Strategic Transportation Plan
Final Report

Submitted by
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Submitted to
Gateway Cities Council of Governments

March, 2016
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Please note, appendix materials are provided in separate documents.
1.0 STP Background & Purpose

1.1 Overview

This report summarizes the Strategic Transportation Plan (STP), conducted for the Gateway Cities Council of Governments (GCCOG) subregion over a two-year period from 2013 to 2015. One of the primary objectives of the GCCOG is coordination of transportation infrastructure among its member agencies, neighboring jurisdictions and other regional agencies including the Los Angeles County Metropolitan Transportation Authority (Metro).

Over the past fifteen years the GCCOG, Metro, and member jurisdictions have conducted numerous transportation studies to improve the complex transportation network within the Gateway Cities. However, no strategic multimodal assessment of all planned and proposed improvements had been attempted until now.

The STP encompasses all modes of surface transportation in the Gateway Cities, including:

- Local and regional arterial highways;
- Freeways;
- Local and regional transit;
- Park-and-ride lots;
- Active transportation; and
- Goods movement and logistics.

The STP incorporates previous planning efforts of subregional significance, and expands upon them with new research, outreach and recommended transportation system concept improvements for each mode. This plan uses new, state-of-the-art multimodal modeling and analysis to develop a strategic plan for subregional travel throughout the Gateway Cities and connecting to the Southern California region. Finally, it’s important to note that this plan has been developed via a collaborative process that included significant input, review and approval of all of the jurisdictions throughout the process of developing the plan.

The Gateway Cities Council of Governments

The GCCOG is a Joint Powers Authority (JPA) representing 27 cities and several unincorporated county areas in southeast Los Angeles plus the Port of Long Beach (see Figure 1.1). Table 1.1 lists all GCCOG member jurisdictions. All GCCOG member cities with the exception of Avalon are

\[1\] A Joint Powers Authority is a cooperative agency that enables government agencies or public authorities to work together on issues where their jurisdictions overlap.
covered by the STP and were active participants in the development of the Plan. Thus, all technical analyses described in this report cover the 27 city area (excluding Avalon) plus the County of Los Angeles unincorporated areas and the Port of Long Beach. It is the GCCOG’s mission to represent member governments with a unified voice to advocate on issues concerning transportation, air quality, housing, and economic development. The GCCOG provides a structure for member cities to act cooperatively to address these issues.

Figure 1.1 Gateway Cities Subregion

Table 1.1 Gateway Cities Member Jurisdictions

<table>
<thead>
<tr>
<th>Cities</th>
<th>Cities</th>
<th>Cities</th>
<th>Cities</th>
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<tbody>
<tr>
<td>Artesia</td>
<td>Compton</td>
<td>La Mirada</td>
<td>Paramount</td>
</tr>
<tr>
<td>Avalon</td>
<td>Cudahy</td>
<td>Lakewood</td>
<td>Pico Rivera</td>
</tr>
<tr>
<td>Bell</td>
<td>Downey</td>
<td>Long Beach</td>
<td>Santa Fe Springs</td>
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<td>Bellflower</td>
<td>Hawaiian Gardens</td>
<td>Lynwood</td>
<td>Signal Hill</td>
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<tr>
<td>Bell Gardens</td>
<td>Huntington Park</td>
<td>Maywood</td>
<td>South Gate</td>
</tr>
<tr>
<td>Cerritos</td>
<td>Industry</td>
<td>Montebello</td>
<td>Vernon</td>
</tr>
<tr>
<td>Commerce</td>
<td>La Habra Heights</td>
<td>Norwalk</td>
<td>Whittier</td>
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</table>

Unincorporated Areas of Los Angeles County

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<tr>
<th>District 1</th>
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<th>District 4</th>
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<tbody>
<tr>
<td>East Los Angeles</td>
<td>East Rancho Dominguez</td>
<td>East La Mirada</td>
</tr>
<tr>
<td>Walnut Park</td>
<td>Florence/Graham</td>
<td>East Whittier</td>
</tr>
<tr>
<td>West Whittier (portion)</td>
<td>Rancho Dominguez</td>
<td>Los Nios</td>
</tr>
<tr>
<td></td>
<td>Rosewood</td>
<td>South Whittier</td>
</tr>
<tr>
<td></td>
<td>Willowbrook</td>
<td>West Whittier (Portion)</td>
</tr>
</tbody>
</table>

Source: GCCOG, 2013.

A Complex Transportation System

The Gateway Cities are home to one of the most complex transportation systems in the nation:

- The Gateway Cities have an approximate population of 2,081,000. Approximately 65 percent of the population is Hispanic, 48 percent is White, 9.5 percent is Asian, and 8.5 percent is African American. Over the next 25 years, the population is expected to increase nearly 11 percent. Employment is expected to increase by over 11 percent in the subregion by 2035 (source: Gateway Cities Travel Demand Model).

- The freeway system in the Gateway Cities Subregion includes portions of four interstate routes (I-710, I-605, I-405, and I-110) and one state route (SR 91), with 764 lane miles of freeway which carry approximately 18.8 million vehicle miles of travel (VMT) per day;

- The arterial highway system forms the backbone network for travel in the Gateway Cities, with approximately 3,250 lane miles of arterial roadway (total number of lanes available for travel), nearly 2,300 traffic signals and approximately 14.4 million vehicle miles of travel per day;

- Transit services in the Gateway Cities include commuter and intercity passenger rail, light rail, rapid and express bus service, and local bus service. Transit service is provided by multiple operators: Amtrak, Metrolink, Metro, Long Beach Transit, Los Angeles City Department of Transportation (LADOT), Orange County Transportation Authority (OCTA) and several local and municipal operators. On a typical weekday,
people will make 318,790 trips in the Gateway Cities using transit. Of these trips, approximately 311,000 begin or end in the subregion, and 7,790 pass through it. The largest share of estimated ridership is on local and other buses (60 percent), followed by light rail (32 percent), rapid and express buses (5.5 percent), and commuter and intercity rail (2.5 percent).

- Traffic safety is a major concern in the Gateway Cities, especially on freeways. Approximately 39 percent of the freeway system in the subregion experiences accident rates 30 percent higher than the statewide average for similar facilities. The large number of trucks accessing the Ports of Long Beach and Los Angeles further complicates traffic patterns in the subregion.

- There are 18 park-and-ride facilities in the subregion with a daily parking capacity of 7,130 vehicles. An average of 5,750 vehicles per weekday use about 81 percent of the daily parking capacity. Several park-and-ride lots are at or near capacity.

- The combined Ports of Los Angeles and Long Beach constitute the largest port complex in North America, handling 40 percent of the nation’s import traffic and 25 percent of the nation’s export traffic. These ports are supported by over half a billion square feet in warehousing space with over 1000 trucking and drayage companies. The ports handled 15.2 million twenty-foot equivalent units (TEUs) in 2014. By 2035, the Ports are projected to handle approximately 36 million TEUs.

### 1.2 Purpose

The STP is intended to help the Gateway Cities:

**Understand a complex travel market**

The GCCOG area is bordered by two major employment and housing areas, downtown Los Angeles to the north and Orange County to the south. Both of these regions have an impact on the Gateway Cities’ travel patterns. For example, many home-to-work trips occur through the Gateway Cities from Orange County to Downtown Los Angeles on freeways and commuter rail lines. Prior to the STP, transportation projects were studied individually, with minimal coordination or understanding of how they might relate to or be affected by adjacent areas. In 2012, the GCCOG and Metro commissioned the STP as a comprehensive and integrated study of transportation projects and needs within the entire Gateway Cities subregion.

**Build upon prior regional analysis**

The STP is funded by the Los Angeles County Measure R half-cent sales tax approved by voters in 2008 to fund transportation improvements. The Measure R funding allocation for highway improvements in the Gateway Cities Subregion is $590 million for the SR-91/I-605/I-405
Corridors. Another allocation of funds is designated for the I-710 Corridor. A first phase study called the SR-91/I-605/I-405 Hot Spots was conducted that investigated transportation problems and solutions for a portion of the Gateway Cities along those same freeway corridors, and much of that work is incorporated into the STP.

The I-710 Corridor within the Gateway Cities is the subject of an on-going environmental review process assessing multiple improvement alternatives within the I-710 corridor. The I-5 corridor was also previously also studied and environmental assessments were conducted of conditions along I-5 within the Gateway Cities Subregion. Building on the SR-91/I-605/I-405 Hot Spots Study, the I-710 effort, the I-5 studies and other efforts, the STP provides a comprehensive approach to understanding the freeway system as well as assessing the multimodal transportation needs in the subregion. Finally, the GCCOG itself had conducted a previous transportation technology focused study through their Technology Plan for Goods Movement. The STP synthesizes the outcomes of all these prior studies, while adding new technical work to create a cumulative, multimodal subregional plan.

**Understand Project Interrelationships**

The Gateway Cities Subregion has an interconnected network of streets, roadways, freeways, transit systems, park-and-ride lots and other transportation infrastructure that must be understood comprehensively. Changes or improvements to one or more of these transportation facilities will impact the performance of others in the system. The STP is intended to help understand the operational relationships and impacts of future transportation projects on the current network, and to develop a comprehensive transportation improvement plan to help solve current and future transportation challenges.

**Think Strategically About Multimodal Transportation Investments**

While the STP does not develop final detailed plans for each regionally significant transportation system project, it offers conceptual recommendations for each transportation mode of travel that together provide a comprehensive and strategic approach to transportation system improvement.

**Obtain Funding and Financing for Strategic Transportation Investments**

The STP includes a detailed funding and financing strategy that provides a clear roadmap for Metro and the GCCOG to pursue for obtaining federal and state funding and implementing needed for STP transportation improvements. In total, STP projects would require over $25 billion to implement. Twenty-one separate funding sources are included in the funding strategy, including seven major existing or proposed programs that account for $16 billion of the over $25 billion total.
1.3 **Approach to Development**

An impressive body of transportation planning and analysis has been conducted by regional agencies in recent years. The STP incorporates much of this work and updates many of the studies, in addition to the extensive analysis performed as part of the STP itself.

