunnel for high occupancy vehicles between the SR-2 state highway terminus and the I-10 freeway, and the construction of an additional northbound lane along Cahuenga Boulevard from Odin Street to Barham Boulevard.

3.0 STUDY AREA DEMOGRAPHICS

3.1 Land Use

Land uses throughout the Central Mobility Matrix subregion are a mix of residential and commercial, with a large commercial area in Downtown Los Angeles along SR-110, and a large industrial area generally located between I-10, US-101 and I-5 in the eastern portion of Downtown Los Angeles. Other major commercial areas include east-west corridors such as Wilshire Boulevard west of Downtown Los Angeles, Sunset Boulevard and Hollywood Boulevard in Hollywood, and Pico Boulevard. Major north-south corridors also feature commercial zoning, including Western Avenue, Vermont Avenue, and La Brea Avenue.

Table 3-1 shows the land uses for the Mobility Matrix subregion, with the data and categories taken from the 2008 SCAG land use database.

Table 3-1. Land Uses in Study Area

Land Use Type	Central Los Angeles Study Area
Low Density Residential	24%
Medium/High Density Residential	26%
Rural Residential	0%
Commercial	14%
Public Facilities/Institutions	9%
Industrial	6%
Transportation/Utilities	5%
Mixed Use	1%
Open Space	14%
Miscellaneous	1%

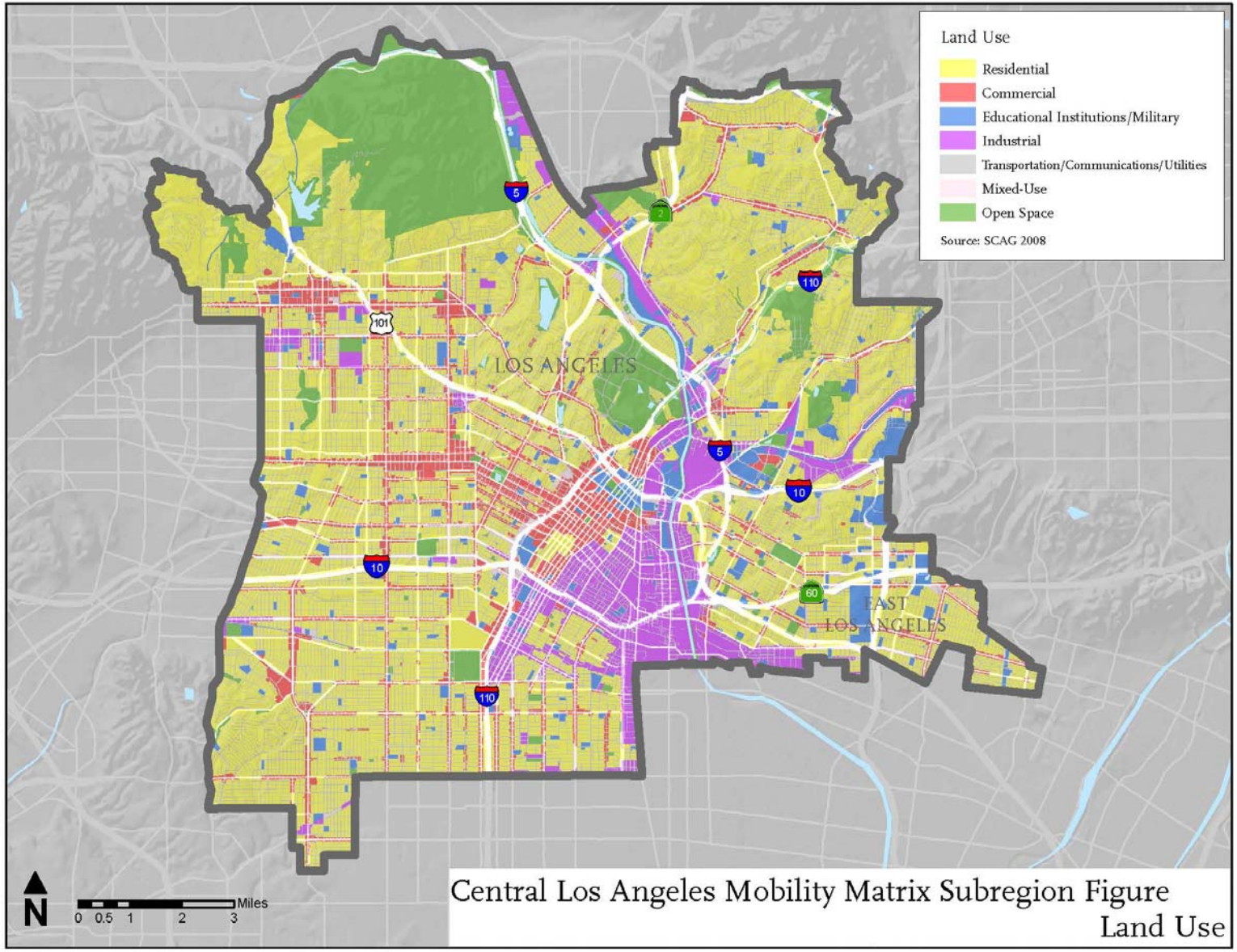

Figure 3-1: Land Use

3.2 Population and Employment

The Metro 2014 Short Range Transportation Plan (SRTP) Travel Demand Model was used to assess the estimated change in population and employment in the Mobility Matrix subregion between 2014 and 2024. This analysis provides an indication of where additional person trips may occur due to growth in the Mobility Matrix subregion. Figure 3-2 shows the forecasted change in population and employment, with each color point indicating 20 added jobs (blue dots) or 20 added residents (green dots) at that location. As shown in Figure 3-2, the highest growth in both population and employment is projected to occur in the Downtown area, generally east of SR-110, north of I-10 and south of US-101. Additional concentrations of added population are shown generally to the west of Downtown, north of Wilshire Boulevard and south of US-101. Growth is also projected in the rest of the study area, but at lower densities.

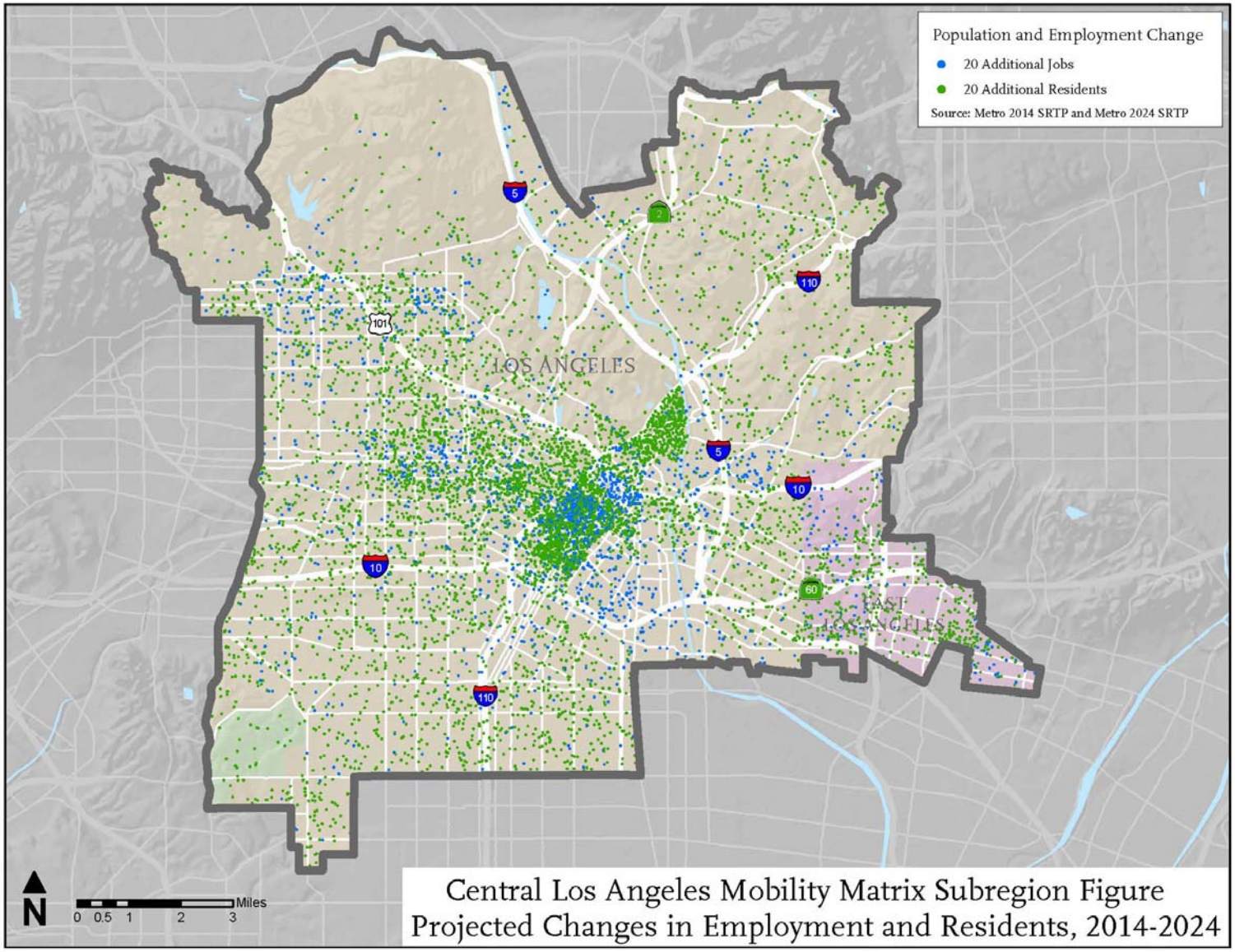

Figure 3-2: Projected Changes in Employment and Residents, 2012-2024

3.3 Environmental Justice Communities

Concentrations of disproportionately disadvantaged and/or pollution-burdened communities were identified using the California Environmental Health Hazard Screening Tool (CalEnviroScreen). This tool aggregates variables that indicate certain types of socioeconomic vulnerability such as low income, high unemployment, low levels of educational attainment, linguistic isolation, or high rent burden, and/or physical exposure to environmental pollution and other hazards that can lead to negative public health effects. The resulting indexed score shows the communities most disproportionately burdened by multiple types of exposure and risk.

Component Group	Maximum Score
Pollution Burden	
Exposures and Environmental Effects	10
Population Characteristics	
Sensitive Population and Socioeconomic Factors	10
CalEnviroScreen Score	**Up to 100 (= 10 x 10)**

The overall CalEnviroScreen score is calculated by multiplying the Pollution Burden and Population Characteristic scores. Since each group has a maximum score of 10, the maximum CalEnviroScreen Score is 100. The data are presented in terms of the Environmental Health Hazard Score, with ranges of 1 to 15 (best), 16 to 25, 26 to 35, 36 to 50 and 51 to 90 (worst). The areas in which the highest (worst) CalEnviroScreen scores are located are generally east of I-110 in the southeastern quadrant of the Central Mobility Matrix subregion. In these areas, scores range from 51 to 90.

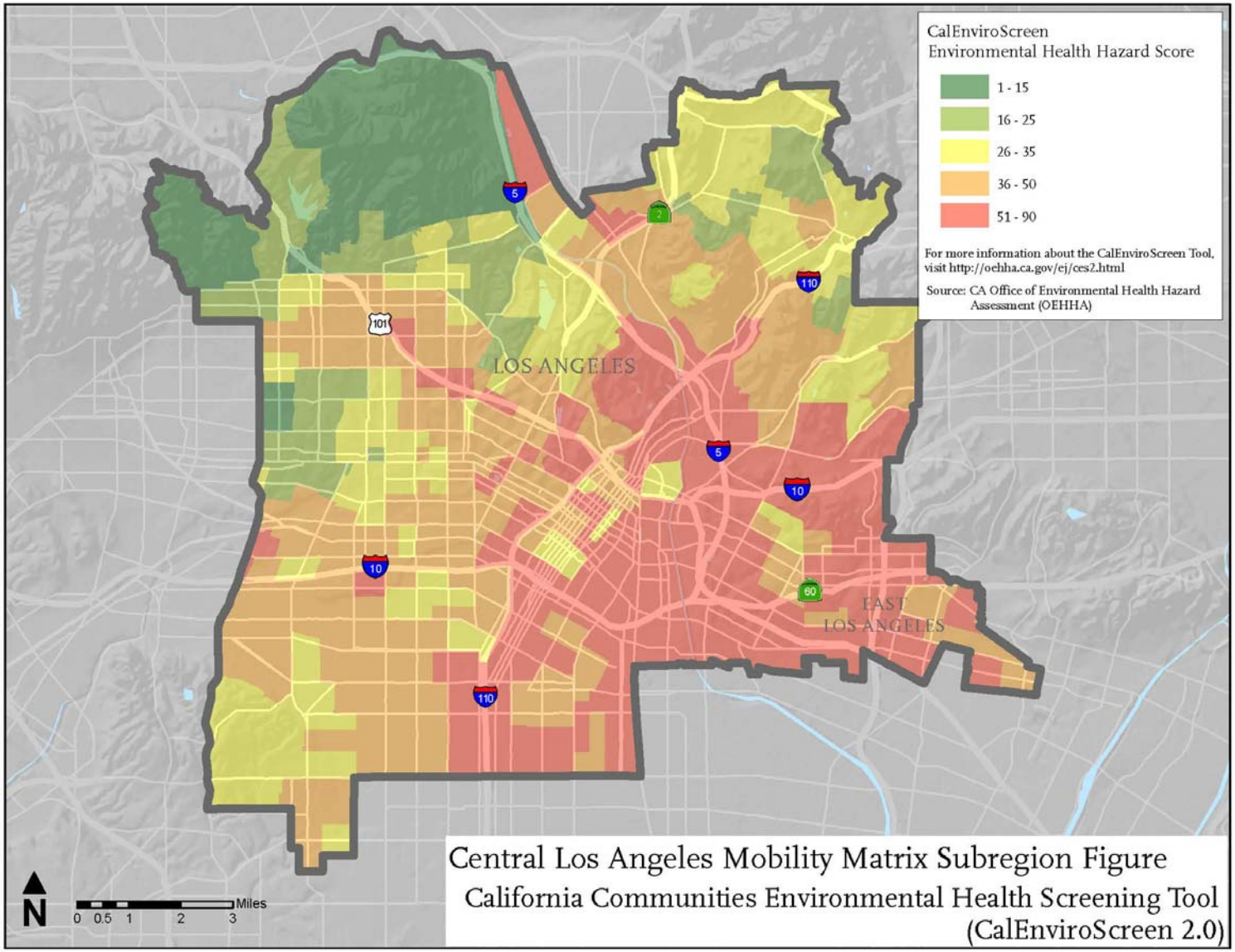

Figure 3-3: California Communities Environmental Health Screening Tool (CalEnviroScreen 2.0)

4.0 TRAVEL MARKETS

4.1 Subregional Trip Patterns

Subregional trip patterns were developed for the Central Los Angeles Mobility Matrix subregion using the Metro 2014 SRTP Travel Demand Model . The model data were summarized for two conditions: Total Daily Trip Productions and Attractions, and AM Peak Hour Home Based Work Trips. The model was used to determine the number of trips to and from the subregion to other subregions within Los Angeles County as well as to adjacent counties. This gives a general understanding of the major patterns of trip movements associated with people who live and work in the Central Los Angeles Mobility Matrix subregion.