The approach to developing the STP included the following key elements:

- Extensive consultation and collaboration with GCCOG member cities, other agencies and private sector entities (see Chapter 3);
- Review and synthesis of previous studies and projects;
- Development of new comprehensive traffic modeling and air quality analysis tools;
- Determine the best way technology can be leveraged to improve goods movement mobility and efficiency.
- Analysis of alternative strategies for reducing congestion, increasing transportation capacity, improving mobility, reducing emissions, and complying with stormwater management regulations;
- Assessment of transportation projects as a system, including detailed review of how projects affect one another and might work together to solve complex multimodal transportation challenges;
- Assessment of all modes of travel and how they affect each other.

The process to develop the STP began by conducting technical studies of the subregional freeway and arterial systems, transit facilities, bicycle and pedestrian travel, air quality, goods movement, new transportation technologies, and stormwater treatment.

Next, the consultant team then shared these studies with Gateway Cities’ jurisdictions, neighboring jurisdictions, partner agencies, and stakeholders. Taking into account their feedback and comments, adjustments revisions and improvements to the work products were made.

In addition to incorporating existing transportation plans and studies, the STP has developed many new project tools to assess the impacts of projects and analyze the system-wide interactions of projects. New analytical tools include a comprehensive three-tier traffic forecasting model (described in Chapter 3) and an updated air quality assessment tool.

Table 1.2 lists previous studies that have been reviewed and incorporated into the STP analysis and program. A complete bibliography with hyperlinks to these studies appears at the end of this study.
Table 1.2  Previous Studies Incorporated into STP Planning Effort

<table>
<thead>
<tr>
<th>Study Lead Agency</th>
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<td>Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS)&lt;sup&gt;2&lt;/sup&gt;</td>
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<tr>
<td>SCAG</td>
<td>Comprehensive Regional Goods Movement Plan and Implementation Strategy (includes Warehousing Study)</td>
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<tr>
<td>Metro/GCCOG</td>
<td>SR 91/I-605/I-405 Hot Spots Study (includes multiple reports)</td>
<td>2012</td>
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<td>Los Angeles to San Diego (LOSSAN) Corridor Agency</td>
<td>LOSSAN Corridor Study</td>
<td>2012</td>
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<tr>
<td>California Department of Transportation (Caltrans)</td>
<td>California State Rail Plan</td>
<td>2013</td>
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<tr>
<td>Ports of Los Angeles and Long Beach</td>
<td>San Pedro Bay Ports Container Forecast Study Update</td>
<td>2009 (updated early 2016)</td>
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<td>Ports of Los Angeles and Long Beach</td>
<td>Transloading of Marine Containers in Southern California</td>
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<td>Technology Plan for Goods Movement</td>
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<td>Metro/GCCOG</td>
<td>GCCOG Air Quality Action Plan</td>
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<td>Metro</td>
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1.4  Elements of the Strategic Transportation Plan

The primary elements of the STP fall into twelve key categories discussed below. Benefits to local communities result from each of these elements, as is described in the STP report. The STP report includes chapters on each mode/technical area (freeway system, arterial system, transit/park-and-ride, active transportation, goods movement, technology element, stormwater quality) as

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<sup>2</sup> Senate Bill (SB) 375 is a state law enacted to reduce GHG from passenger vehicles. It directs planning organizations to develop “Sustainable Communities Strategies” (SCS) outlining transportation, land-use and housing policies to reduce vehicle emissions in their regions.
well as chapters describing background and purpose of the plan, needs and deficiencies, approach, methodology and outreach, benefits of the plan, funding of the plan and next steps.

Figure 1.2  Organization and structure of the report, by chapter
Figure 1.3 STP Components

An overview of all the transportation elements, projects, and considerations that went into the development of this plan.

**FREEWAY PROJECTS**
Building on both the I-605/SR-91/I-405 Congestion Hot Spots Feasibility Study and I-710 Corridor Study, this chapter considers eight proposed freeway improvement projects.

**ARTERIAL IMPROVEMENT PROJECTS**
This chapter evaluates the existing arterial network, discusses priority issues and deficiencies, and identifies intersection and corridor improvements that address them.

**TRANSIT AND PARK & RIDE PROJECTS**
To address current transit challenges, this chapter outlines projects to improve the utility value of transit offerings and establishes policy priorities to guide future investments.

**ACTIVE TRANSPORTATION PROJECTS**
To reduce energy use, ease congestion, and improve health, this chapter outlines a strategy for improving pedestrian and bicycle facilities in response to growing demand.

**PROJECTS FOR GOODS MOVEMENT**
A look at existing conditions and anticipated challenges associated with the transport and storage of cargo and freight, including capacity and condition of warehouses, ports, and rail facilities.

**INTELLIGENT TRANSPORTATION SYSTEMS**
Expanding on earlier research and studies, this chapter provides guidance & preliminary designs for key ITS applications including the I-710 Freight Corridor and traveler information systems.

**STORM WATER IMPROVEMENTS**
Prevention of storm water pollution and treatment of runoff from transportation facilities are considered in this chapter, along with recommendations for agency collaboration and regulatory compliance.

**CONSOLIDATED SET OF PROJECTS**
By taking a holistic view of all planned improvements and existing conditions for the subregion across modes and jurisdictions, this STP achieves an unparalleled comprehensive understanding of impacts and enables the development of a transportation improvement plan from a crucial system-wide perspective.
Regional Collaboration and Coordination

The STP is a subregional approach to transportation planning that is not limited to one city, a single corridor or intersection. Each project recommended in the STP has regional significance and is multi-jurisdictional, and often multi-modal. This collaborative approach positions STP projects to better compete for limited funding at the county, state and federal levels.

The STP is designed to improve collaboration and coordination among federal, state, regional, and subregional agencies, as well as local communities. The GCCOG strongly believes that a collaborative approach will yield increased funding opportunities for projects included in the STP because the STP recommended projects benefit multiple stakeholders and jurisdictions.

Project Definition and Interrelationships

Consensus can only be achieved when stakeholders understand the scope of proposed projects and their estimated impacts. For example, major freeway improvements can shift traffic from other freeways and arterial roads, and transit improvements can shift trips from automobile to bus or rail. Understanding how different projects affect each other is equally important. Completing a project in one area typically affects travel conditions in other areas. The STP fosters a better understanding of these factors and interrelationships within and between communities.

New Traffic Model for Gateway Cities Jurisdictions

The STP includes the Gateway Cities Traffic Model (GCTM), a state-of-the-art “three-tier” traffic model at the regional, subregional, and local levels. The first tier, or macroscopic model, is a multimodal travel demand model derived from the Southern California Association of Governments (SCAG) regional model. The second tier is an a mesoscopic operations model simulating vehicle flows, including impacts of queues, traffic signals, ramp meters, peak spreading, and other real-world traffic operations not captured by the first tier travel demand model. The final third tier includes microscopic simulation modeling, which is the most detailed of all the models and can be used to simulate and assess freeway operations for a freeway corridor, freeway segment, interchange, arterial segment, or arterial intersection.

Subregional Air Quality Model

The STP provides an update to the previously completed Gateway Cities Air Quality Action Plan (AQAP) and CALPUFF air quality dispersion model for Gateway Cities, which estimates how air quality will change between 2009 and 2035 levels. The air quality model can help communities understand where local pollution “hot spots” are today, and how these may shift in the future. The model has been used to assess existing air quality as well as future air quality both with and without the all the regional projects listed in the STP combined. While the analysis conducted for this plan only included this all-inclusive STP run, the model created does provide the platform for more detailed project specific air quality analysis for the region in the future. It is a
tremendously useful tool for future project planning, design and implementation. This STP air quality model provides a legacy analytic platform for environmental analysis in the same way the GCTM creates a legacy tool for traffic analysis in the subregion. The combination of these two powerful tools is unique in the state and positions the GCCOG and all its member cities for future funding using the output from these tools.

**Goods Movement Impacts, Industry Coordination and Collaboration**

The communities in Gateway Cities are the gateway for international goods flowing through the largest port complex in the United States and are home to a warehouse and logistics industry that serves both domestic and international customers. Moving containers from the ports to distribution points farther inland via truck and rail has a significant impact on traffic and air quality in the Gateway Cities. However, these same facilities also offer job opportunities and spur economic growth in the subregion. The STP analyzes the trends in this complex and diverse industry. Understanding the impacts of the freight industry on local communities and the needs of freight industry stakeholders is critical to planning transportation infrastructure, defining mitigation measures, and setting sound public policy.

**Cutting-Edge Technology Design and Plans, including Zero-Emission Trucks**

The advent of new intelligent transportation systems (ITS) and zero-emission (ZE) vehicles will significantly impact transportation projects. One goal of the STP is to understand how technology can reduce congestion and pollution; and improve efficiency, safety, and roadway capacity, particularly in the goods movement system. The STP offers a roadmap for zero-emission truck commercialization and explores the infrastructure necessary to support this new industry. A key economic benefit would be to position the Gateway Cities Subregion as a center for clean, safe, automated transportation technologies.

**Freeway System Improvements and Designs**

Building upon the work completed for the SR-91/I-605/I-405 Hot Spots Study, concept improvement drawings have been completed and tested for nearly every freeway segment in the Gateway Cities Subregion with the exception of I-105. The freeway concepts developed in the STP for the Gateway Cities Subregion are more comprehensive than any other subregion in Los Angeles County. At the time of this report, two major freeway Project Study Reports (PSRs) have been completed, another PSR is nearing completion, and one is about to start. In addition two Project Assessment/Environmental Documentation projects are also about to begin. All of these freeway improvement plans build on the STP work and the precursor SR-91/I-605/I-405 Hot Spots Study. These efforts, completed in conjunction with the California Department of Transportation (Caltrans), will position the GCCOG for additional funding for final engineering design and implementation of major freeway improvement projects, with other projects ready to be funded as monies are available.
Arterial Highway System Improvements

Arterial congestion and traffic safety are major issues of concern to local communities. Local jurisdictions own, operate, and maintain the arterial roads within their boundaries and they invest heavily in local streets and intersections. The arterial system and freeway system are interconnected, and arterial roads are key components of the Measure R corridors. Considerable attention has been paid to the arterial highway system as part of the STP, with detailed review of over 600 intersections and assessment of collisions, congested speeds, traffic volume, truck volume and projected traffic growth to 2035. The STP identifies a critical arterial network with deficiencies and recommends a series of concept arterial system improvements including improvements at many key intersections and mid-block locations connecting those intersections.

Transit System Improvements

Transit in the Gateway Cities includes regional rail systems (Amtrak, Metrolink) light rail (Metro Blue Line, and Metro Green Line), local and municipal bus service, bus rapid transit, park-and-ride facilities and local shuttle bus circulation systems. Millions of trips are made on these transit routes each year, and those transit trips reduce the number of cars using the freeway and arterial highway system. The STP has studied the transit system in detail and included a comprehensive outreach to all of the key transit providers serving the Gateway Cities. A list and map of key transit routes and projects has been developed and a “maximum transit” scenario has been tested using the Gateway Cities Traffic Model.

Active Transportation (Bicycle and Pedestrian) Improvements

Bike and pedestrian facilities are analyzed in detail within the STP, not only for their mobility improvements, but also for the health benefits that they provide. While most cities have adopted bicycle networks and master plans, sometimes those plans do not align at city and/county boundaries. The STP has developed 55 regionally significant bicycle projects that span multiple jurisdictions. For each project, a draft project sheet has been developed that includes key descriptive information on the project and can be used by Gateway Cities, or other agencies to apply for funding in the future should they wish to pursue these regionally important STP bicycle projects. Since the 55 projects are multi-jurisdictional and regionally important, they are expected to compete better than single city projects for multiple funding sources.

Stormwater Treatment Strategies

Local communities face many state and federal environmental mandates, and storm water treatment requirements. The STP provides guidance to local communities on how to implement best management practices for complying with these complex regulations in transportation projects.
Funding and Financing Strategies

The STP positions the Gateway Cities to effectively compete for limited transportation funding. For regionally significant projects, the STP thoroughly analyzes funding options from existing and potential new sources, and attempts to match proposed projects with specific sources of funds. Creative financing approaches are also explored.

1.5 Summary

The STP develops implementation and funding strategies for the projects included in it. Project readiness is critical when competing for funds. If design and environmental approvals are delayed, funding opportunities may be missed. With effective management, consensus and coalition building, the Gateway Cities Subregion can successfully achieve its goals to reduce congestion, improve air quality and health, strengthen the economy, and improve quality of life for its citizens.

In the remainder of the report, the methodology, findings, and recommendations for the STP are presented. Chapter 2 summarizes the transportation system needs and deficiencies. Chapter 3 provides an overview of the technical approach, methodology and outreach conducted for the STP. Chapters 4 through 8 are organized by facility type or mode of transportation:

- Chapter 4, Freeway System
- Chapter 5, Arterial Highway System;
- Chapter 6, Transit/Park-and-Ride;
- Chapter 7, Active Transportation;
- Chapter 8, Goods Movement

In each of these “modal” chapters, Baseline 2012 conditions are presented first. Next, a 2035 No Build scenario is defined, followed by a presentation of 2035 No Build traffic conditions as predicted by the new modeling system. These 2012 and 2035 No Build scenarios are then contrasted with alternative STP Build scenarios in Chapter 14.

- Chapter 9 is devoted to new transportation technologies, which offer lower congestion, reduced emissions, and enhanced safety.
- Chapter 10 describes the stormwater quality analysis and coordination.
- Chapter 11 documents benefits of the Plan.
- Chapter 12 discusses funding options and financing plan and for the STP.
2.0 Needs and Deficiencies

2.1 Needs and Deficiencies

The transportation system in the Gateway Cities currently experiences significant congestion on freeways, arterial highways, and at intersections; costly goods movement delays; and insufficient transit services and active transportation infrastructure. The STP addresses both current and projected future system deficiencies. The following needs and deficiencies were studied and analyzed (among others):

- Slow speeds and excessive travel time on highways and roadways;
- Delay experienced by motorists due to congestion;
- Lack of convenient and accessible transit services;
- Lack of regional bicycle and pedestrian infrastructure;
- Poor access to transit hubs;
- Insufficient capacity at park and ride lots which support transit;
- Poor air quality, especially adjacent to freeway corridors;
- Goods movement transportation delays and inefficiencies;
- Future growth in population and jobs, which will result in additional trips and congestion;
- Funding challenges to pay for needed improvements; and
- Lack of coordination between planned and proposed transportation system improvements.

This chapter examines the transportation system needs and deficiencies for each mode of travel and discusses the key performance measures that are used to assess the current and future system performance with and without the STP.

2.2 Gateway Cities Overview

The Gateway Cities are home to a diverse population and diverse land uses. Equally diverse is the extensive multi-modal transportation network of freeways, local and arterial roads, transit services, rail and freight facilities, and bicycle and pedestrian infrastructure.

This section provides an overview of the demographic characteristics of the Gateway Cities as well as an overview of transportation system performance. A summary of existing transportation
needs and deficiencies is provided along with information on projected year 2035 deficiencies and expected changes in transportation system performance between now and 2035. For the purpose of analysis, the 2035 conditions summarized in this Chapter assume the STP has not been implemented. Later sections of this Report describe projected conditions with the STP recommendations completed and implemented.

Population and Employment Characteristics

In 2012, the Gateway Cities were home to just over two million residents, one quarter of who lived in the City of Long Beach. The subregion’s other largest cities are, in order, Downey, Norwalk, Compton, and South Gate. Over 200,000 residents live in unincorporated areas of Los Angeles County within the Gateway Cities’ geographic boundaries. As shown in Table 2.1, by 2035, the population of the region is expected to grow more than ten percent, to over 2.3 million. During the same period, the subregion is expected to add nearly 100,000 jobs, bringing the total to over 900,000, an 11.2 percent increase.

Table 2.1 Gateway Cities Population and Employment

<table>
<thead>
<tr>
<th></th>
<th>Base Year - 2012</th>
<th>Model Year 2035</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>2,089,000</td>
<td>2,312,000</td>
<td>10.7%</td>
</tr>
<tr>
<td>Employment</td>
<td>821,000</td>
<td>912,000</td>
<td>11.2%</td>
</tr>
</tbody>
</table>

Source: Gateway Cities Travel Demand Model, 2014

The Gateway Cities population is socioeconomically and ethnically diverse. The median household income for the region is close to $55,000; however, almost 20 percent of the population lives below the poverty level.

Disadvantaged Communities

In 2014, the California Environmental Protection Agency released the California Communities Environmental Health Screening Tool 2.0 (CalEnviroScreen), a tool used to identify disadvantaged communities based on population and environmental factors. Communities that score in the top 25 percent qualify as disadvantaged. The CalEnviroScreen tool provides a standardized definition of disadvantaged communities in California used in cap-and-trade and active transportation funding decisions. In the Gateway Cities, more than 61 percent of the population lives in a disadvantaged community census tract.

3 Office of Environmental Health Hazard Assessment, California Environmental Protection Agency. http://oehha.ca.gov/ej/ces2.html
Travel Behavior

According to Metro’s Short Range Transportation Plan (SRTP), the Gateway Cities\(^4\) produce more trips than any other subregion of Los Angeles County under existing conditions. Forty-five percent of trips originating in the Gateway Cities have destinations within the Gateway Cities, followed by travel outside of LA County (17 percent), to the South Bay Cities (11 percent), to Central Los Angeles (11 percent) and the San Gabriel Valley (seven percent).\(^5\)

Nationwide, work commute trips made up only 16 percent of all trips in 2009,\(^6\) but accounted for a large share of traffic during the most congested periods of the day. The mode share for commute travel within Gateway Cities in 2013 is shown in Table 2.2. Comparing 2000 and 2013 figures illustrates the changing commute patterns in the Gateway Cities and surrounding communities. Commuting in single-occupant vehicles comprised almost 75 percent of the work trips, up from 71 percent in 2000, which indicates more people are now driving themselves to work. Similar to nationwide commute trends, rates of carpooling have decreased while rates of transit use and people working-from-home have increased slightly.

Mode share for non-work trip purposes is not surveyed by the Census and is therefore unknown at the Census tract level. However, the 2012 California Household Travel Survey demonstrated that carpooling, biking, and walking are much more common for all trip purposes than they are for commute trips. For example, many off-peak trips such as going to school or shopping include more than one person, while many home-to-work trips have only one occupant, the driver. This is consistent with the GCTM, which predicts trip production by mode (see Table 2.4). Table 2.2 below demonstrates the difference between California’s commute mode choice and the mode share for all trips. Since survey data for the Gateway Cities is lacking, the California data provides a useful comparison for commute and all trips mode share.

Table 2.2 Gateway Cities Commute Mode Share and California All Trips Mode Share

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Drove Alone</td>
<td>70.6%</td>
<td>74.9%</td>
<td>72.4%</td>
<td>49.3%</td>
</tr>
<tr>
<td>Carpool</td>
<td>17.2%</td>
<td>11.9%</td>
<td>10.6%</td>
<td>26.5%</td>
</tr>
<tr>
<td>Transit</td>
<td>5.7%</td>
<td>5.8%</td>
<td>7.1%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Bicycle</td>
<td>0.7%</td>
<td>0.7%</td>
<td>0.9%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

\(^4\) In the SRTP, Metro did not include the City of Industry and parts of Unincorporated Los Angeles County in the Gateway Cities subregion.

\(^5\) Metro 2014 Short Range Transportation Plan – Technical Document

\(^6\) 2009. National Household Travel Survey
### 2.3 Transportation System Performance

The Gateway Cities Subregion is home to two major water ports, major rail corridors, several freeways, hundreds of miles of regional and local arterials, multiple transit service providers, and bicycle and pedestrian facilities. Together, these facilities enable the movement of essential goods and services and the mobility of residents and visitors through the region. The STP aims to enhance the Gateway Cities Subregion’s transportation system in order to improve the quality of life for residents and to promote the subregion’s economic competitiveness.