Some basic definitions that apply to trips as described in this section are as follows:

- Trip: One-way journey or movement from a point of origin to a point of destination.
- Home-based trip: When the home of the trip maker is either the origin or destination of the trip.
- Non-home based trip: Neither end of the trip is the home of the trip maker.
- Trip Production: Home end (origin or destination) of a home-based trip, or origin of a non-home-based trip.
- Trip Attraction: Non-home end (origin or destination) of a home-based trip, or destination of a non-home based trip.
- Net Trip Attractions: Trip attractions minus trip productions.
- Percent Net Attractions: Percentage of trips the subarea attracts from a particular subregion versus generates from the same subregion. For example: Central Los Angeles attracts 101% more trips from the North County than it generates to North County.

The plots and data provided show daily person trips, which include all trips made for any reason throughout the day; and home based work trips, which are trips from home (and arrives back at their home) to go to (and arrive from) work.

Figure 4-1 illustrates the daily person trip productions and attractions using bandwidths to show the magnitude of the trip patterns, and colors to illustrate the outbound (blue) and inbound (green) direction of the trips. That data is also shown in Table 4-1.

Overall, based on the daily person trip patterns, 58% of all the trips produced by the Central Los Angeles Mobility Matrix subregion stay within (are attracted to) the subregion, and 56% of all trips attracted to the Central Los Angeles Mobility Matrix subregion are produced within the subregion. The percentage of internal trips varies because the overall number of attractions (inbound trips) in the Central Los Angeles Mobility Matrix subregion is greater than the productions.

For the Central Los Angeles area, trip producers and attractors are well distributed throughout the region, consistent with the central location of the subregion and its role as a job and commercial center. Of the trips produced in the Central area, the highest volume of trips is destined for the Westside Cities Mobility Matrix subregion, where approximately 596,000 daily trips, or

12% of all trips produced by Central Los Angeles are destined on an average day.

As seen in Table 4-1, the remaining Central area trip productions are well distributed throughout the region, with other subregions accounting for up to 4% each of the Central trips produced.

The highest number of trips attracted to the Central Los Angeles Mobility Matrix subregion come from the San Gabriel Valley (9%), followed closely by Gateway Cities (8%) and San Fernando Valley (also 8%) and Westside (6%). Of the approximate 5,065,000 total daily trips produced, and 5,295,000 daily trips attracted, almost 60%, or approximately 3,000,000 trips stay within the Central Los Angeles Mobility Matrix subregion. The other portion goes to or arrives from other areas.

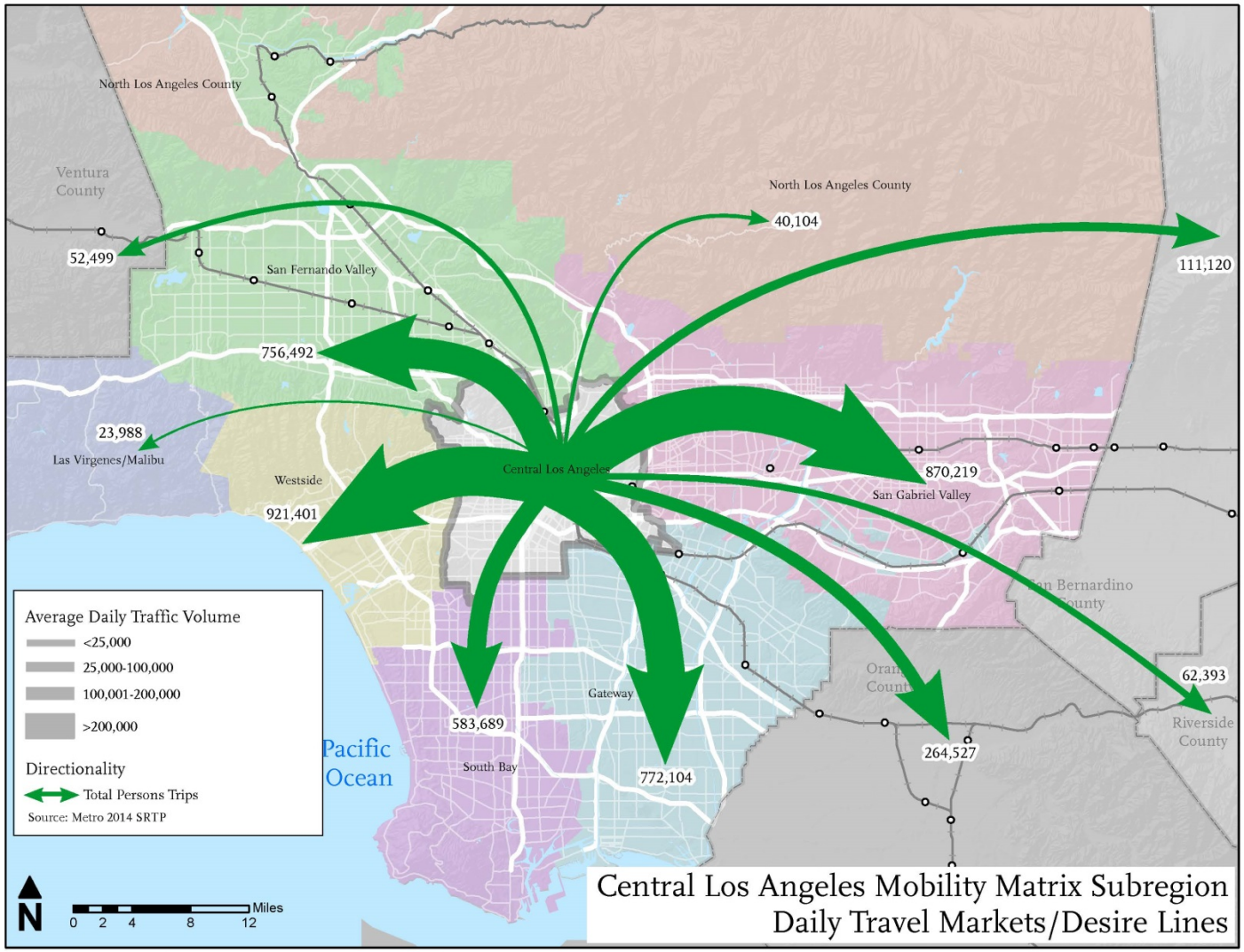

Figure 4-1: Daily Travel Markets/Desire Lines*

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.

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

ID	To/from Sub-region	Trips Produced	% of Trips Produced	Trips Attracted	% of Trips Attracted
1	**Central Los Angeles**	**2,950,841**	**58%**	**2,950,841**	**56%**
2	Gateway Cities	324,829	6%	447,276	8%
3	North County	13,315	0%	26,789	1%
4	San Fernando Valley	354,161	7%	402,330	8%
5	San Gabriel Valley	396,008	8%	474,211	9%
6	Malibu/Las Virgenes	10,343	0%	13,646	0%
7	South Bay	208,902	4%	374,789	7%
8	Westside	595,676	12%	325,724	6%
9	Ventura County	19,958	0%	32,541	1%
10	Orange County	100,622	2%	163,905	3%
11	Riverside County	35,534	1%	26,858	1%
12	San Bernardino County	55,004	1%	56,117	1%
	Total	**5,065,193**	**100%**	**5,295,027**	**100%**

Figure 4-2 illustrates the home-based work trips to and from the area during the AM peak hour, and also uses bandwidths to visually show the magnitude of the trip flows, and colors to illustrate the outbound (blue) and inbound (green) direction of each trip. The data is also shown in Table 4-2. These data describe trips which have the home at one end and work at the other.

A comparison of Table 4-2 (peak hour trips) to Table 4-1 (daily trips) shows that some Mobility Matrix subregions have significantly higher peak period trip interactions with the Central area than overall, on a daily basis. This pattern of trip concentration during peak hours likely reflects the role of the Central Los Angeles Mobility Matrix subregion as an employment hub, attracting a sizable number of work trips, particularly from those Mobility Matrix subregions showing highest peak concentration. Of the trips attracted to the Central area for work, the highest percentage comes from the San Gabriel Valley (15%) followed closely by the San Fernando Valley (14%) and then the Gateway Cities (12%). South Bay and Westside each account for 9% and 8% of the work trips attracted, respectively, and the remaining areas contribute less than 4% each of the work trips to Central.

During the AM peak, 35% of the work trips produced in the Central Los Angeles Mobility Matrix subregion stay within the subregion (people who both live and work in the subregion).

4.2 Subregional through Trips

The Metro travel demand model has been used to estimate the non-local "through" trips on the freeway system in the Central Los Angeles Mobility Matrix subregion. As the subregion is the hub of many of the region's freeways, many commute and other trips pass through the area entirely without having an origin or a destination end of the trip within the subregion. Based on the Metro model, on a daily basis, the Central area generates approximately 3.7 million freeway-oriented trips to/from and within the Central area. During the AM peak period, the subregion generates approximately 1.26 million freeway-oriented trips. Through the use of the Metro model, an origin-destination matrix was developed to estimate the number of trips that pass through the Central area from one adjacent or external subregion to the next (such as from San Gabriel Valley to Westside, for example, as well as all other possible combinations), without stopping in the Central Los Angeles Mobility Matrix subregion. Using this matrix, it is estimated that about 665,800 daily and 153,600 peak period non-local "through" trips pass through the study area. Therefore, considering the total freeway-oriented trips (Central plus external), this suggests that approximately 15% of the total daily trips, and 25% of the peak period trips, could be through trips on the Central Los Angeles Mobility Matrix subregion's freeway system. The peak hour through-trip percentage is higher because during the peak hour, there is a much greater proportion of longer distance commuter trips, while on a daily basis, short distance trips occur in greater proportion such as home to school or home to shopping, which mostly do not occur on the freeways. This estimate is for all of the Central Los Angeles Mobility Matrix subregion freeways and is not specific to one freeway or another. Individual freeways will have higher or lower through trip percentages based on their location and desirability for regional travel and the estimation of such trips would require more detailed link-level analysis that is beyond the scope of this effort.

Table 4-2. AM Peak Hour Home-Based-Work Trip Patterns

ID	To/from Sub-region	Trips Produced	% of Trips Produced	Trips Attracted	% of Trips Attracted
1	**Central Los Angeles**	**218,870**	**40%**	**218,870**	**31%**
2	Gateway Cities	61,416	11%	83,959	12%
3	North County	2,551	0%	10,355	1%
4	San Fernando Valley	62,945	11%	101,897	14%
5	San Gabriel Valley	39,830	7%	106,501	15%
6	Malibu/Las Virgenes	2,672	0%	3,674	1%
7	South Bay	33,730	6%	63,308	9%
8	Westside	111,511	20%	58,426	8%
9	Ventura County	2,729	0%	8,478	1%
10	Orange County	10,972	2%	26,527	4%
11	Riverside County	1,164	0%	6,618	1%
12	San Bernardino County	4,196	1%	18,292	3%
	Total	**552,586**	**100%**	**706,905**	**100%**

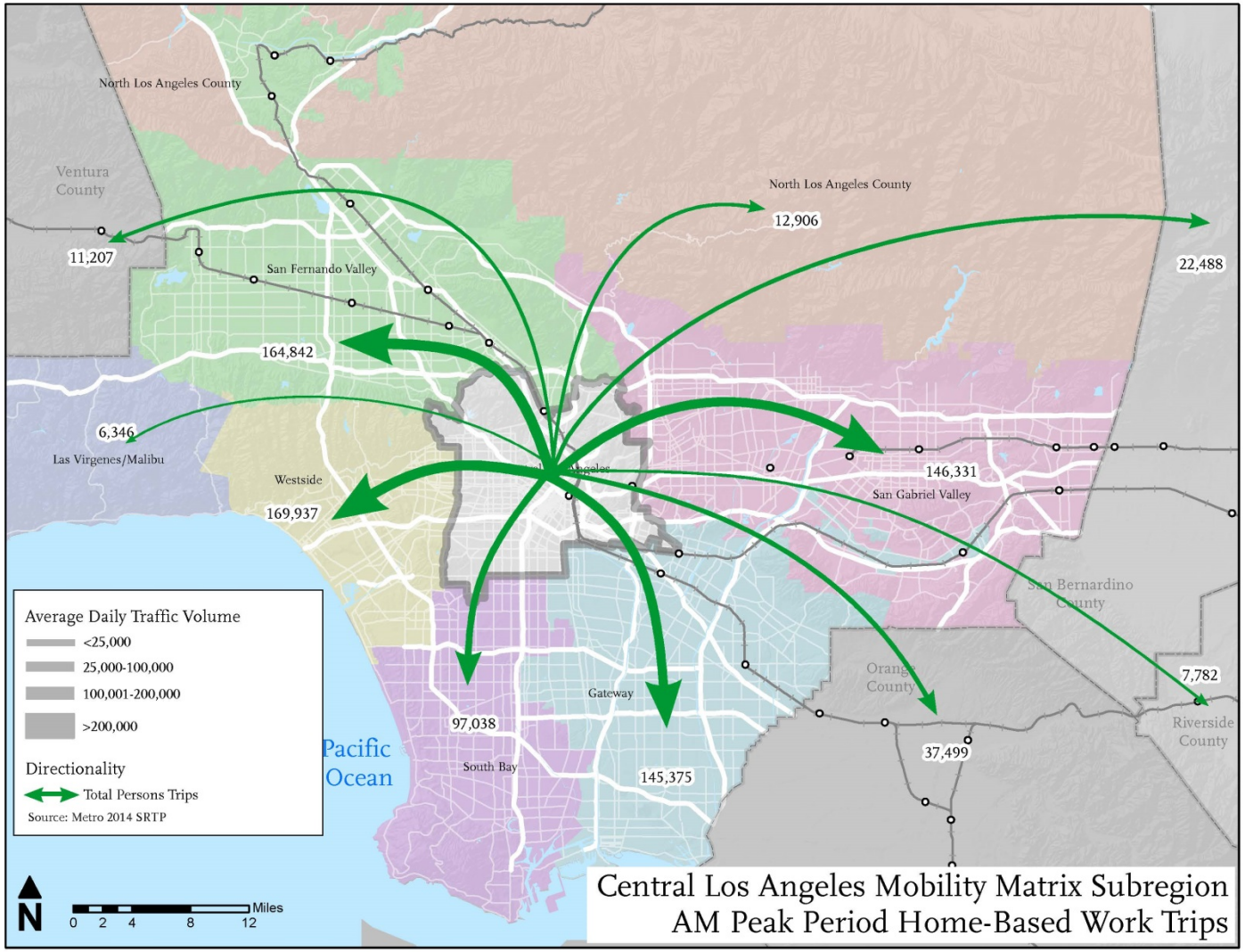

Figure 4-2: AM Peak Period Home-Based Work Trips*

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.

5.0 FREEWAYS AND ARTERIALS

This section describes the existing, as of the end of 2014, and future condition and performance of the subregion's freeways and arterials. Travel demand modeling analysis and a review of speeds were used to determine 2014 baseline conditions and future conditions on the freeways and key arterial roadways. For the freeway system, Caltrans Freeway Performance Monitoring System (PeMS) was used to assess freeway volumes and speeds. The PeMS system is a joint effort of Caltrans and the University of California's Berkeley (UC Berkeley) Institute for Transportation Studies. PeMS uses the vast amount of data generated by the thousands of loop detectors deployed throughout the state on freeways. PeMS is used by Caltrans for performance analysis, including monitoring of traffic flow, congestion monitoring and estimating travel time reliability. PeMS allows the uniform and comprehensive assessment of the performance of the freeway network. Within the study area, Caltrans PeMS monitoring locations were available through the freeway system at various locations.

5.1 Freeways

Using PeMS data, typical daily freeway traffic volumes are shown on Figure 5-1. As shown, the daily freeway volumes in the Central Los Angeles Mobility Matrix subregion are as follows:

- In the Central area, several freeway segments carry between 250,000 and 300,000 vehicles per day. While some of the other sub regions experience freeway volumes that are higher, the concentration and close spacing of freeways in the Downtown area likely contributes to the somewhat lower volumes per facility.
- The highest volume freeways include I-110 south of I-10, I-5 east of I-710, SR-101 leaving downtown north of I-110 and I-5 north of I-110. All of those freeway segments have volumes between 250,000 and 300,000 daily vehicles.
- Freeways that carry between 200,000 and 250,000 vehicles per day include I-5 from I-10 to SR-110, US-101 on the north side of Downtown, and portions of I-10 and SR-60.
- The remaining freeway segments, as shown in the figure, carry less than 150,000 vehicles per day.

Using the PeMS database, average speeds were extracted for locations in the study area. October 2013 speed data were reviewed to understand typical peak hour operating speeds on the freeway system in the subregion. October was chosen as a typical month because it lacks major holidays, all schools are in session, and peak vacation times such as late summer, when volumes tend to be lower, are avoided. Only typical weekdays (non-holiday Tuesdays, Wednesdays and Thursdays) were used as a basis for the average speed data extraction. Data were collected hourly, and speeds were extracted over 24 hours for each weekday. Peak hours were chosen based on the slowest observed speeds during the peak commute period.

The PeMS speed profile data provides an accurate representation of where congestion currently occurs, as illustrated by slow speeds and mainline delay. The specific slow areas on the network indicate some type of geometric or operational issue (or both), which results in systemic speed reduction and vehicle delay at specific freeway locations. Causes of slowing could include

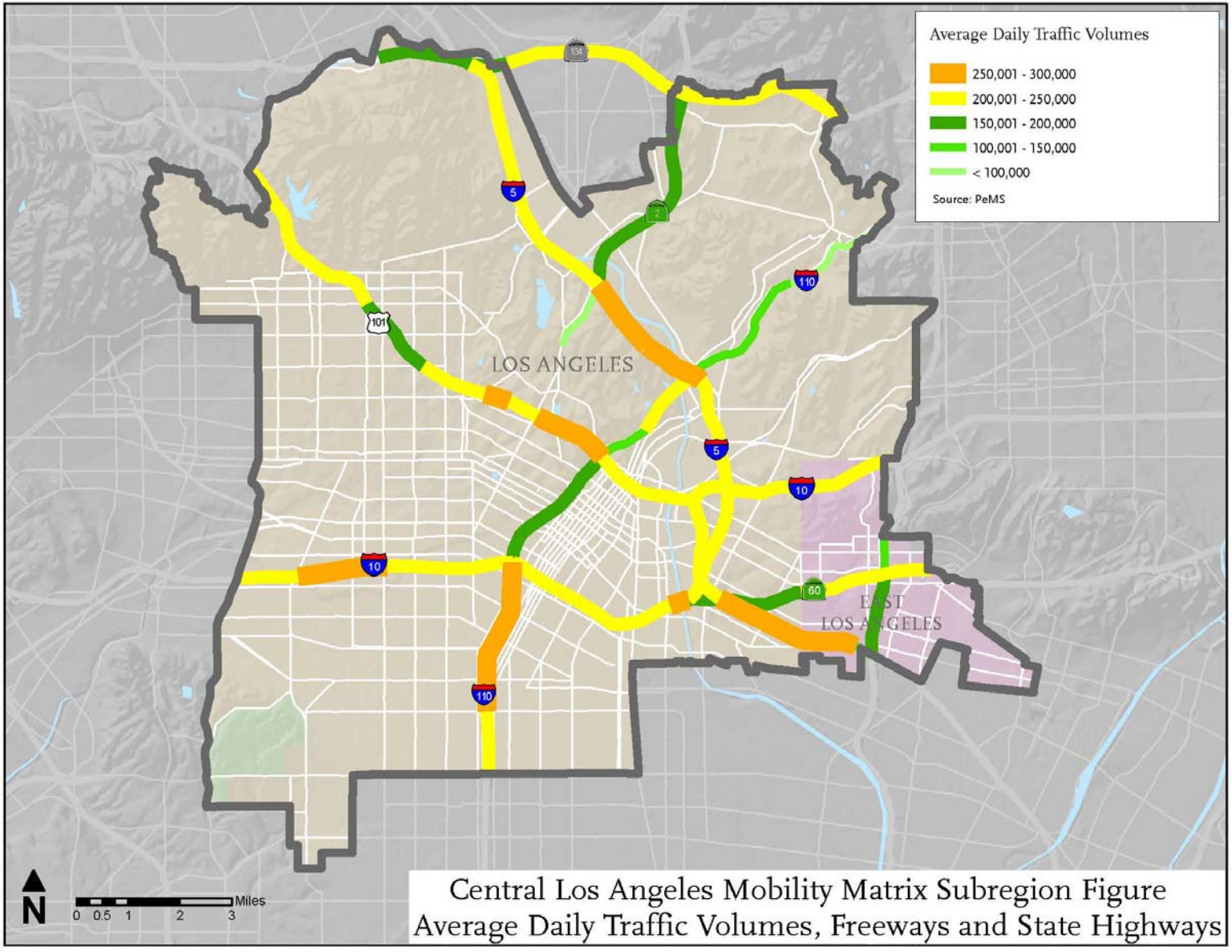

Figure 5-1: Average Daily Traffic Volumes, Freeways and State Highways

inadequate mainline weaving areas, ramp/mainline merge or diverge locations with inadequate operating conditions, existing geometric alignment constraints such as curvature or sight distance, or simply too much travel demand and too many vehicles for the available freeway capacity.

Figures 5-2 and 5-3 illustrate the AM and PM peak hour freeway speeds in the Central Los Angeles Mobility Matrix subregion. As seen during the AM peak hour, many of the freeways serving the Central area experience significant slowing and associated congestion, including I-110 northbound approaching Downtown, I-10 in both directions, I-5 and US-101 northbound coming from the east, US-101 southbound and I-5 southbound coming from the west/north, SR-110 southbound from Pasadena and SR-2 southbound. These speed patterns clearly reflect the inbound work trip patterns to the Downtown area as well as through trips from one subregion to another using the freeways that run through the Central Los Angeles Mobility Matrix subregion.

During the afternoon PM peak, a greater number of freeway segments experience significant slowing, including much of the freeway ring around Downtown with slow speeds below 30 mph (I-10, I-110, I-5, SR-101). In addition to the freeway ring around Downtown, other segments that experience very slow speeds include I-110 south of Downtown in the outbound (southbound) direction, US-101 north of Downtown (both directions) and I-10 to the west of Downtown.