**Performance Measures**

The STP’s goals are organized under the following themes: Mobility, Accessibility, Safety, and Sustainability. To assess the consequences of making no improvements to the transportation system, the STP estimates current conditions and also forecasts future conditions in which STP projects are not implemented (i.e., “No Build” conditions). The No Build scenario assumes the completion of already funded projects, but does not include any unfunded projects identified in the STP. Year 2035 was selected as the future analysis year because this is the furthest future year for which socioeconomic forecasts were available. The following sections identify forecasted mobility, accessibility, safety, and sustainability conditions in 2035 under No Build conditions.

**Mobility**

Due to projected growth in population and employment, subregional traffic is expected to worsen by 2035. Based on GCTM projections, VMT on the arterial and freeway system will increase by approximately seven percent, total vehicle hours traveled (VHT) will increase by approximately fifteen percent, and total vehicle hours of delay (VHD) will increase by approximately 25 percent.

**Freeway and Arterial System Mobility**

The figures below illustrate the variability in existing and future congestion and mobility patterns. The AM peak period (6am to 10am) is used as an example, though in many locations...
the evening commute conditions are more congested. Figure 2.1 shows the projected change in VMT, VHT and VHD for the arterial and freeway systems. As shown, the percentage increase in VMT is exceeded by the percentage increase in hours of travel, which means people will experience more congestion and greater miles of travel in the future. The hours of delay are still higher as operating conditions deteriorate and people experience increased delays. Without the STP, arterial system delay is projected to increase by 25 percent and freeway system delay by 27 percent.

**Figure 2.1** AM and PM Peak Travel Characteristics: Changes from 2012 to 2035

![Bar chart showing changes in VMT, VHT, and VHD from 2012 to 2035.](image)

**Congestion**

Higher congestion levels result in increased delay at intersections and freeway bottlenecks. In the Gateway Cities, the GCTM measures VHD on freeways, freeway ramps, and arterial highways. In 2012, VHD for freeways and arterials in the GCCOG region were 69,000 and 72,000 hours, respectively, for the AM peak period. Similarly, PM peak values were 73,000 for freeways and 83,000 hours of delay for arterials. By 2035, without the STP, VHD for freeways and arterials is expected to increase by sixteen to eighteen percent in the AM peak, and over thirty percent in the PM peak periods. Figure 2.2 displays the AM peak period base year (2012) and future 2035 No Build hours of delay for the arterial and freeway systems.
Vehicle hours of delay per vehicle hour traveled, systemwide, is 0.43, which means that 43 percent of all travel time is due to delay. This is projected to increase to 47 percent by 2035.

Delay varies between freeway corridors and time of day. Within the Gateway Cities subregion, the freeway corridors vary considerably in length. To better understand delay in each corridor, the delay is translated to “delay per mile traveled” to account for the length of the respective freeway corridors. Figure 2.3 below shows the delay per mile traveled for both AM and PM peak periods in even freeway corridors. Interstate 605 features the highest delay per mile traveled today, but will not worsen significantly in 2035, while the delay on I-405 per mile traveled will worsen considerably. Total delay on I-405 is projected to increase by almost sixty percent.

In 2012, average speeds during the AM peak period were 35.3 mph on freeways and 24.0 mph on arterials, while PM peak values were 35.0 mph and 23.9 mph, respectively. In 2035, AM and PM peak average speeds are projected to decrease for freeways, ramps, and arterials. Figure 2.4 shows a comparison of AM peak average speeds, highlighting the projected three percent reduction in
speeds for the freeway system and four percent reduction in average speeds for the arterial system.

**Figure 2.4 AM Peak Average Speeds: 2012 vs 2035**

The STP also measured intersection level of service (LOS)\(^7\) for 100 intersections in addition to the several hundred analyzed in previous studies such as the SR-91/I-605/I-405 Congestion Hot Spot Study, the I-710 DEIR/DEIS and studies along the I-5 corridor. Under current conditions, analysis of these 260 intersections show that nearly ten percent are operating at deficient LOS E or F conditions during AM peak hours and fifteen percent are operating at LOS E or D during the PM peak hours. The I-710 Corridor Study, which assessed 140 locations, revealed even greater levels of congestion in that freeway corridor, with fourteen percent of intersections at LOS E or F in the AM peak, and 24 percent at LOS E or F during the PM peak.

**Vehicle Trips and Miles Traveled**

The VHT and VMT metrics illustrate the time and distance of vehicle travel in the Gateway Cities Subregion. Figures 2.5 and 2.6 illustrate AM Peak Vehicle Miles Traveled and AM Peak Vehicle Hours Traveled respectively. In 2012, the VMT was 5.3 million miles for freeways and 4.2 million miles for arterials in the AM peak period. The VMT for PM peak periods were 5.5 million miles and 4.8 million miles for freeways and arterials respectively. The AM peak period VHT was 150,500 for freeways and 170,100 for arterials. The PM peak period was 157,800 for freeways and 199,750 for arterials. In 2035, total VMT is projected to increase. During AM peak periods, VMT is projected to increase by 8.2 percent on arterials and 8.6 percent for freeways. In 2035, VHT is projected to increase twelve percent both for arterials and freeways. In sum, by 2035 under the No Build scenario, people in the Gateway Cities are expected to drive approximately ten percent more than today on both freeways and arterials. That growth is problematic since it will occur on top of a system that is already congested in many locations. Adding new vehicles to an already congested system results in exponential congestion growth.

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\(^{7}\) Level of Service is a qualitative measure used to describe traffic flow on freeways, arterial roads, and at intersections. Locations with severe congestion get low grades, D, E, or F, while roads with better traffic flow are rated higher, from A through C.
Active Transportation

The existing bicycle network in the Gateway Cities Subregion has developed primarily through individual city or county efforts, and regional efforts supported by Metro and other multi-jurisdictional agencies. Despite the increasing popularity of bicycling in Southern California, the region still lacks a safe, well-connected, and accessible bicycle network. The Gateway Cities Active Transportation Plan identified two primary barriers to increasing bicycling and walking in the region:

- **Safety.** Perceived safety and personal security are important determinants of whether one will choose to walk or bicycle over other means of transportation. Surveys indicate that many do not feel safe or comfortable riding on streets that exhibit high vehicle volumes and travel speeds, or do not provide marked or separated bicycle lanes.\(^8\) Reported collisions involving bicyclists increased between 2007 and 2011 in California, while those involving pedestrians have decreased. Collisions involving pedestrians

---

were on average more severe than those involving bicyclists. Total collision rates can be misleading without knowing the level of bicycle and pedestrian activity. Research has shown that when bicycle ridership increases, overall collisions may increase, but the number of collisions per rider (and potentially the severity) decreases.

- **Connectivity.** The ability to access one’s destination is a critical factor when considering transportation modes. Common barriers to accessibility for bicyclists and pedestrians in the Gateway Cities include gaps in the network of bike routes, lanes, and paths; impassable or missing sidewalks; linear barriers such as freeways, train tracks, and long blocks; and insufficient infrastructure to facilitate roadway crossings. Traveling long distances can be a barrier to active transportation, thus connecting bicycling and walking to transit is vital for enabling longer trips.

As of 2012, the total network of bicycle facilities in the Gateway Cities included a total of 296 miles of bike paths, lanes, bike routes, and cycle tracks.

**Goods Movement**

Goods movement is projected to grow dramatically in the region between now and 2035, requiring investments in both new highway and railroad infrastructure. The San Pedro Bay Ports are vital to the subregion’s economy, generating significant revenue and jobs; however, the ports also present many challenges to the Gateway Cities including increased traffic congestion, safety concerns, increased emissions, and heightened noise levels. Freeway congestion on I-710, SR-91 and I-605 is in part caused by the relatively high volume of large trucks that serve the ports as well as local industrial and warehousing land uses.

**Increases in Port Volume**

By 2035, the San Pedro Ports are estimated to handle 36 million TEUs containers. A major study of transloading\(^9\) conducted for the Ports of Los Angeles and Long Beach in 2012 indicates that the while the transload-to-truck percentage will remain at thirteen percent of all loaded trips, the transload-to-rail percentage of all trips is projected to increase to twenty percent.\(^{10}\) This increase in transload-to-rail trips will need to be met with additional capacity.

**Increases in Container Truck Trips**

By 2035, the total number of port primary container truck trips is expected to increase to 106,800 truck trips assuming Southern California International Gateway (SCIG) and Intermodal Container Transfer Facility (ICTF) rail yard improvements occur. Without these rail yard improvement projects, container truck trips will increase to 109,100. It is assumed that the SCIG and ICTF would generate fewer “bobtail trips” in which the truck engine unit makes a trip

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\(^9\) Transloading is the process of transferring a shipment from one mode of transportation to another. It is most commonly employed when one mode cannot be used for the entire trip, such as when goods must be shipped from one inland point to another.

without a chassis or container, than the older facilities due to improved efficiency.

Accessibility

The STP seeks to increase accessibility by connecting residents to jobs, retail centers, and other activity centers. Over 8 percent of households in Gateway Cities have no access to a vehicle, and many more households do not have vehicles for each working adult. Accessibility in the STP is measured by household proximity to fixed guideway transit service, by the first and last mile connections to transit, and by proximity to dedicated bikeways.

Travel Mode

Table 2.3 indicates the share of daily trips made by travel mode in the Gateway Cities in 2012 and 2035 assuming forecasted trends continue without additional investment in infrastructure, (no build) and also assuming the full investment in the STP.