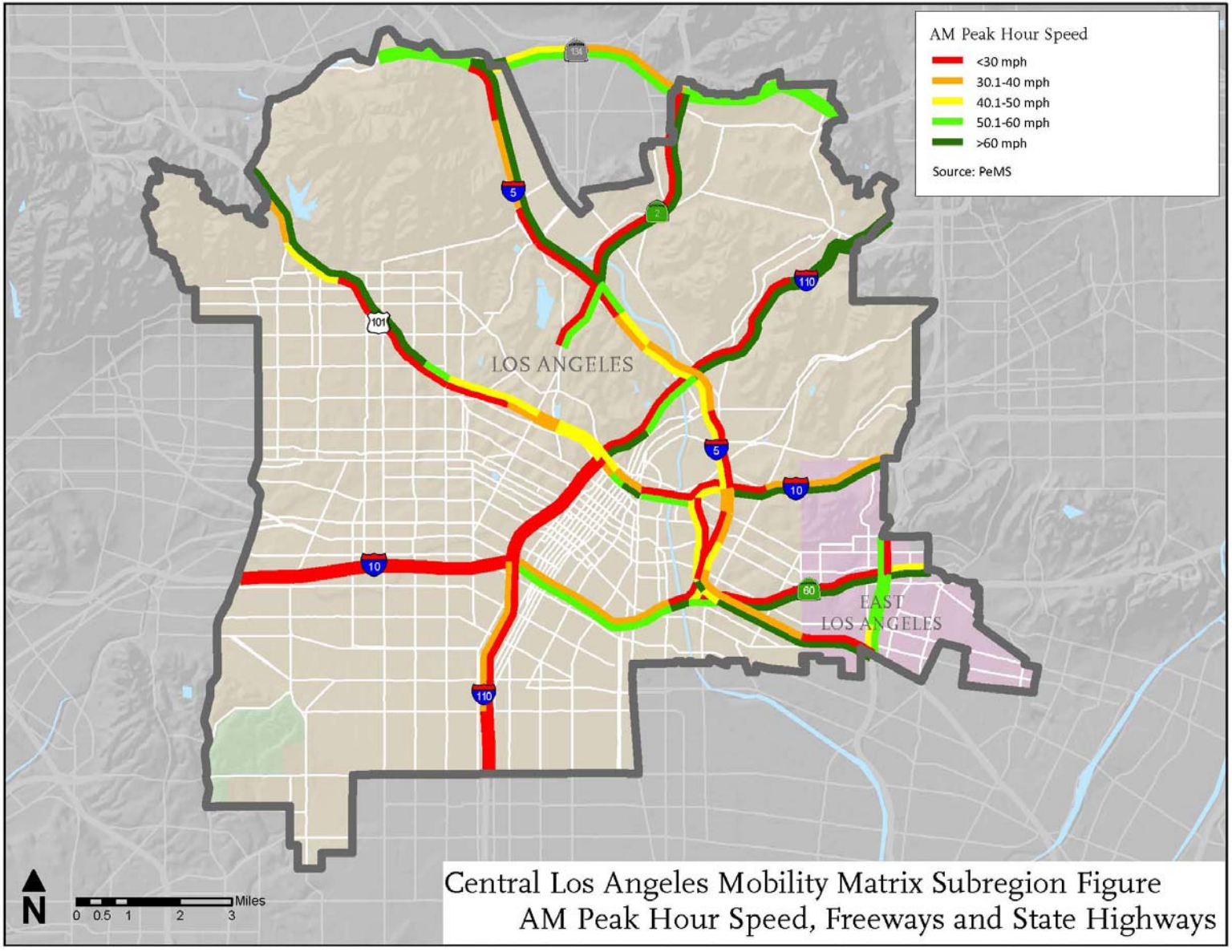

Figure 5-2: AM Peak Hour Speed, Freeways and State Highways

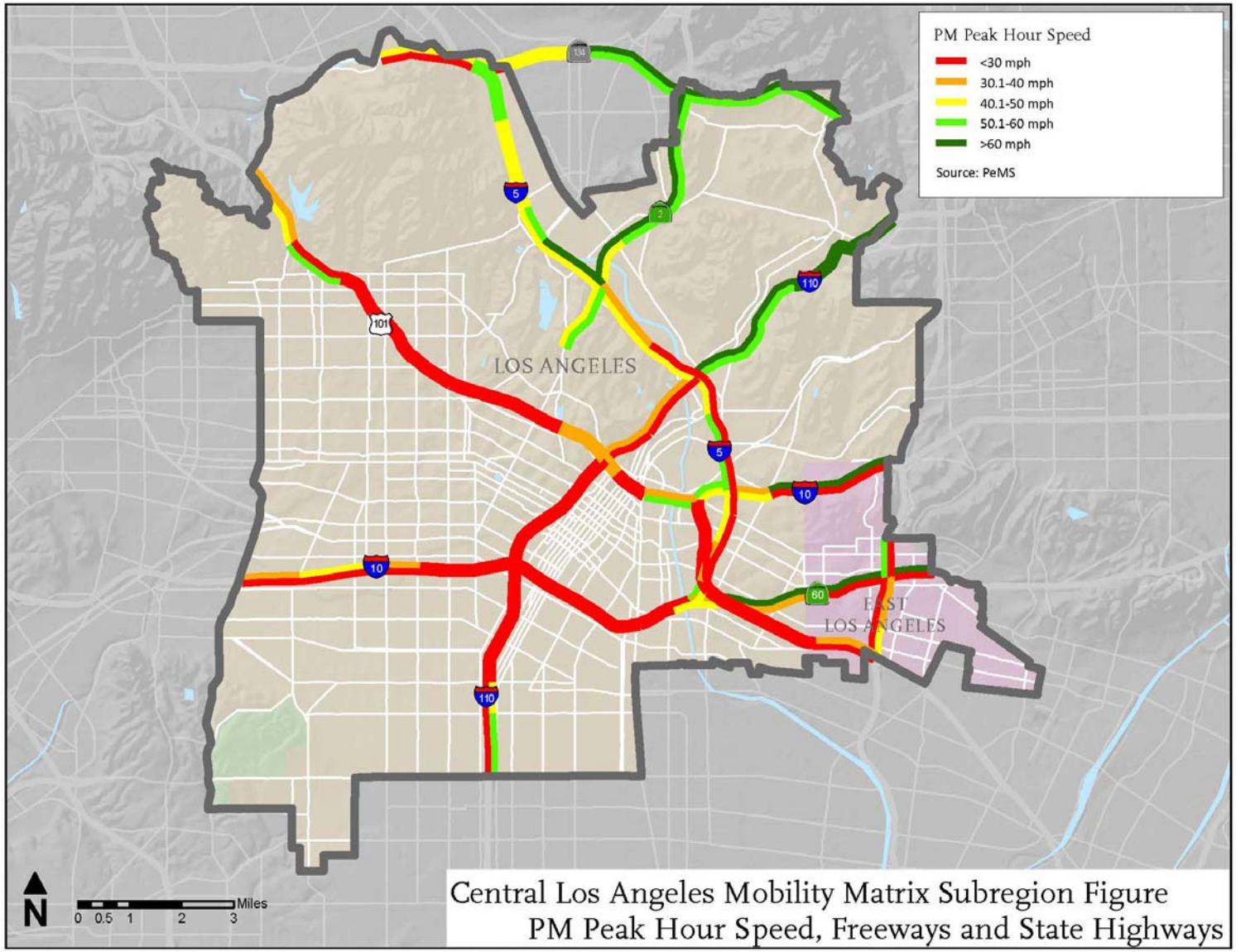

Figure 5-3: PM Peak Hour Speed, Freeways and State Highways

5.2 Arterials

Unlike the freeway PeMS system, there is no single comprehensive source of daily traffic flow information on arterial roadways. Many cities do not regularly collect traffic counts or only do so for special studies or as needed in selected locations. Thus, it is not possible to develop a traffic volume flow profile for arterial roadways using actual traffic count data analogous to the PeMS database. As such, the Metro SRTP 2014 Model was used to identify daily volumes on selected key arterial corridors. While these are not actual measured volumes, they are computer model representations of 2014 traffic flow, which was validated to generally replicate existing conditions. The model is a useful tool to assess the overall magnitude of arterial traffic flow and to understand which roadways and segments carry the highest amount of traffic in the Central Los Angeles Mobility Matrix subregion. In addition, the City of Los Angeles's historical traffic count database has been used to validate the Metro model estimates. The actual average daily traffic counts have been extracted from the City's database for use in this study. Where the City's count differed from the Metro model estimate, the volume was updated to reflect the actual count value rather than the model estimate.

The corridors shown on Figure 5-3 include arterial roadways and other key regionally-significant corridors that were selected for the study. These arterial facilities form the backbone of surface streets for the Central Los Angeles Mobility Matrix subregion. As shown in Figure 5-4, the highest arterial volumes are experienced on portions of Vermont Avenue, Crenshaw Boulevard, Los Feliz Boulevard, Alameda Street, Soto Street, Venice Boulevard, Olympic Boulevard Santa, Monica Boulevard, Barham Boulevard, Martin Luther King, Jr. Boulevard, and Florence Avenue. All of those roadways have several segments with daily volumes exceeding 40,000 vehicles per day. Interestingly, none of the core Downtown area streets carry relatively higher volumes, due to the dense and closely spaced grid roadway system which carries the traffic load on a large number of facilities.

In addition to assessment of arterial roadway volumes, peak hour traffic speeds on study area arterial roadways were also analyzed through the use of iPeMS system. iPeMS gathers vehicle probe data along arterials and then delivers real-time and predictive traffic analytics. The vehicle probe data comes from cell phones and fleet (truck/taxi/bus/other) GPS units that are observed, and their position and speed are used to determine average speeds occurring throughout the day and during peak periods on the arterial system.

For this analysis, vehicle probe data were assessed for the months of January through April 2013, and for the hours of 7:30 to 8:30 AM and 4:30 to 5:30 PM. Similar to freeway PeMS, the data provides a visual snapshot of how the arterial system is performing, and can be used to assess points of slowing on the arterial system.

Using the collected data, vehicle speeds were posted on study area arterial roadways for both the AM and PM peak hours. These are shown in Figures 5-5 and 5-6. Figure 5-5 and 5-6 show that peak hour slowing occurs during AM and PM peak hours on many of the key arterial roadways in the Central area. Roads that are particularly impacted include Santa Monica Boulevard, Wilshire Boulevard, 6th Street, Alvarado Street and Alameda Street. The overall arterial system speeds are also generally slower during the PM peak hour throughout the Central Los Angeles Mobility Matrix subregion on the key arterials.