<table>
<thead>
<tr>
<th>Mode</th>
<th>2012 - Base Year</th>
<th>2035 – No Build Scenario</th>
<th>2035 – STP Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Daily Trips</td>
<td>Percent of All Trips</td>
<td>Daily Trips</td>
</tr>
<tr>
<td>Single-Occupant</td>
<td>4,159,750</td>
<td>54.8%</td>
<td>4,286,900</td>
</tr>
<tr>
<td>Vehicle</td>
<td></td>
<td></td>
<td>4,144,800</td>
</tr>
<tr>
<td>High-Occupancy</td>
<td>1,444,200</td>
<td>19.0%</td>
<td>1,567,950</td>
</tr>
<tr>
<td>Vehicle</td>
<td></td>
<td></td>
<td>1,516,450</td>
</tr>
<tr>
<td>Transit</td>
<td>245,650</td>
<td>3.2%</td>
<td>284,050</td>
</tr>
<tr>
<td>Bicycle</td>
<td>94,050</td>
<td>1.2%</td>
<td>98,700</td>
</tr>
<tr>
<td>Walk</td>
<td>1,642,400</td>
<td>21.6%</td>
<td>1,723,600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,042,200</td>
</tr>
</tbody>
</table>

Source: Gateway Cities Travel Demand Model

In 2012, single occupant vehicle (SOV) trips made up almost 55 percent of all trips, while transit, bicycle, and pedestrian trips comprised 3.2, 1.2, and 21.6 percent, respectively. About 26 percent of private vehicle trips, and 19 percent of all trips included more than one occupant per vehicle. The STP will result in fewer single occupant vehicle trips in 2035 than were made on COG roadways in 2012 or projected in 2035 under the No-build scenario. The share of single occupant trips will decrease from 55 percent to just over 51 percent. Trips in the high occupancy vehicle lanes (HOV) will go up, but the percentage of total trips via HOV will go down slightly. Transit trips will increase by nearly 30,000 trips per day, and the percent of trips made on transit will go up slightly to 3.4 percent of all trips. Reasons for transit trips to not increase even more include a projected shift in some trips from bus to new rail services (thus no net increase in transit trips for those riders only a change in type of transit trip), and also the increase in freeway capacity.
and improvement in freeway operations will keep some trips on the freeway system. Both bicycle and walking trips are expected to go up significantly, with the share of trips via active transportation modes increasing to a combined 26.7 percent of all trips from 22.8 percent in 2012.

**First/Last Mile Connections to Transit**

The Gateway Cities is home to a transit system that includes intercity rail, commuter rail, light rail, and dozens of bus routes operated by Metro and municipal transit agencies. While well served by bus routes, only an estimated seven percent of households in the Gateway Cities (43,500) are within one-half mile of a fixed-guideway transit station.\(^\text{11}\)

Fixed-route transit cannot provide point-to-point service for all individuals who live, work, and shop in geographically dispersed locations. The first/last mile connection refers to a riders’ additional travel necessary to access transit or reach a final destination. Metro’s *First/Last Mile Strategic Plan*\(^\text{12}\) found that 91 percent of Metro rail riders accessed rail lines by bus, walking, biking, or another non-motorized method.

Access to transit is determined by station location, surrounding land uses, and street grid configuration. A recent study graded all fixed guideway stations in California based on the quality of the service and the surrounding neighborhood factors, including transit usage, crime, walkability, job access, and other factors.\(^\text{13}\) Of the 88 stations it graded in LA County, seven of the ten lowest scoring stations are located in the Gateway Cities.

**Transit and Bicycle Accessibility for Low Income Residents**

Transit and bicycle access for low-income residents, who are less likely to own or have access to a private vehicle, is another measure of accessibility. It is estimated that 57 percent of Gateway Cities households are considered low-income, and more than eight percent of Gateway Cities households do not have access to a private vehicle.\(^\text{14}\)

In 2012, an estimated eight percent of the low-income households in Gateway Cities (29,400) were located within one-half mile of a fixed route transit stop, meaning 92 percent are farther than one-half mile.\(^\text{15}\)

\(^{11}\) Household data based on ACS 2013 – 5 year estimates at the block group level. Fixed guideway transit services include Metro Gold Line, Metro Blue Line, Metro Silver Line, and Metrolink Orange County and Riverside Lines.


\(^{15}\) Ibid
Gateway Cities Strategic Transportation Plan

Needs and Deficiencies

Bicycle system coverage for the STP is measured as the number of households within one quarter mile of existing dedicated bikeways. Dedicated bikeways are those designated as Class 1 bike paths (separated bike paths such as through a part of on the beach), Class 2 bicycle lanes (striped bike lanes on streets), or Class 4 cycletracks (separated bike paths alongside a road with physical barrier to traffic lanes). In 2012, an estimated 35 percent of all Gateway Cities households (217,000), and 31 percent of low income households (110,700), were within one quarter mile of a dedicated bikeway.

Safety

Traffic safety is an important component of most transportation projects. Based on the Statewide Traffic Records System (SWITRS), in 2012, there were 8,118 reported collisions in the Gateway Cities, including 112 that resulted in fatalities and 350 resulting in severe injuries. There were 938 reported collisions involving bicyclists, 5 percent of which were fatal or severe, and 789 involving pedestrians, of which 15 percent were fatal or severe. In 2012, there were 345 reported collisions involving trucks.

The STP intersection study identified the arterial intersections in Gateway Cities with the highest number of reported collisions, including the top 100 intersections as measured by total collision volume. Additionally, an analysis of freeway traffic safety data indicated that there are 89 freeway locations with accident rates thirty percent higher than statewide averages, 25 of which are freeway mainline locations, while other high accident locations occur on the merge or diverge areas where ramps meet the freeway or in weaving sections between ramps where traffic weaves among lanes to access ramps and high occupancy vehicle (HOV) lanes.

Sustainability

Measuring the STP’s contribution towards environmental sustainability must include an analysis of the subregion’s air quality and greenhouse gas (GHG) emissions from the transportation sector.

Air Quality

Air quality in the Gateway Cities is quantified in terms of two localized air pollutants: Fine Particulate Matter (PM$_{2.5}$) and Diesel Particulate Matter (DPM).

PM$_{2.5}$ refers to small airborne particles, including dust, soot, and smoke that are smaller than 2.5 microns in diameter. Prolonged exposure at high concentration levels can lead to heart and respiratory health problems. In 2009, the mean PM$_{2.5}$ concentration across the Gateway Cities was 14.4 $\mu g/m^3$, although there is high variability in particulate matter concentrations throughout the Gateway Cities. Under existing conditions, most communities in the Gateway Cities are estimated to exceed the current federal, national ambient air quality standard (NAAQS) for PM$_{2.5}$, which is 12 $\mu g/m^3$.

The DPM pollutant is the principal contributor to cancer risk from air pollution. In 2009, mean DPM concentration across the Gateway Cities was 4.0 $\mu g/m^3$, and a majority of the Gateway
Cities households had an air pollution lifetime cancer risk between 800 and 2,000 per million, with an average of 1,328. The highest air pollution potential cancer risk (i.e., greater than 3,000 per million) occurs in the immediate vicinity of freeway interchanges.

**GHG Emissions**

In the transportation sector, GHG emissions are largely driven by private vehicle usage and trucking. By the year 2035, these on-road emissions are expected to account for 38 percent of total regional GHG emissions, or about 9.7 million metric tons per year.\(^\text{16}\)

In 2035 under the No Build scenario, the annual average on-road GHG emissions would be 9.7 million tons per year. This figure accounts for increases in fuel economy and increased market penetration of clean technologies.

**2.4 Summary**

The Gateway Cities faces numerous transportation system challenges and opportunities as it plans for the next thirty years. Slow but steady growth is projected, and strain on the already overburdened transportation network will continue to build. Increased congestion, along with the associated economic losses and impacts on mobility, are challenges that the region must address.

As shown in this chapter, the subregion’s needs and deficiencies include: freeway and arterial congestion and associated delay to travelers, insufficient transit system capacity, goods movement system inefficiencies, and insufficient infrastructure to support active transportation modes of walking and biking. The STP presents a holistic and comprehensive approach for systemwide planning and evaluation of strategies to maintain the system, and create new multimodal transportation choices. The STP’s recommendations help to address the subregion’s mobility and accessibility concerns, while balancing safety, environmental and sustainability goals.

\(^{16}\) *Gateway Cities Air Quality and Health Risk Assessment*, ICF International, 2015
3.0 Technical Approach, Methodology, and Outreach

This chapter describes the combination of traditional transportation planning analysis methods and innovative new tools that were used to develop and evaluate the STP.

3.1 Evaluation Needs

At the core of the STP is the need to understand the highly complex, multimodal Gateway Cities transportation system. At the outset of the STP process, it became clear that an innovative and rigorous set of technical models would be required to effectively evaluate the subregion’s dense and interconnected network of freeways, surface streets, transit, and goods movement infrastructure. In addition, continuous input and feedback from representatives of Gateway Cities member jurisdictions, transit agencies, watershed groups, and active transportation stakeholders would be required to both ensure that the analyses reflected actual conditions, and that STP project recommendations are based upon the most current data and information.

This chapter provides a brief overview of the modeling tools used to evaluate transportation system conditions and assess STP candidate projects, as well as the outreach process employed to ensure Gateway Cities communities were represented in the development of the STP. Table 3.1 indicates the tools and databases employed by the GCTM in the development of the STP for each major mode of travel or area of analysis.

Table 3.1 Evaluation Tools and Databases by Mode of Travel

<table>
<thead>
<tr>
<th>Mode of Travel/Area of Analysis</th>
<th>Tools and Databases Applied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freeway System</td>
<td>• Gateway Cities 3-Tier Travel Model (GCTM)</td>
</tr>
<tr>
<td></td>
<td>• Caltrans Performance Measurement System (PeMS)</td>
</tr>
<tr>
<td></td>
<td>• Highway Capacity Manual (HCM) process;</td>
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<td></td>
<td>• Level of Service (LOS) Analysis;</td>
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<tr>
<td></td>
<td>• Caltrans Traffic Accident Surveillance and Analysis System (TASAS);</td>
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<td></td>
<td>• SR-91/I-605/I-405 Hot Spot Feasibility Study;</td>
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<td>• Project Study Reports (PSR);</td>
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<td></td>
<td>• Project Assessment/Environmental Documentation;</td>
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<tr>
<td></td>
<td>• I-710 Draft Environmental Impact Report/Draft Environmental Impact Study;</td>
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<tr>
<td></td>
<td>• Regional Integration of Intelligent Transportation System (RIITS)</td>
</tr>
<tr>
<td>Arterial Highway System</td>
<td>• Gateway Cities 3-Tier Travel Model (GCTM);</td>
</tr>
<tr>
<td></td>
<td>• Existing and future peak period link level volume to capacity ratio (AM and PM);</td>
</tr>
</tbody>
</table>
## Mode of Travel/Area of Analysis

**Tools and Databases Applied**

- Existing and future daily traffic volume and projected growth in traffic volume;
- Daily truck volumes;
- AM and PM peak hour arterial speeds;
- Three-year crash totals (2008-2011) organized by intersection;
- Peak Hour Intersection Level of Service (LOS);
- Countywide Significant Arterial Network (CSAN) status;
- Countywide Strategic Truck Arterial Network (CSTAN) status;
- Intelligent transportation systems (ITS) network status;
- Rail or bus rapid transit route status;
- Freeway connectivity;
- Active transportation projects;
- Bridge condition/deficient bridges;
- Existing and forecasted population and employment density;
- SCAG Regional Travel Demand Model;
- Vehicle Probe data/iPEMS (HERE);
- Statewide Integrated Traffic Record System (SWITRS) collision data;
- Route of Metro, Long Beach Transit, Montebello; Caltrans Structure Maintenance & Investigations Bridge List;
- Gateway Cities database of historical vehicle probe data;
- SR-91/I-605/I-405 Hot Spot Feasibility Study;
- Intersection level of service;
- Population and Employment Density analysis;
- AIMSUN Mesoscopic Transportation Model);
- SR-91/I-605/I-405 Congestion Hot Spots Study;
- STP Active Transportation Plan;
- Review of network map.

### Transit/PNR Chapter

- Gateway Cities 3-Tier Travel Model;
- 2014 Gateway Cities Transit Assessment;
- Gateway Cities Park-and-Ride Assessment;
- Input from Gateway Cities transit operators and providers;

### Active Transportation Chapter

- Gateway Cities 3-Tier Travel Model;
- California Household Travel Survey (CHTS);
- Statewide Integrated Traffic Record System (SWITRS) collision data;
- Jurisdiction input;
- 2013 Gateway Cities Active Transportation Plan;
- U.S. Census Bureau Community Survey - 2013 5 year estimate;
3.2 Gateway Cities Traffic Model

The STP is based on a set of sophisticated and interconnected transportation evaluation tools that have forecasted and assessed the effects of proposed changes on the Gateway Cities transportation network. Together, these tools are known as the Gateway Cities Traffic Model (GCTM).

This GCTM is the first of its kind developed in California, enabling the evaluation of baseline year (2012) and future year (2035) traffic conditions and multimodal impacts. Although developed for the STP process, the GCTM will also serve as a platform for modeling and analysis in the Gateway Cities Subregion after the STP is completed.

Structure

The GCTM consists of three “tiers” of analysis:

**Tier 1: “Macroscopic” Travel Model:** A multimodal, regional travel demand model derived from the SCAG regional model. The macroscopic model generates estimates of travel generation, distribution of travel, and travel mode choice for the entire SCAG region.

**Tier 2: “Mesoscopic Simulation Model:** A subregional, dynamic operations model that evaluates the Gateway Cities transportation network at a much greater level of detail, allowing for dynamic assignment of traffic across the subregional roadway system, evaluation of freeway and arterial queue lengths, understanding the impact of geometric road designs and bottlenecks on trip route choice. The mesoscopic model contains detailed geometric road design information for all freeways and arterial roadways in the Gateway Cities, including ramp metering information and signal timing data for all 2,300 signalized intersections in the Gateway Cities Subregion.
Tier 3: “Microscopic” Simulation Model. Tier 3 is the most detailed model component and it utilizes the geometric data provided in the mesoscopic model to simulate and analyze the impacts of design characteristics on individual intersections, arterial segments and freeway segments.

The relationship of the model structure is illustrated in Figure 3.1.

**Figure 3.1 Multi-tier Modeling Structure of the Gateway Cities Traffic Model**
3.3 Synchro Intersection Analysis

To evaluate the performance of individual intersection operations, the GCTM used Synchro software to evaluate LOS of specific intersections within Gateway Cities. Synchro computes LOS using the Intersection Capacity Utilization (ICU) method. The effects of intersection improvements, such as adding a left turn pocket or another through-lane, can be tested in Synchro and also incorporated into the regional operational/simulation model to evaluate system performance with and without these improvements.

For the STP, Synchro was used to study signalized intersections to identify the major bottlenecks along the arterial roadway system. Synchro used the Highway Capacity Manual (HCM) 2000\textsuperscript{17} methodology to evaluate the effectiveness of proposed improvements at reducing intersection congestion.

Inputs to Synchro include:

- Lane geometries;
- Volumes by turning movement (taken from Tier 2 model results);
- Peak hour factor (a measure of how much of the peak hour volume is clustered into the worst 15 minutes); and
- Signal phasing and signal timing.

For each signalized intersection studied, Synchro was used to assess potential future improvements that would help to improve levels of service and reduce vehicle delay. Three types of improvements were tested:

- Addition of protected left-turn and protected signal phases;
- Addition of right-turn signal phases; and
- Geometric (physical) changes to the intersection.

3.4 Air Quality Assessment

The peer-reviewed CALPUFF air quality dispersion model was used to assess air quality and health risk as part of the STP. EPA guidance provided the justification for the use of the model. The CALPUFF model was previously used in the Gateway Cities AQAP, completed in 2013. The analysis provided an overview of the projected changes in air quality and health risk in the Gateway Cities between 2009 and 2035, assuming implementation of all the regional projects within the STP.

\textsuperscript{17} Transportation Research Board, 2000
Two key air pollutants are responsible for much of the health risk in the Gateway Cities:

- **PM\textsubscript{2.5}** exposure at high concentration levels over a long period of time can lead to heart and lung problems; and

- **DPM** exposure is a major cause of air pollution cancer risk.

The analysis included a comparison of annual average PM\textsubscript{2.5} and DPM concentrations across the Gateway Cities, and by individual city, for 2009 conditions and 2035 conditions (including all STP projects). Overall air pollution lifetime cancer risk across the Gateway Cities were also presented. Finally, the analysis forecasted greenhouse gas GHG emissions by source category for the Gateway Cities for 2035 with implementation of the STP and without the implementation (i.e., No Build scenario).

Key findings include:

- Compared to existing conditions, year 2035 mean PM\textsubscript{2.5} concentration in the Gateway Cities is expected to decrease by 30 percent, due in part to the STP.

- Compared to existing conditions, year 2035 mean DPM concentration in the Gateway Cities is expected to decrease by 82 percent.

- Implementation of the STP will be responsible for a forecasted net reduction of 900,000 annual metric tons of GHG emissions in the Gateway Cities.

- Due in part to the STP, lifetime cancer risk in the Gateway Cities is expected to decline by about 68 percent, from an annual rate of 1,328 per million residents in 2009 to an annual rate of 421 per million residents in 2035.

It is important to note that the development of this model provides the GCCOG and Metro with the capability to do additional analysis in the future at a project by project basis should the need arise.

### 3.5 STP Outreach

The STP outreach efforts followed a multi-step, iterative, and inclusive process. Key elements of the outreach for the STP include:

- **STP Technical Advisory Committee (TAC)** – In late 2014, a Technical Advisory Committee was formed that included representatives from all member cities and agencies in the Gateway Cities Council of Governments. Monthly TAC meetings were held during which each element of the STP was presented and discussed. The TAC was asked to review and provide comments and input on all STP Elements and associated work products. STP Elements and work products were revised to reflect TAC input and then re-circulated for approval.
• **STP Oversight Committee** – formed in 2015, the Oversight Committee consists of two representatives from the TAC, two city managers and two elected official representatives. The Oversight Committee guides the TAC and will facilitate moving the STP through the GCCOG committees and ultimately to Board review and approval.

• **Technical Meetings with GCCOG Member Cities** – Numerous one-on-one meetings were held with GCCOG member cities to discuss technical issues relevant to individual jurisdictions. Often, these meetings were with city staff, including public works directors, planning directors, community development officials, city managers, and staff from other departments.

• **Stakeholder Focus Meetings** – Meetings with stakeholder groups representing transportation modes, including biking, pedestrian, and transit users, were held in order to discuss issues relevant to individual stakeholder concerns. The STP also met with watershed management groups to discuss how the STP could help the meet the goals of watershed management plans. Table 3.2 lists the stakeholder groups that met with the STP consultant team on transit and active transportation issues.

• **STP Roll-out Briefings** – Each jurisdiction was given the opportunity to request briefings on the STP for city staff, commissioners and elected officials. The STP consultant team met with nearly all GCCOG member jurisdictions. During briefings, the project consultant team presented an overview of the STP along with specific maps and materials detailing the STP’s impact on the specific jurisdiction. The briefings were tailored to the requests of the member cities. Some were informal presentations to elected officials and commissions while others included formal, public presentations to at city council meetings.