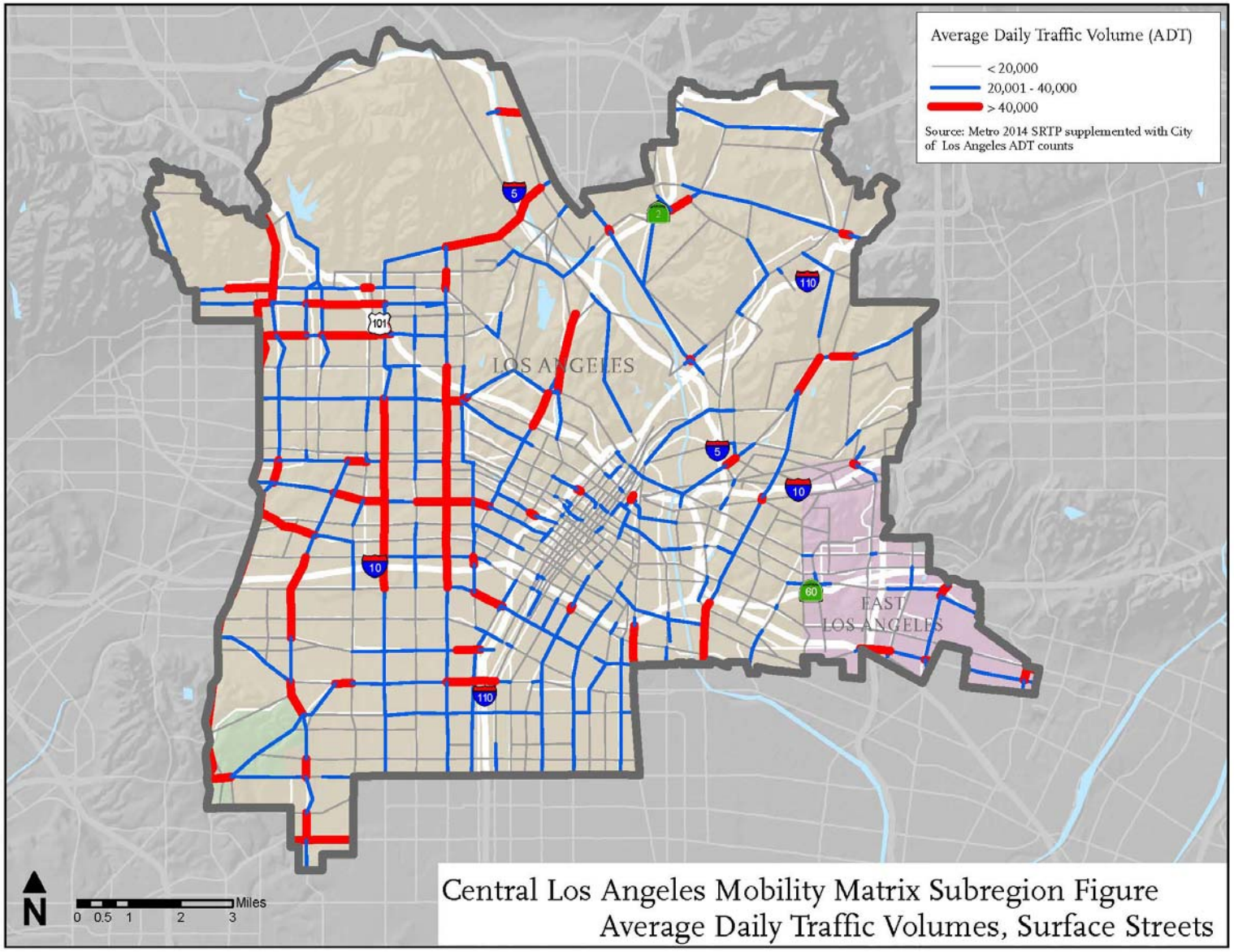

Figure 5-4: Average Daily Traffic Volumes, Surface Streets

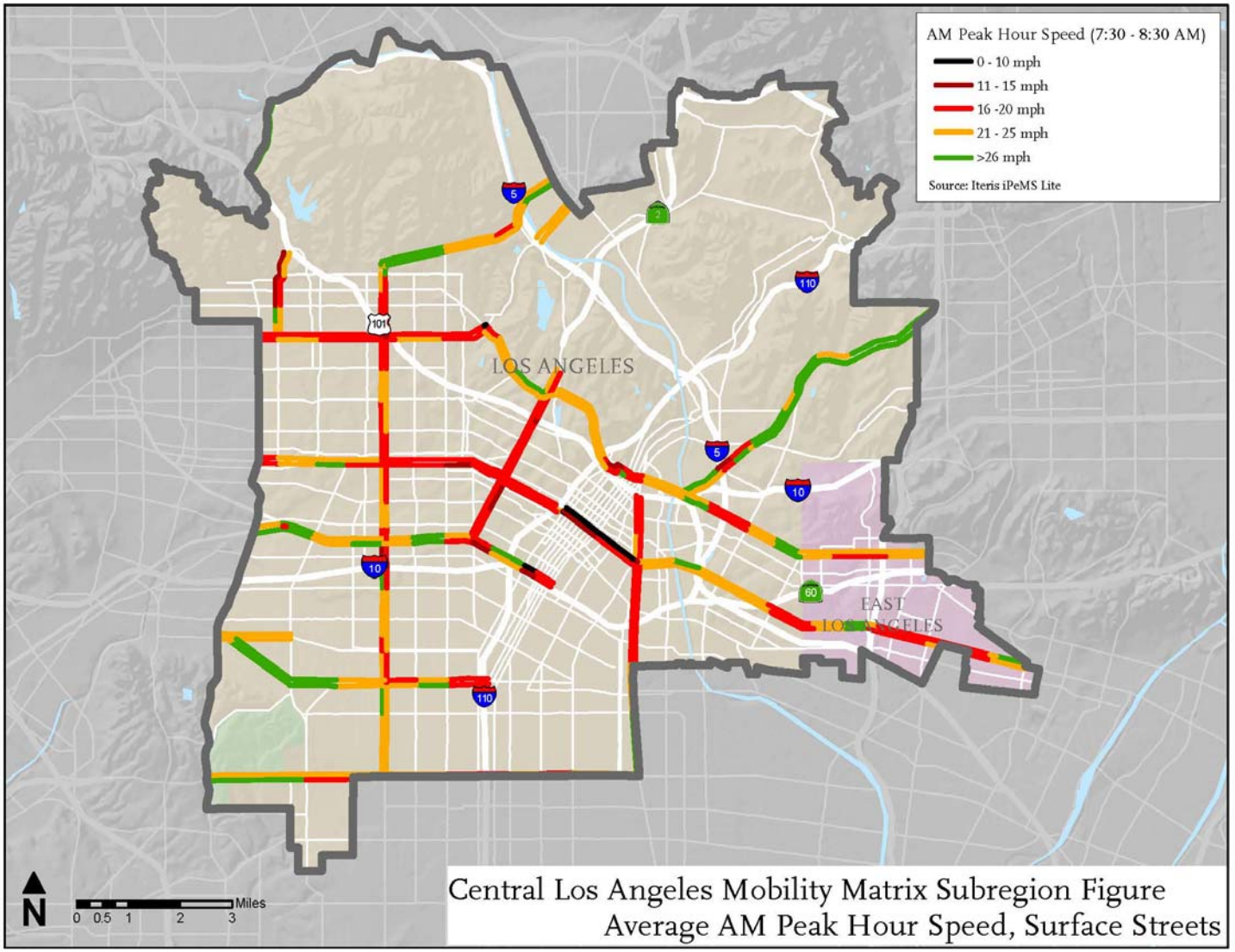

Figure 5-5: Average AM Peak Hour Speed, Surface Streets

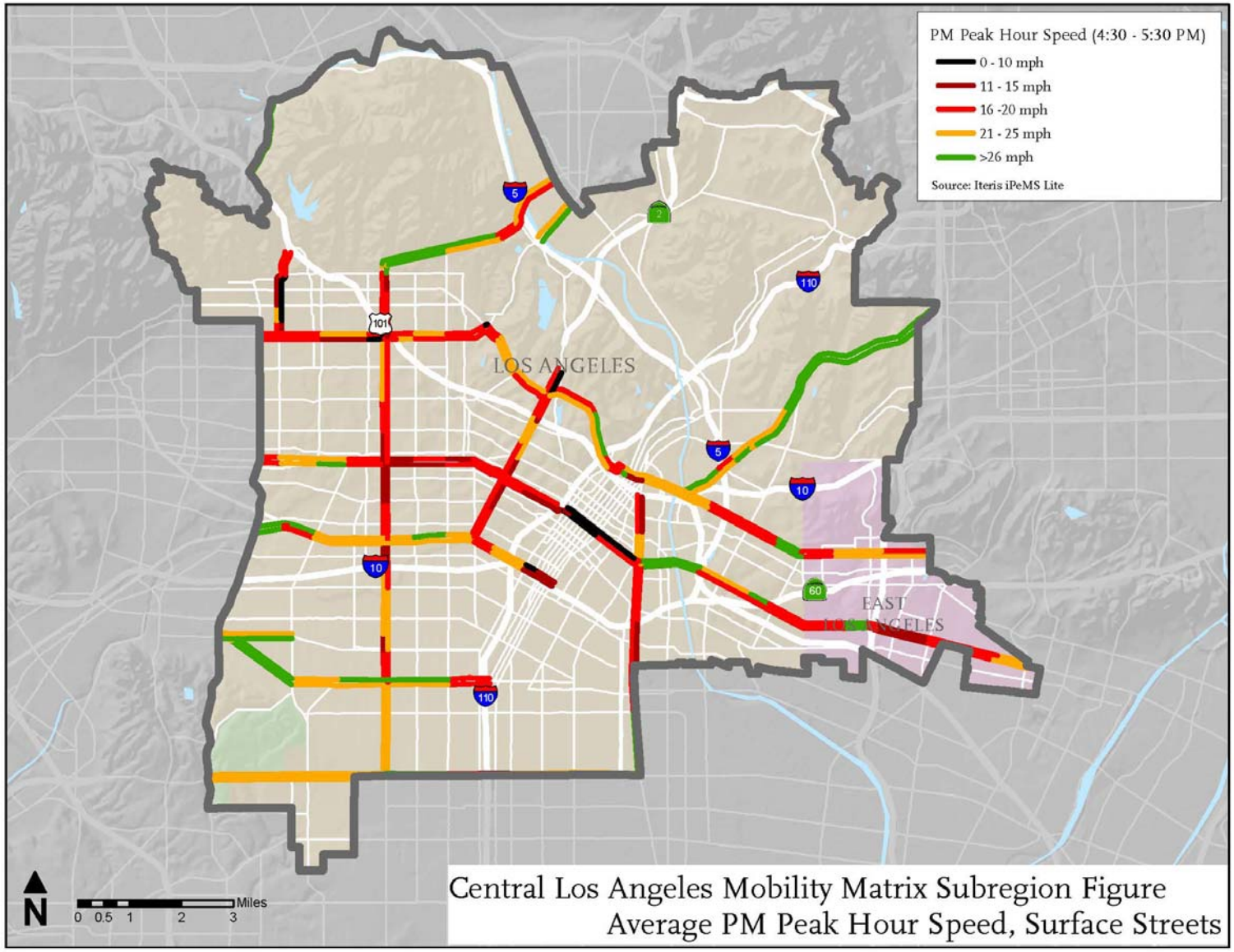

Figure 5-6: Average PM Peak Hour Speed, Surface Streets

5.3 Goods Movement

Figure 5-7 illustrates the designated truck route system in the subregion. The routes shown are the designated truck routes as adopted by the cities within the subregion. These routes are designated for use by trucks, including non-local "through" trucks which do not have a local destination. Trucks making local deliveries can legally use the entire arterial system, unless specifically prohibited by ordinance. Non-local through trucks must use the designated truck route system, as shown. In the Central area, the designated truck routes are mostly concentrated in the industrial area east and south of Downtown, along with some other key routes which feed trucks to I-10, US-101, I-5 and SR-2.

Figure 5-7 also shows the DRAFT Countywide Strategic Arterial Network (CSTAN). This is a network of arterial facilities designated by Metro. The CSTAN is intended to ultimately help with the development of goods movement policies for the Countywide arterial system through Metro's Long- and Short-Range Transportation Plans. The CSTAN will be used to assist Metro and local jurisdictions in the identification of regional goods movement priorities for the Call for Projects. The CSTAN can ultimately be used in the identification and prioritization of trucking and goods movement related projects. In the Central Los Angeles Mobility Matrix subregion, the CSTAN consists of much of the City of Los Angeles truck route network as identified in the draft Mobility Plan and it also includes some other key arterial routes which provide connectivity to the regional system. As expected, the CSTAN and City truck route system is concentrated in the industrial/commercial area to the southeast of Downtown. In addition, the draft CSTAN network includes other arterials that are not part of the City's truck route system in the Draft Mobility Plan, such as Washington Boulevard that parallels I-10, Santa Monica Boulevard and Highland Avenue that connect to the US-101 Freeway, Olympic Boulevard and Valley Boulevard that provide system connectivity west of Downtown and Alvarado Street and Sunset Boulevard that provide system connectivity east of Downtown.

Traffic collision data for the four year period from 2008 to 2011 were also reviewed to determine where collisions involving trucks have occurred. Figure 5-7 shows the locations of truck-involved collisions in the subregion. As shown, the collision locations are generally concentrated in the areas with the truck routes, with the intersections with the most frequent truck collisions occurring to the south and east of Downtown, in the industrial and warehousing locations.

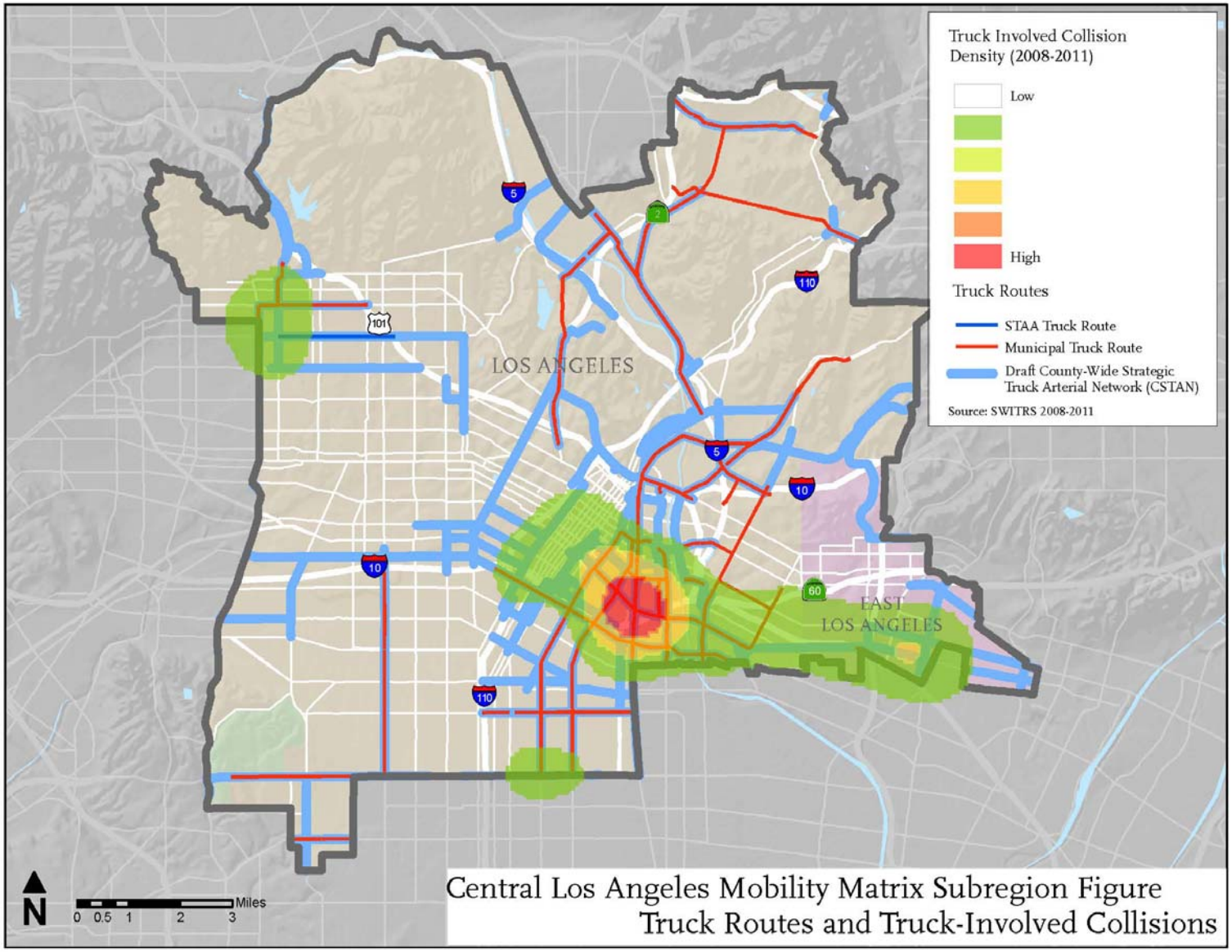

Figure 5-7: Truck Routes and Truck-Involved Collisions

6.0 ACTIVE TRANSPORTATION

6.1 Commute Mode Share

Bicycling and walking currently represent a small proportion of commute modes in the Central Los Angeles Mobility Matrix subregion, at less than 5% combined. A little more than two-thirds of commuters drive alone to work. Table 6-1 shows the Commute Modes in the Central Los Angeles Mobility Matrix subregion, with data from the 2010 Census.

Table 6-1. Commute Modes in Subregion

Mode	Mode Share
Bicycling	3.7%
Walking	0.8%
Carpooling	9.8%
Transit	11%
Drive Alone	68.4%

Source: Census, 2010

6.2 Bicycle Facilities

Bicycle Paths (Class I) – Class I Bike Paths are exclusive car-free facilities that are typically not located within a roadway area.

Bicycle Lanes (Class II) – Class II Bicycle Lanes are part of the street design that is dedicated only for bicycles and identified by a striped lane separating vehicle lanes from bicycle lanes.

Bicycle Routes and Bicycle-Friendly Streets (Class III) – Bicycle-Friendly Streets and Bicycle Routes (Class III) are in-road bikeways where bicycles and motor vehicle share the roadway. They are typically intended for streets with low traffic volumes, signalized intersections at crossings or wide outside lanes.

Figure 6-1 shows the 2014 bikeways for the study area. As shown in the map, the predominant type of bicycle facility in the Central Los Angeles Mobility Matrix subregion is Class III on-street bike routes, which are provided along many streets. In the northwest portion of the study area, and near the US-101 freeway corridor, there are a number of Class III bike routes with sharrows. A limited number of Class III routes are also provided. Class I bike paths follow the Los Angeles River alignment generally to the north and west of Downtown Los Angeles, and a portion of the Arroyo Seco which also parallels the SR-110 state highway.

6.3 Bicycle Collisions

The Statewide Integrated Traffic Records System (SWITRS) is a database that collects and processes data gathered from a collision scene. SWITRS data for the period from 2008 – 2011 were analyzed to identify the locations of bicycle-involved and pedestrian-involved collisions. Figure 6-2 illustrates the number of bicycle-involved collisions over the period of 2008 to 2011. The highest concentration of bicycle-involved collisions has occurred in the Downtown area generally east of SR-110 in the core of Downtown and another concentration of collisions occurred along Vermont Avenue, Sunset Boulevard and Wilshire Boulevard.