Table 3.2 lists the members of the STP TAC.
Table 3.2  STP TAC Membership

<table>
<thead>
<tr>
<th>Stakeholder Group</th>
<th>Members and Agencies</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Subregional</strong></td>
<td>Yvette Kirrin, Gateway Cities Council of Government</td>
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<td></td>
<td>Kekoa Anderson, Gateway Cities Council of Governments</td>
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<td></td>
<td>Dana Pynn, Long Beach Transit</td>
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<td>Michael Kodama, Eco-Rapid Transit</td>
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<td></td>
<td>Theresa Dau-Ngo, Port of Long Beach</td>
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<tr>
<td><strong>County</strong></td>
<td>Alvin Ly, County of Los Angeles, Department of Public Works</td>
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<td></td>
<td>Port of Long Beach</td>
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<td></td>
<td>Port of Los Angeles</td>
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<tr>
<td><strong>Cities</strong></td>
<td>Okina Dor, Artesia</td>
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<td></td>
<td>Al Cablay, Bell</td>
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<td></td>
<td>Raphael Guzman, Bellflower</td>
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<td></td>
<td>Ray Abassi, Bell Gardens</td>
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<td></td>
<td>Maryam Babaki, Commerce</td>
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<td>Gina Nila, Commerce</td>
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<td>Hien Nguyen, Compton</td>
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<td>Aaron Hernandez, Cudahy</td>
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<td>Mohammad Msotahkami, Downey</td>
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<td>Ed Norris, Downey</td>
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<td>Bill Pagett, Hawaiian Gardens</td>
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<td>Desi Alvarez, Huntington Park</td>
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<td>Joshua Nelson, Industry</td>
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<td>Max Withrow, Lakewood</td>
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<td>Mark Stowell, La Mirada</td>
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<td>Derek Wieske, Long Beach</td>
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<td></td>
<td>Bill Pagett, Maywood</td>
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<td></td>
<td>Aurora Jackson, Montebello</td>
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<td></td>
<td>Bill Zimmerman, Norwalk</td>
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<td></td>
<td>Christopher Cash, Paramount</td>
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<td></td>
<td>Jose Loera, Pico Rivera</td>
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<td></td>
<td>Noe Negrete, Santa Fe Springs</td>
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<td></td>
<td>Monic Sary, Santa Fe Springs</td>
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<tr>
<td></td>
<td>Steve Itagaki, South Gate</td>
</tr>
<tr>
<td></td>
<td>Arturo Cevantes, South Gate</td>
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<tr>
<td></td>
<td>Chris Magdosku, Whittier</td>
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</tbody>
</table>
Table 3.3 presents a list of agencies and stakeholders who provided critical input by STP issue area.

Table 3.3  Stakeholder Meeting by Issue Area

<table>
<thead>
<tr>
<th>Mode of Travel</th>
<th>Stakeholders Engaged</th>
</tr>
</thead>
</table>
| Active Transportation | • All GCCOG member cities  
| | • I-710 Technical Advisory Committee and bicycle stakeholder group  
| | • SR-91/I-605/I-405 Technical Advisory Committee and Citizens Advisory Committee  
| | • Los Angeles & Orange Counties (15 cities and unincorporated communities)  
| | • Orange County Transportation Authority  
| | • Los Angeles Metro  
| | • Caltrans  
| | • Los Angeles County Bicycle Coalition  
| | • Los Angeles Walks  
| | • Long Beach Cyclists  
| | • East Yard Communities  
| Arterial Highways | • Strategic Transportation Plan Technical Advisory Committee  
| | • City of Artesia  
| | • City of Bell  
| | • City of Bellflower  
| | • City of Bell Gardens  
| | • City of Carson  
| | • City of Cerritos  
| | • City of Commerce  
| | • City of Compton  
| | • City of Cudahy  
| | • City of Downey  
| | • City of Hawaiian Gardens  
| | • City of Huntington Park  
| | • City of Industry  
| | • City of La Mirada  
| | • City of Lakewood  
| | • City of Long Beach  
| | • City of Maywood  
| | • City of Montebello  
| | • City of Norwalk  
| | • City of Paramount  
| | • City of Pico Rivera  
| | • City of Santa Fe Springs  
<p>| | • City of Signal Hill |</p>
<table>
<thead>
<tr>
<th>Mode of Travel</th>
<th>Stakeholders Engaged</th>
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<tbody>
<tr>
<td></td>
<td>- City of South Gate</td>
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<td></td>
<td>- City of Vernon</td>
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<td>- City of Whittier</td>
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<td></td>
<td>- Port of Long Beach</td>
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<td></td>
<td>- Los Angeles Department of Water and Power (Wilmington, Hacienda Heights)</td>
</tr>
<tr>
<td>Goods Movement</td>
<td>- Port of Long Beach</td>
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<tr>
<td></td>
<td>- Port of Los Angeles</td>
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<tr>
<td></td>
<td>- City of Bell</td>
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<td></td>
<td>- Bell Gardens Transit</td>
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<td></td>
<td>- Bellflower Bus</td>
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<td></td>
<td>- Cerritos on Wheels</td>
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<td></td>
<td>- Compton Renaissance Transit</td>
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<tr>
<td></td>
<td>- Cudahy Area Rapid Transit</td>
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<td></td>
<td>- East Los Angeles Shuttle</td>
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<td></td>
<td>- Eco-Rapid Transit</td>
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<td></td>
<td>- Los Angeles Department of Transportation (LADOT)</td>
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<td></td>
<td>- Long Beach Transit</td>
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<td></td>
<td>- Metro</td>
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<tr>
<td></td>
<td>- Orange County Transportation Authority (OCTA)</td>
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<td></td>
<td>- Paramount Easy Rider</td>
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<tr>
<td></td>
<td>- Sunshine Shuttle</td>
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*Gateway Cities Strategic Transportation Plan*

*Technical Approach, Methodology, and Outreach*
4.0 Freeway System

The Gateway Cities freeway system provides regional access to local land uses via a network of freeway-arterial interchanges. In addition, the freeway system facilitates many regional, longer-distance trips that pass through the Gateway Cities but do not begin or end here. The freeway system also serves a high volume of truck trips to and from the ports of Long Beach and Los Angeles, intermodal rail yards, and warehousing destinations in the Inland Empire. The freeway system serving the Gateway Cities includes portions of I-405, I-605, I-105, I-710, SR-91 and I-5.

This chapter provides an overview of the existing freeway system, summarizes existing and future freeway deficiencies in the Gateway Cities, and identifies a series of recommended physical, operational and programmatic improvements to address those deficiencies. Also included is a discussion of next steps toward implementation and how the STP will help the GCCOG accomplish important freeway improvements.

The STP freeway study builds upon prior freeway analyses conducted for the SR-91/ I-605/ I-405 Hot Spots Study. That effort assessed existing and future freeway operations within the Gateway Cities including SR-91, I-605, and part of I-405. For the STP, additional freeway segments have also been assessed, including I-405 from Lakewood Boulevard to Wilmington Avenue, plus portions of the I-105 and I-5 freeways.

The following freeway system analyses have been conducted for the STP and are summarized within this chapter:

1. Identification of congestion issues, including traffic volumes, congestion levels, and bottlenecks on the freeway system in the study area;
2. Identification of safety issues, including existing freeway accident concentration locations within the study area; and
3. A list of proposed freeway improvements to address existing congestion and safety deficiencies.

For more information regarding the freeway system analysis including concept improvement plans, please refer to Appendix 1.

4.1 Overview of Freeway System

The freeway system within the Gateway Cities is illustrated in Figure 4.1. The freeways in the subregion include 760 lane miles for travel and carry over 18.7 million miles of vehicle travel per day. Existing and future operating conditions on the freeway system are measured using a number of data sources and performance measures, including:

- **Physical design** - The number of lanes carried by the freeway including mixed flow/general purpose lanes, high occupancy vehicle lanes, auxiliary lanes, ramps and
other features;

- **Traffic volumes** – A summary of 24-hour daily, peak period, and peak hour traffic volumes, indicating demand for travel on the freeway segment;

- **Speeds** – Identification of locations where speeds are consistently low, indicating delay caused by excess traffic, geometric deficiencies, operational deficiencies or a combination of those factors; and

- **Crashes** – Identification of locations with higher than statewide average crash rates, indicating areas that require geometric and/or operational improvements.

Average daily traffic (ADT) volumes on the area freeways were determined using available existing traffic count sources from Caltrans’ databases. The daily volumes are summarized below. The I-605 freeway is the highest volume freeway within the Gateway Cities, followed by I-405, SR-91, I-5, I-105 and I-710 (note only small segments of SR-60 fall within the study area and thus SR-60 was not included in the technical freeway analysis).

- **I-605** – Daily traffic flow ranges from 174,000 to 292,000 vehicles, with the highest volumes near I-5;

- **I-405** – Daily traffic flow ranges from 258,000 to 282,000 vehicles;

- **SR-91** – Daily traffic flow ranges from 213,000 to 260,000 vehicles;

- **I-5** – Daily traffic flow ranges from 176,000 to 230,000 vehicles;

- **I-105** – Daily traffic flow ranges from 204,000 to 230,000 vehicles;

- **I-710** – Daily traffic flow ranges from 56,000 to 225,000 vehicles with the lower volume occurring at the southern end where the freeway begins near the Port of Long Beach and Downtown Long Beach. Portions of I-710, particularly those adjacent to the ports of Los Angeles and Long Beach, carry very high truck volumes.
Figure 4.1 Gateway Cities Freeway System
4.2 Freeway System Issues and Deficiencies

Gateway Cities’ freeway system issues and deficiencies were identified using three criteria: existing vehicle speeds; existing and future freeway LOS; and the location and concentration of vehicle collisions.

4.3 Freeway System Speeds

Data from the Caltrans Transportation Performance Measurement System (PeMS) were utilized to assess speeds on the freeway system and identify points of congestion and slowing during peak travel periods. PeMS is a traffic data collection, processing, and analysis tool to assist traffic engineers and transportation planners in assessing the performance of the freeway system. Using the PeMS database, average speeds were extracted for locations along the freeway corridors within the study area.

Figures 4.2 and 4.3 display the AM and PM peak hour speeds on the freeway system. The speed profiles on the AM Peak and PM peak maps are shown below. Segment speeds lower than 25 mph are shown as red, 25 to 35 mph are shown as orange. Lower than 35 mph is typically used to define severe congestion on most maps and reports showing freeway speeds. Thus, the red and orange colors indicate significant congestion/delay on the freeway system, and the yellow segments indicate slowing and areas that are approaching significant congestion/delay.

Causes of slowing could include 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 demand for travel in excess of available freeway capacity.

Based on the speed contour analysis the following points of recurrent congestion were identified:

- **I-405** - Based on analysis of speeds, significant northbound congestion occurs in the morning peak period from I-605 to approximately Cherry Avenue, and during the PM peak period significant southbound congestion occurs the entire length of the study area along I-405.

- **I-605** - The portion of I-605 south of SR-91 generally operates well and experiences acceptable travel speeds. North of SR-91 there is some recurrent congestion and slowing in the northbound direction starting at Alondra Boulevard to I-5 during both peak hours. Near Rose Hills Roads there is another area of congestion northbound during the PM peak. In the southbound direction, I-605 experiences significant slowing from Whittier Boulevard to I-5 during both peak hours.