6.4 Pedestrian Collisions

Figure 6-3 shows the results of the pedestrian-involved collision analysis for 2008 to 2011, also with data from SWITRS. Pedestrian-involved are shown by location on a relative scale. Locations with 1 to 5 pedestrian involved collisions are shown in varying shades of green, while those with 6 or more pedestrian collisions are shown in varying shades of blue. As illustrated by the data shown in the figure, the Downtown area and the area generally west of Downtown have the highest overall concentrations of pedestrian collisions. Both of these areas have very high pedestrian volumes and closely spaced streets with many intersections and therefore create more pedestrian crossing opportunities and potential conflict points. Key routes with the largest proportionate share of pedestrian-involved collisions include the following; on the west side of the study area they include Western Avenue, Normandie Avenue, Alvarado Street, Hollywood Boulevard, Sunset Boulevard and Santa Monica Boulevard. South of Downtown, the key streets with the most pedestrian collisions include Broadway, Main Street, Avalon Boulevard and Central Avenue. To the east of Downtown, the streets with the highest concentration of pedestrian-involved collisions include Whittier Boulevard and Soto Street. On the north end of the Central Los Angeles Mobility Matrix subregion, Figueroa Street and Fletcher Drive show a higher concentration of pedestrian-involved collisions.

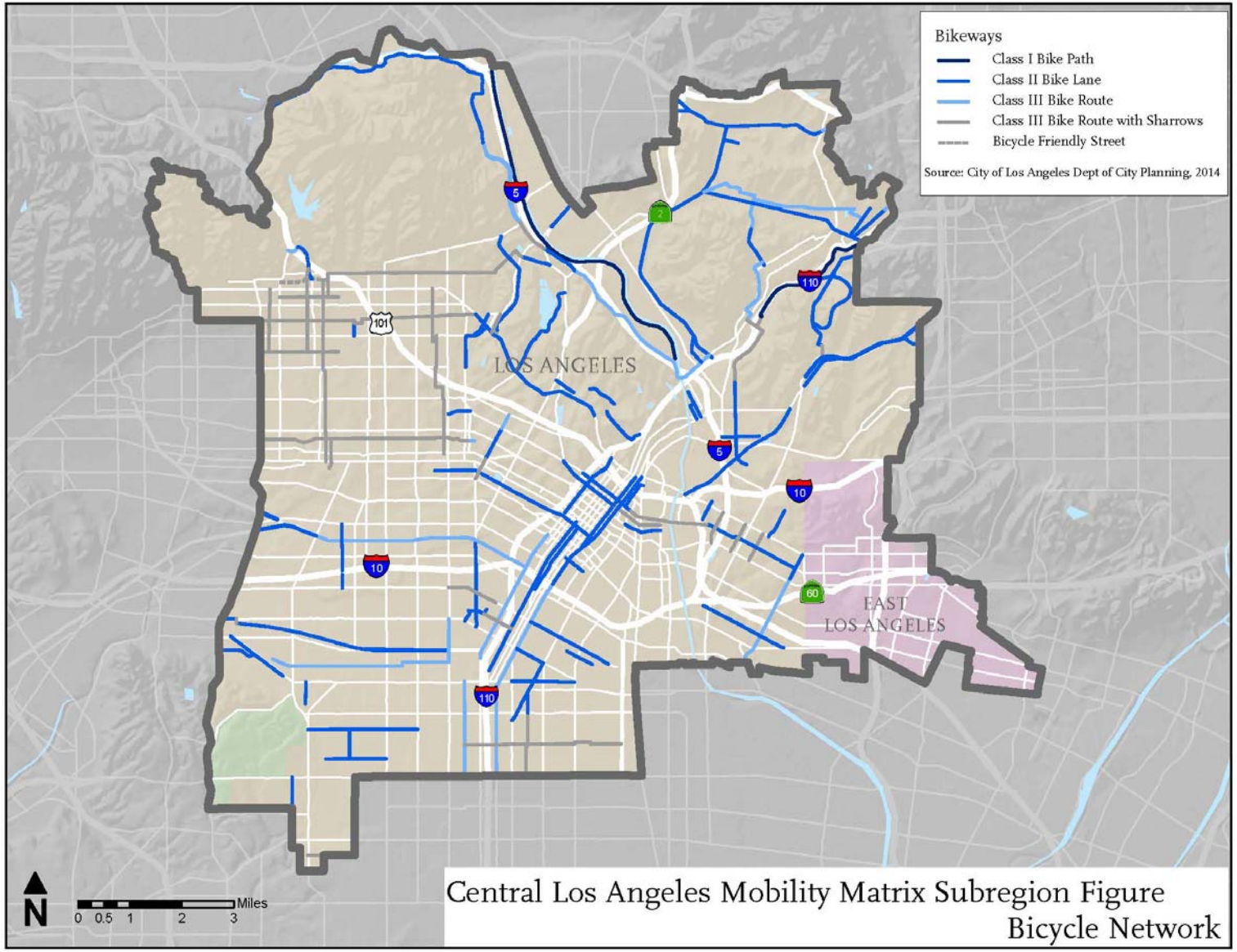

Figure 6-1: 2014 Bicycle Network

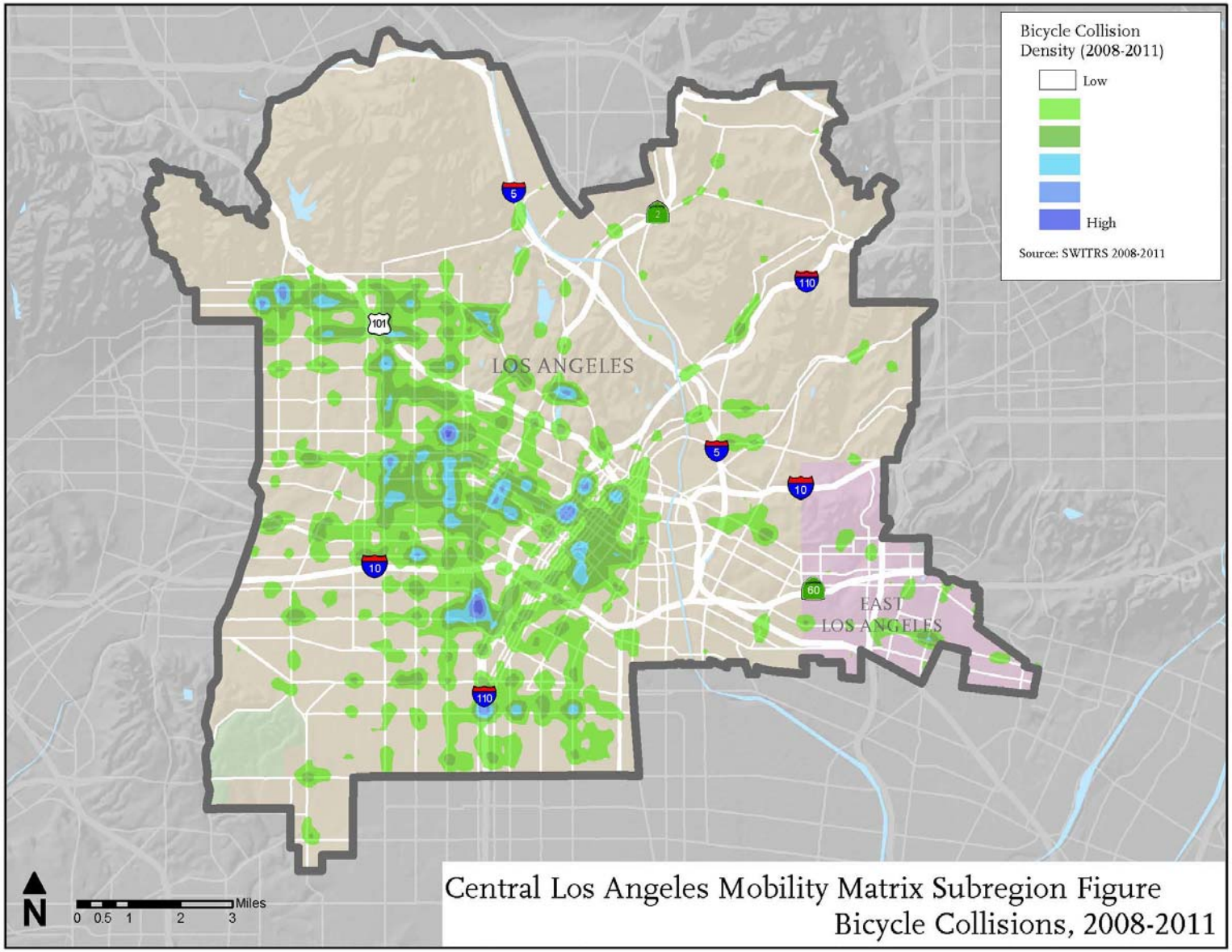

Figure 6-2: Bicycle Collisions, 2008-2011

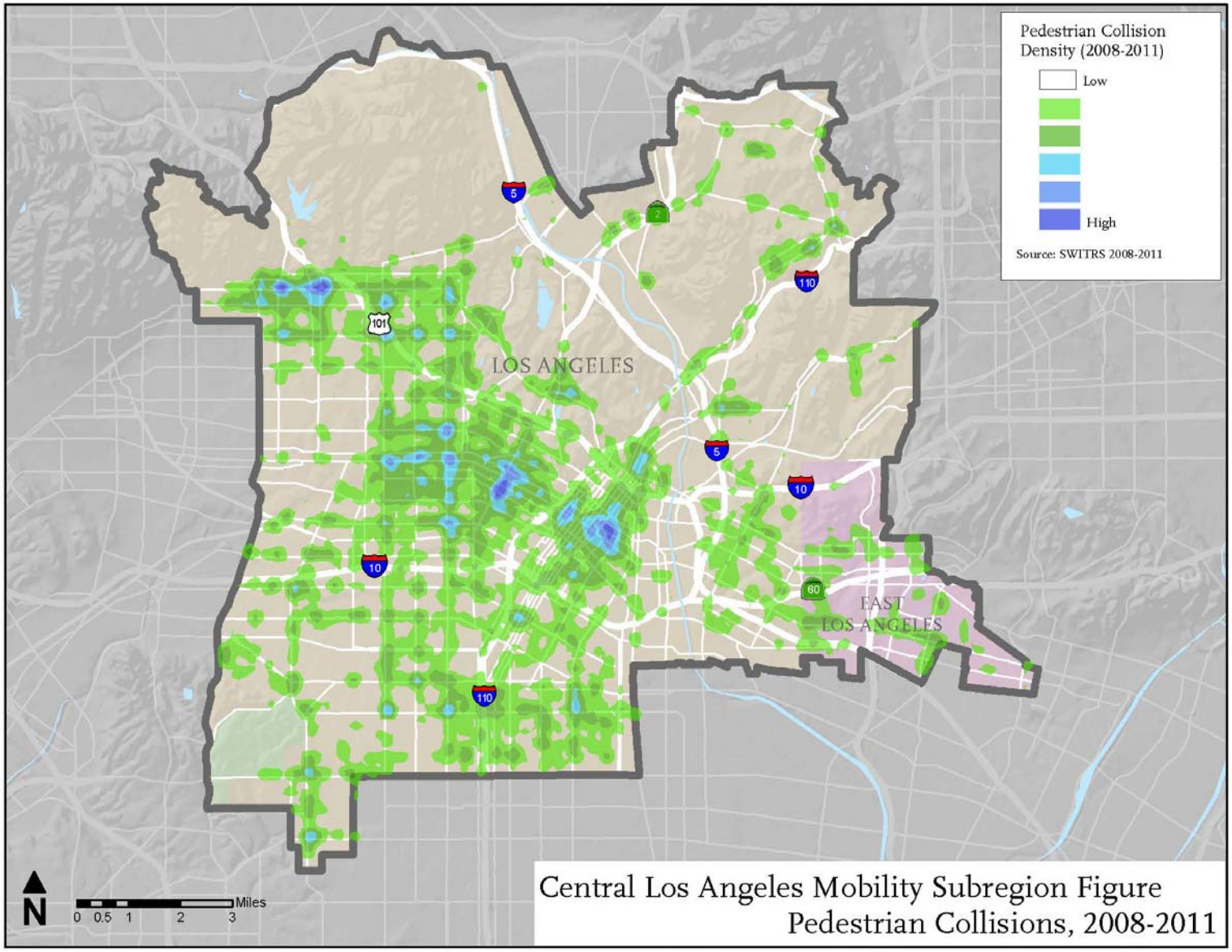

Figure 6-3: Pedestrian Collisions, 2008-2011

6.5 Safety

SWITRS data for the entire City of Los Angeles for the period from 2008 and 2011 were analyzed to reveal additional information about bicycle-involved and pedestrian-involved collisions.

In the 4-year period analyzed, a total of 141,518 collisions occurred in the City of Los Angeles. Of those, 7,364, or 5% of the total, involved a bicyclist. Almost all bicycle collisions resulted in a complaint of at least some pain (96%), with 6% suffering severe injuries. Less than 1% of bicycle-involved collisions were fatal. The most common type of bicycle-involved collision was broadside (51%). The top three factors for bicycle-involved collisions included driving on the wrong side of the road (28%), failure to yield right of way (24%), and failure to obey traffic signals and signs (10%). During the four year period, 10,170 pedestrian-involved collisions occurred, equal to 7% of the total collisions. Almost all pedestrian-involved collisions resulted in a complaint of at least some pain (96%), with 12% suffering severe injuries. Approximately 3% of pedestrian-involved collisions were fatal. The top three factors for pedestrian-involved collisions included violation of the pedestrian right of way (38%), pedestrian violations (31%), and unsafe speed (5%).

Table 6-2: SWITRS Statistics, 2008 - 2011

City of Los Angeles		
Total Collisions	141,518	
	Bicycle	Pedestrian
Number of Collisions	7,364	10,170
Percent of City Total	5%	7%
Collision Severity		
Fatal	< 1%	3%
Severe	6%	12%
Other Visible Injury	47%	39%
Complaint of Pain	43%	45%
Collision Type		
Broadside	51%	5%
Head On	5%	4%
Hit Object	1%	0%
Not Stated	4%	1%
Other	21%	1%
Overturned	0%	0%
Rear End	4%	1%
Sideswipe	12%	3%
Vehicle/Pedestrian	4%	85%

Table 6-2. SWITRS Statistics, 2008 - 2011 (Continued)

City of Los Angeles		
	Bicycle	Pedestrian
Collision Factors		
Auto Right of Way	24%	3%
Following Too Closely	1%	-
Improper Passing	2%	1%
Improper Turning	8%	1%
Not Stated	3%	4%
Other Hazard	6%	1%
Other Improper Driving	2%	2%
Other Than Driver	1%	1%
Ped Right of Way	1%	38%
Ped Violation	1%	31%
Traffic Signals & Signs	10%	3%
Under the Influence	1%	1%
Unknown	3%	4%
Unsafe Lane Change	3%	-
Unsafe Speed	5%	5%
Unsafe Starting/Backing	2%	4%
Wrong Side of Road	28%	1%

7.0 TRANSIT

Figure 7-1 illustrates the 2014 passenger rail transportation network in the Central Los Angeles Mobility Matrix subregion as well as the daily weekday boardings at the station locations. These data provide an indication of the overall usage of each passenger rail transit route within the Central Los Angeles Mobility Matrix subregion, and where the boardings occur. The Central area has several regionally significant transit routes including the Metro Red Line, Metro Expo Line, Metro Gold Line, Metro Purple Line, Metro Blue Line and Metrolink. Several express bus services run by Metro (not shown) enter the Downtown area from all directions, along with a grid network of local bus services which serve the Downtown area as well. Data is from Metro 2012 Rail Ridership and Metrolink 2014 Average Rail Ridership

The daily weekday boarding data indicate that the highest passenger rail ridership within the Central Los Angeles Mobility Matrix subregion occurs on the Metro Red Line. Two Metro Red Line stations have over 20,000 daily boardings, including the major stations at 7th/Metro Center and Union Station. The Pershing Square station experiences daily boardings of between 10,001 and 20,000 riders, as does Wilshire/Vermont. All other Metro Red Line stops within the Central Los Angeles Mobility Matrix subregion experience between 5,001 to 10,000 daily weekday boardings. The Metro Blue Line and Metro Expo Line experience fewer boardings than the Red Line, with several stops along each route experiencing up to 2,500 daily boardings and a few experiencing between 1,001 to 2,500 daily boardings. Similarly, most of the Metro Gold Line stops experience between 501 to 1,000 boardings daily, with only the Union Station generating over 10,000 boardings per day. The Metrolink commuter rail stop at Union Station experiences from 5,001 to 10,000 boardings on a typical weekday. Data was provided by Metro.

Additionally, several express bus services run by Metro, Santa Monica Big Blue Bus, Culver City Transit, and other services are operated within the subregion, along with a grid network of local bus services which serve the subregion's cities as well. Table 7-1 and 7-2 list the Metro and municipal bus routes within the subregion as of the end of 2014, and Figure 7-2 illustrates the bus transit network in the subregion as of the end of 2014.

Countywide, regional, and local bus systems provide important connections to other transit systems, such as Metrolink and Metro rail lines, as well as access to key activity centers throughout the Central Los Angeles Mobility Matrix subregion. The following describes the bus services available in the subregion.

- Los Angeles Metro – Metro currently operates 86 bus routes within the subregion (seven commercial circulators, 17 Rapid/BRT routes, 30 local CBD routes, six limited/express route, and 26 non-CBD routes).
- Alhambra Community Transit – Alhambra Community Transit is a shuttle that operates one bus route, the Blue Route, within the subregion.
- Antelope Valley Transit (AVT) – AVT currently operates two commuter express routes, Route 795 and 786, within the subregion.

- Children's Court Shuttle – Children's Court Shuttle is a free shuttle service that operates one route through the subregion.
- Commerce Transit – Commerce Transit currently operates four routes, the Blue, Orange, Red and an Express route, within the subregion.
- East Los Angeles Shuttle – The East Los Angeles Shuttle is a shuttle service that operates three routes within the subregion.
- Foothill Transit – Foothill Transit currently operates seven bus routes within the subregion.
- Gardena Bus Lines – Gardena Bus Lines currently operates one express bus route, Route 1X, within the subregion.
- Glendale BeeLine – The Glendale BeeLine currently operates one route, Route 6, within the subregion.
- LADOT Commuter Express – LADOT currently operates 13 Commuter Express routes within the subregion. LADOT DASH – LADOT currently operates 26 DASH routes within the subregion.
- Monterey Park Sprirt Bus – The Monterey Park Spirit Bus currently operates one route within the subregion.
- Montebello Bus Lines – Montebello Bus Lines currently operate seven bus routes within the subregion.
- Santa Clarita Transit – Santa Clarita Transit currently operates two express routes, Route 794 and 799, within the subregion.
- Santa Monica Big Blue Bus – Santa Monica Big Blue Bus currently operates four bus routes within the subregion.
- Torrance Transit – Torrance Transit currently operates one bus route, Route 4, within the subregion.

Table 7-1: 2014 Metro Bus Routes

Metro	Route	Peak Headway
Metro - Commercial Circulator	603	10-15
	605	15
	607	55
	612	60
	620	60
	665	30-40
	685	30
Metro - Rapid/BRT	704	10-15
	705	10-20
	710	10-20
	720	2-10
	728	10-12
	733	7-15
	740	15
	745	5-13
	751	12-15
	754	5-12
	757	6-15
	760	8-20
	762	17-30
	770	10-15
	780	10-12
	794	15-20
	910	4-5
Metro - Local CBD	2	5-15
	4	9-12
	10	8-15
	14	5-8
	16	3-8
	18	3-8
	20	6-15
	28	6-15
	30	6-12
	33	6-15
	35	12
	40	7-12
	45	4-8
	51	3-12
	53	4-14
	55	8-15
	60	6-7
	62	15-40
	66	3-12

Metro	Route	Peak Headway
Metro - Local CBD	68	13-16
	70	10-15
	71	15-35
	76	12-15
	78	6-20
	81	6-12
	83	20-30
	90	30-50
	92	16-20
	94	15-20
	96	30-35
Metro - Limited/Express	442	20-35
	450	10-30
	460	20-30
	485	30-60
	487	20-30
	550	30-40
Metro Non-CBD	102	36
	105	10-16
	108	8-15
	110	10-20
	111	9-20
	156	25-40
	175	8-60
	176	45
	180	35
	200	5-13
	201	50
	204	6-10
	206	8-16
	207	8-12
	209	45-55
	210	10-20
	212	10-12
	217	12-20
	218	30-35
	222	26-45
	251	15-20
	252	24
	254	30-60
	256	45
	258	35-45
	260	10-20

* TBD - Route may have been recently discontinued.

Table 7-2: 2014 Municipal Bus Routes

Municipal Provider	Route	Peak Headway
Alhambra Community Transit	ACT-BLUE	20
Antelope Valley Transit	AVT-785	15-30
Antelope Valley Transit	AVT-786	4 AM/PM Daily Runs
Children's Court Shuttle	N/A	10-30
Commerce Transit	CO X	35-50
Commerce Transit	CT-Blue	60
Commerce Transit	CT-Orange	60+
Commerce Transit	CT-Red	53-60
East Los Angeles Shuttle	CT-ELAC	50
East Los Angeles Shuttle	UP/SP	45
East Los Angeles Shuttle	W/SP	45
Foothill Transit	FT-481	15-20
Foothill Transit	FT-493	5-15
Foothill Transit	FT-497	*
Foothill Transit	FT-498	5-30
Foothill Transit	FT-499	*
Foothill Transit	FT-699	5-15
Foothill Transit	FT-707	8-20
Gardena Bus Lines	GB-1X	30
Glendale BeeLine	GB-6	15-30
LA DOT Commuter Express	CX-409	10-40
LA DOT Commuter Express	CX-413	*
LA DOT Commuter Express	CX-419	15-20
LA DOT Commuter Express	CX-422	*
LA DOT Commuter Express	CX-423	5-40
LA DOT Commuter Express	CX-430	*
LA DOT Commuter Express	CX-431	25-30
LA DOT Commuter Express	CX-437	15-30
LA DOT Commuter Express	CX-438	7-30
LA DOT Commuter Express	CX-448	*
LA DOT Commuter Express	CX-534	20-30
LA DOT Commuter Express	CX-549	30-35
LA DOT Commuter Express	CX-MLS	N/A
LA DOT DASH	DA-S	20
LA DOT DASH	DA-A	7
LA DOT DASH	DA-B	8
LA DOT DASH	DA-BEA	25
LA DOT DASH	DA-BOY	20
LA DOT DASH	DA-CHE	20
LA DOT DASH	DA-CRE	30
LA DOT DASH	DA-D	5-15
LA DOT DASH	DA-E	5
LA DOT DASH	DA-ELS	15-25
LA DOT DASH	DA-F	10
LA DOT DASH	DA-FAI	30
LA DOT DASH	DA-HIG	20
LA DOT DASH	DA-HOL	30
LA DOT DASH	DA-HOW	25-30
LA DOT DASH	DA-KIN	20
LA DOT DASH	DA-LAR	12
LA DOT DASH	DA-LEI	25
LA DOT DASH	DA-LIN	30
LA DOT DASH	DA-LOS	15-20
LA DOT DASH	DA-MID	30
LA DOT DASH	DA-PIC	*
LA DOT DASH	DA-PUE	10-12
LA DOT DASH	DA-SOU	20
LA DOT DASH	DA-WCK	20
LA DOT DASH	DA-WEE	35 (Weekend)
Montebello Bus Lines	MB-10	10-20
Montebello Bus Lines	MB-30	50
Montebello Bus Lines	MB-40	15-35
Montebello Bus Lines	MB-50	30
Montebello Bus Lines	MB-70	30-35
Montebello Bus Lines	MB-341	20-25
Montebello Bus Lines	MB-342	20-25
Monterey Park Spirit Bus	N/A	40
Santa Clarita Transit	SC-794	3-4 AM/PM Daily Runs
Santa Clarita Transit	SC-799	15-20
Santa Monica's Big Blue Bus	SM-5	15-30
Santa Monica's Big Blue Bus	SM-7/7R	12-20
Santa Monica's Big Blue Bus	SM-10	20
Santa Monica's Big Blue Bus	SM-13	4 AM/PM Daily Runs
Torrance Transit	TT-4	4-5 AM/PM Daily Runs

* TBD - Route may have been recently discontinued.

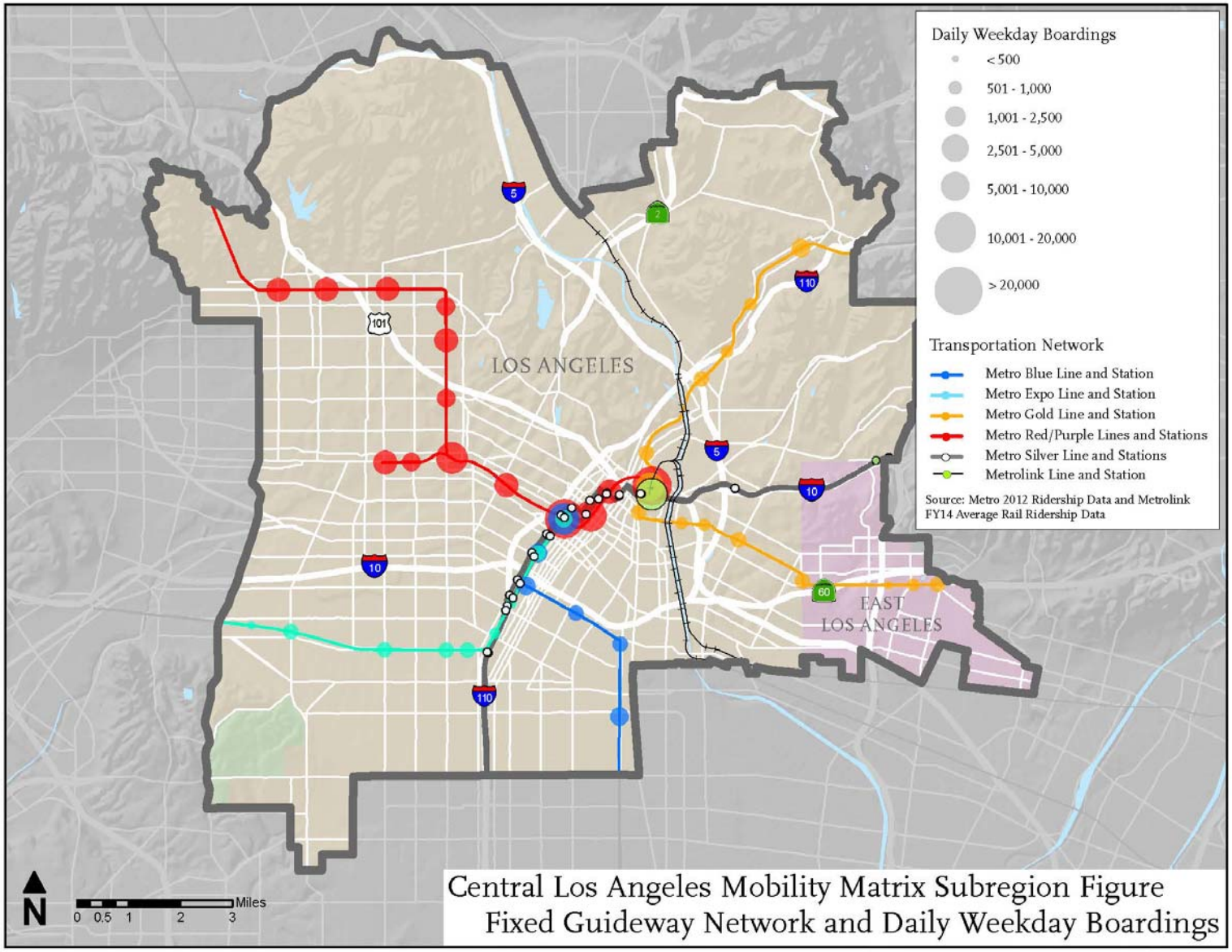

Figure 7-1: 2014 Fixed Guideway Network and Daily Weekday Boardings

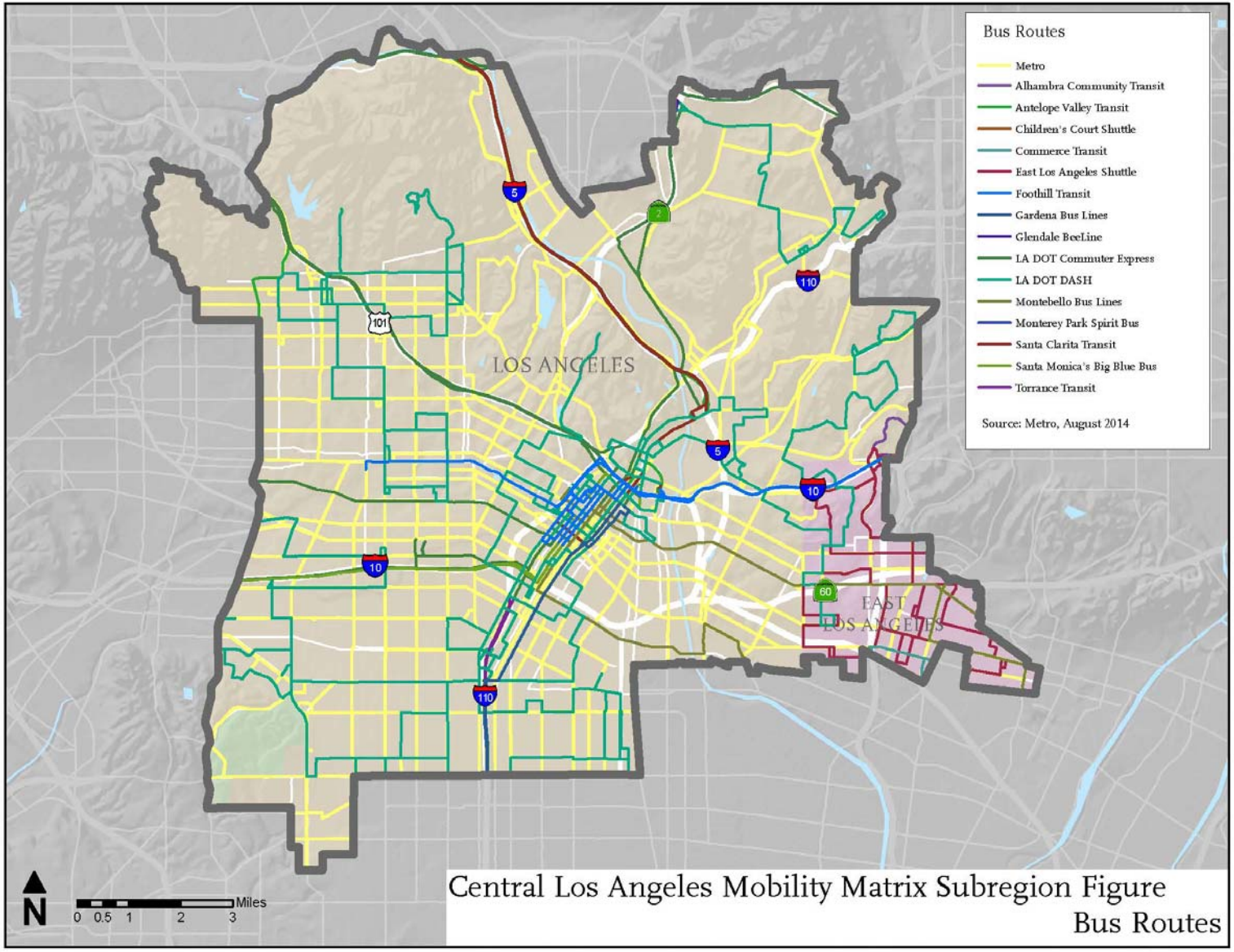

Figure 7-2: 2014 Bus Routes

8.0 SUMMARY/CONCLUSIONS

This document presents an overview of 2014 baseline transportation conditions within the Central Los Angeles Mobility Matrix subregion. It provides key information, at the subregional level, that can be used to understand the major transportation conditions and issues in the area, and it will be used to assist in the subregional needs assessment as well as project level assessment.
The following information has been assessed as part of this baseline conditions analysis effort:

- Existing projects and studies;
- Demographics;
- Land Uses in the subregion;
- Population and Employment change projected from 2014 to 2024;
- Environmental Justice measures: socioeconomic vulnerability or physical exposure, such as low income, low education attainment, linguistic isolation, pollution exposure, hazardous waste exposure, or traffic exposure;
- Travel Markets: including an assessment of the magnitude of trip origins and destinations to and from the subregion from other subregions;
- Goods Movement: designated truck routes per the Draft City Mobility Plan, truck-involved collision concentrations and the Draft Countywide Strategic Arterial Truck Network (CSTAN) within the area;
- Freeways;
- Freeway average daily traffic flow;
- Freeway AM and PM peak hour speeds;
- Arterial Roadways;
- Arterial roadways daily traffic flow;
- Arterial roadways AM and PM peak hour speeds;
- Active Transportation;
- Bicycle routes and bicycle-involved collisions;
- Pedestrian-involved collisions;
- Transit: passenger rail routes, including stops and average daily boardings at each stop; bus routes including Metro Rapid.

By reviewing this information, a summary of the subregion's transportation conditions can be determined. The following summarizes the results of the research and analysis in each topical area that has been assessed for the Mobility Matrix baseline conditions analysis.

8.1 Land Use

The Central Los Angeles Mobility Matrix subregion is predominantly residential with the exception of the commercial area in Downtown Los Angeles west of I-110, and a large industrial area generally located between I-10, SR-101 and I-5 in the eastern portion of Downtown. Other major commercial corridors are spread throughout the subregion on major arterial roadways. The transportation system must serve a mix of trip types including home-based trips of all kinds as well as a large proportion of commute trips to Downtown.

8.2 Demographics

The highest amount of growth in both population and employment is projected to occur in the Downtown area. Additional concentrations of added population are shown to the east of Downtown and east of I-110 as well as generally to the west of Downtown, north of Wilshire Boulevard and south of SR-101. Growth is also projected in the rest of the study area, but at lower densities.

8.3 Environmental Justice

The California Environmental Health Hazard Screening Tool (CalEnviroScreen) aggregates variables that indicate certain types of socioeconomic vulnerability or physical exposure. The resulting indexed score shows the communities most disproportionately burdened by multiple types of exposure and risk. The areas with the highest (worst) CalEnviroScreen scores are located generally east of I-110 in the southeastern quadrant of the Central Los Angeles Mobility Matrix subregion. In this area, the highest range of scores, from 51 to 90, occur.

8.4 Travel Markets

Of the trips produced in the Central area, the highest volume of trips is destined for the Westside Cities Mobility Matrix subregion, where approximately 596,000 daily trips, or 12% of all trips produced by Central Los Angeles are destined on an average day. The highest number of trips attracted to the Central Los Angeles Mobility Matrix subregion come from the San Gabriel Valley (9%), followed closely by Gateway Cities (8%) and San Fernando Valley (also 8%) and Westside (6%). Of the approximate 5,065,000 total daily trips produced, and 5,295,000 daily trips attracted, almost 60%, or approximately 3,000,000 trips stay within the Central Los Angeles Mobility Matrix subregion.

8.5 Freeways

The freeway system serving downtown does not have the highest traffic volumes as compared to some other Mobility Matrix subregions, but it has a very high concentration of congestion and slow speeds during peak hours. The entire "ring" system around downtown is within the Central area and it essentially experiences severe congestion and slow speeds on nearly every segment during the peak periods, with the PM peak period experiencing the highest level of congestion. The freeway routes outside of the Downtown core also experience significant congestion due to commuter traffic to and from downtown as well, based on a large amount of non-local "through traffic" that passes through the area but does not have a local destination.

8.6 Arterial Roadways

Some of the highest arterial volumes are experienced on portions of Vermont Avenue, Crenshaw Boulevard, Los Feliz Boulevard, Alameda Street, Soto Street, Venice Boulevard, Olympic Boulevard Santa Monica Boulevard, Barham Boulevard, Martin Luther King Jr. Boulevard and Florence Avenue. All of those roadways have several segments with daily volumes exceeding 40,000 vehicles per day. Peak hour slowing occurs during AM and PM peak hours on many of the key arterial roadways in the Central area, with the PM peak experiencing overall slower speeds. Roads that are particularly impacted include Santa Monica Boulevard, Wilshire Boulevard, 6th Street, Alvarado Street and Alameda Street. The overall arterial system speeds are also generally slower during the PM peak hour

throughout the Central Los Angeles Mobility Matrix subregion on the key arterials.

8.7 Goods Movement

In the Central area, the designated truck routes are mostly concentrated in the industrial area east and south of Downtown, along with some other key routes which feed trucks to I-10, SR-101, I-5 and SR-2. Truck-involved crashes in the subregion are generally concentrated in the areas with the truck routes, with the intersections with the highest number of truck crashes occurring to the south and east of Downtown, in the industrial and warehousing locations. In the Central Los Angeles Mobility Matrix subregion, the Draft CSTAN consists of much of the City of Los Angeles truck route network as identified in the Draft Mobility Plan and it also includes some other key arterial routes which provide connectivity to the regional system. As expected, the CSTAN and City truck route system is concentrated in the industrial/commercial area to the southeast of Downtown. In addition, the draft CSTAN network includes other arterials that are not part of the City's truck route system.

8.8 Bicycles

The Central Los Angeles Mobility Matrix subregion has a network of Class III on-street bike routes, which are provided along many streets. In the northwest portion of the study area, and near the SR-101 freeway corridor, there are a number of Class III bike routes with sharrows. A limited number of Class III routes are also provided. Class I bike paths follow the Los Angeles River alignment generally to the north and west of Downtown Los Angeles, and a portion of the Arroyo Seco which also parallels the I-110 freeway. The highest concentration of bicycle-involved collisions has occurred in the Downtown area generally east of I-110 in the core of Downtown and another concentration of collisions occurred along Vermont Avenue, Sunset Boulevard, and Wilshire Boulevard.

8.9 Pedestrians

Pedestrian-involved collision concentrations are generally within Downtown and west of Downtown. Both of these areas have very high pedestrian volumes and closely spaced streets with many intersections and therefore create more pedestrian crossing opportunities and potential conflict points. Other key routes with the largest proportionate share of pedestrian-involved collisions include the following; on the west side of the study area they include Western Avenue, Normandie Avenue, Alvarado Street, Hollywood Boulevard, Sunset Boulevard and Santa Monica Boulevard. South of Downtown, the key streets with the most pedestrian collisions include Broadway, Main Street, Avalon Boulevard and Central Avenue. To the east of Downtown, the streets with the highest concentration of pedestrian-involved collisions include Whittier Boulevard and Soto Street. On the north end of the subregion, Figueroa Street and Fletcher Drive show a higher concentration of pedestrian-involved collisions.

8.10 Transit

The Central area has several regionally significant transit routes including the Metro Red Line, Metro Expo Line, Metro Gold Line, Metro Purple Line, Metro Blue Line and Metrolink. The highest passenger rail ridership within the Central Los Angeles Mobility Matrix subregion occurs on the Metro Red Line. Two Metro Red Line stations have over 20,000 daily boardings, including the major stations at 7th/Metro

Center and Union Station. Other Metro Red Line stops within the Central Los Angeles Mobility Matrix subregion experience from 5,001 to 10,000 daily weekday boardings. The Metro Blue Line and Metro Expo Line experience fewer boardings than the Red Line, with several stops along each route experiencing up to 2,500 daily boardings and a few experiencing between 1,001 to 2,500 daily boardings. Similarly, most of the Metro Gold Line stops experience between 501 to 1,000 boardings daily, with only the Union Station generating over 10,000 boardings per day. The Metrolink commuter rail stop at Union Station experiences from 5,001 to 10,000 boardings on a typical weekday.

In summary, the Central Los Angeles Mobility Matrix subregion is expected to experience moderate to high growth, predominantly in the Downtown and in the area immediately west of Downtown. This growth will add to the current significant congestion that already exists in the subregion, both on the freeways that serve the area as well as the key arterial roadways. The Central Los Angeles Mobility Matrix subregion freeways are well travelled and experience severe congestion and low speeds during both peak periods, with the PM peak period experiencing the slowest speeds overall. Several key arterial roadways already carry over 40,000 vehicles per day and many of the key arterial routes experience significant slowing, again with the PM peak experiencing the worst slowing and congestion. The bicycle network is growing due to implementation of the City's Draft Mobility Plan and Bicycle Master Plan, however, there are concentrations of bicycle-related collisions on selected arterial streets. Pedestrian-involved collisions are concentrated in Downtown and a few other selected arterial routes as well. A mix of multi-modal solutions and projects would help address the various transportation issues and conditions such as congestion, slow speeds, high volumes and collision concentrations as shown in this baseline analysis.