- **SR-91** - Congestion and slowing on SR-91 is highly directional, with the westbound direction operating poorly during the AM peak and the eastbound direction operating poorly during the PM peak. The segment from the Orange County line approaching I-
605 westbound is also congested during the PM peak.

- **I-5** – during the AM peak the entire stretch of I-5 northbound is congested and experiences slow speeds. Conversely, the entire stretch of I-5 is congested southbound during the PM peak. The segment between I-605 and the Orange County line exhibits slow northbound speeds during the PM peak.

- **I-710** – In the AM peak, congestion and slowing occurs in the northbound direction starting south of I-105 and continuing up to I-5, and in the southbound direction south of I-105. In the PM peak, northbound slowing occurs from Downtown Long Beach to roughly Anaheim Street.
Figure 4.2 AM Peak-Hour Congestion and Slowing Map Based on PeMS Speed Data

Source: Caltrans Transportation PeMS.
Figure 4.3  PM Peak-Hour Congestion and Slowing Map Based on PeMS Speed Data

Source: Caltrans Transportation PeMS.
4.4 Level of Service Analysis

An analysis of future LOS conditions on the freeway corridors in the STP study area was performed using the HCM process, which categorizes and assesses each freeway segment as mainline freeway segments, weaving areas (where traffic crosses to reach on/off ramps), or ramp merge/diverge segments. The GCTM also includes the entire freeway and arterial system. The model has been used to assess the operational conditions on the freeway system in detail. Results of the GCTM are described in detail in other chapters of the STP report.

An LOS grade is assigned to each freeway section based on existing and/or forecasted traffic volumes (year 2035) and geometric conditions including number of lanes, length of weaving sections, design of ramp merge and diverge, horizontal and vertical curvature, and other factors. LOS is described on a scale from “A” to “F”, with “A” representing excellent free flow conditions and “F” representing extreme congestion and very low speeds. Levels of service for existing and in some cases 2035 No Build scenario (as data are available) are summarized below for each freeway within the Gateway Cities.

- **I-405 northbound** – LOS E/F conditions during the AM and PM from the Orange County Line to Atlantic Avenue and also at Wilmington Boulevard during both peak periods.

- **I-405 southbound** – Generally LOS D or better during the AM peak except from Orange Avenue to Cherry Avenue/Spring Street; LOS E/F from the Orange County to Atlantic Avenue during the PM peak and also LOS F approaching the I-710 ramps and also at Wilmington Avenue.

- **I-605 northbound** – LOS E from Spring St to South St, and north of SR-91 at Alondra Blvd during the PM peak; LOS E/F from Florence Ave/I-5 to Slauson Ave during both peak periods.

- **I-605 southbound** – LOS E/F conditions in both peak periods near Alondra Boulevard, from Firestone/Florence to Telegraph/Slauson, and from Washington Boulevard to Rose Hills-Peck Road.

- **SR-91 eastbound** – LOS E/F conditions from I-710/Atlantic to Bloomfield/Artesia in both peak periods.

- **SR-91 westbound** – LOS E/F conditions in both peak periods from Paramount/Downey to Bloomfield/Artesia, with the exception of a small segment west of I-605 that operates at LOS C/D.

- **I-710** – The I-710 Major Corridor study is completing new forecasts and analysis (including a traffic microsimulation model) for the entire length of the I-710 within the Gateway Cities. The results of the I-710 analysis will be published in the I-710 DEIR/DEIS.
4.5 Crash History

An analysis of freeway collision history was performed for the STP using the Caltrans Traffic Accident Surveillance and Analysis System (TASAS), which provides information on accident rates, number of accidents/collisions, potential accident investigation locations, vehicle type, and accident type for each freeway facility.

To determine significant accident locations, the STP analysis identified locations in the Gateway Cities study area with accident rates thirty percent or higher than the statewide average accident rate for similar facilities. The analysis revealed 89 locations that meet this criterion, including 25 freeway mainline locations, thirteen freeway-to-freeway direct connectors, and 51 arterial interchange locations. These significant accident locations are shown in Figure 4.4.

The 25 freeway mainline locations with higher than average accident rates represent approximately 39 percent of the total freeway mainline centerline mileage in the study area.
Figure 4.4  Accident Concentration Locations

Source: Caltrans TASAS Table B, Table C, and TSAR.
4.6 Freeway Improvements in the STP

The STP and the SR 91/ I-605/ I-405 Hot Spots Study have identified a series of freeway improvements to address the Gateway Cities freeway system deficiencies. The improvement recommendations were developed with consideration of the Gateway Cities Guiding Principles, and with a special emphasis on limit right-of-way takings to the maximum extent feasible.

Initial design concepts were developed for the Hot Spots Study for several freeway segments within the Gateway Cities:

- I-405, from I-605 to Lakewood Boulevard,
- I-605, the entire length within Gateway Cities,
- SR-91, the entire length within Gateway Cities, and
- Small portions of I-5 and I-105.

For the STP, improvement concepts for the remaining section of I-405, from Lakewood Boulevard to Wilmington Avenue, as well as I-5 were developed. Improvement concepts for I-710 are being developed separately as part of the I-710 EIR/EIS effort.

The SR-91/I-605/I-405 Hot Spots Study and the STP developed incremental improvement concepts to systematically assess traffic operations improvements and reduction in congestion levels. The improvements were developed in concept with preliminary to-scale drawings. A description of the improvement concepts for the freeway system follows. These include the Hot Spots Study (Concept A) plus the additional STP concept recommendations.

- **I-405 Northbound** – One additional general purpose lane added from I-605 to Wilmington Avenue, with ramp realignments at I-605, Studebaker Road, Palo Verde Avenue, Woodruff Avenue, Bellflower Boulevard, Lakewood Boulevard and Temple Avenue to accommodate the widening. The I-710 project is also currently being designed consistent with the one lane addition.

- **I-405 Southbound** – One additional auxiliary lane added from I-605 to Studebaker Road; one additional general purpose lane added from I-605 to Wilmington Avenue; and ramp realignments at Studebaker Road, Stearns Street, Woodruff Avenue, Lakewood Boulevard, and Temple Avenue to accommodate the widening. The I-710 project is also currently being designed consistent with the one lane addition.

- **I-605 northbound** – No improvements between I-405 and SR-91. North of SR-91, one additional general purpose lane, with ramp realignments to accommodate the widening at Alondra Boulevard, Rosecrans Avenue, Firestone Boulevard, Florence Avenue, Slauson Avenue, Washington Boulevard, Saragosa Street, Whittier Boulevard, Beverly Boulevard, Rose Hills Road, Peck Road, SR-60 and Valley Boulevard. Rosecrans Avenue ramp is modified to a two-lane exit; Telegraph Road ramps are reconfigured to D-type
ramp with a two lane exit; and directional off ramps to Telegraph Road are eliminated.

- **I-605 southbound** – No improvements between I-405 and Del Amo Boulevard. North of Del Amo Boulevard, one additional general purpose lane, with ramp realignments at South Street, Alondra Boulevard, Florence Avenue, Telegraph Road, Slauson Avenue, Washington Boulevard, Saragosa Street, Whittier Boulevard, Beverly Boulevard, Rose Hills Road, Peck Road, SR-60 and Valley Boulevard to accommodate the widening. Alondra Boulevard ramps are reconfigured from loop ramp to hook ramp with Pluma Ave.

- **SR-91 eastbound** – No improvements from Alameda Street to I-710. East of I-710, one additional general purpose lane, with ramp realignments at I-710, Atlantic Avenue, Cherry Street, Paramount Boulevard, Downey Avenue, Lakewood Boulevard, Clark Avenue, Bellflower Boulevard, I-605, Studebaker Road, Pioneer Boulevard, Norwalk Boulevard, Bloomfield Avenue and Park Plaza Drive to accommodate the widening. Park Plaza Drive off-ramp is reconfigured to include addition auxiliary lane exit. Clark Avenue exit is modified to two lanes.

- **SR-91 westbound** – No improvements from Alameda Street to I-710. East of I-710, one additional general purpose lane, with ramp realignments at I-710, Atlantic Avenue, Cherry Street, Paramount Boulevard, Downey Avenue, Lakewood Boulevard, Clark Avenue, Bellflower Boulevard, I-605, Studebaker Road, Pioneer Boulevard, Norwalk Boulevard, Bloomfield Avenue and Park Plaza Drive to accommodate the widening. Park Plaza Drive off-ramp is reconfigured to include additional auxiliary lane exit. Clark Avenue exit is modified to two lanes.

- **I-5 northbound and southbound** – One additional lane is added in each direction.

### 4.7 Freeway System Improvement Implementation and Next Steps

The STP provides a comprehensive analysis of the entire freeway system in the subregion. This is the first time that all freeways in the Gateway Cities Subregion have been studied, modeled and assessed for deficiencies and then recommended improvement concepts developed. Beyond serving as a summary planning document, the STP also provides the GCCOG with a plan to move forward to implement urgent freeway system improvements.

The STP freeway component positions the GCCOG to move forward with the next planning and implementation efforts and to ultimately build freeway improvements through the Caltrans project development process (PDP). The PDP is the framework by which Caltrans identifies a transportation problem on the state highway system, and seeks to initiate and carry out specific projects to address the problems. The Caltrans PDP requires further detailed studies that lead to project approval and implementation once funding is available. The STP has accomplished many
of the early steps toward completion of the PDP within the subregion. The next PDP steps include the following:

- **Project Study Report- Project Development Support (PSR-PDS)** - Project study reports are engineering reports whose purpose is to document agreement on the scope, schedule, and estimated cost of a freeway project so that the project can be considered for inclusion in a future programming document such as the State Transportation Implementation Plan (STIP).

- **Project Assessment and Environmental Documentation (PA&ED)** - Caltrans makes a formal request for public input during this step so the project can be designed to meet the community’s needs. The public provides input based on the draft Project Report and draft Environmental Document. The accompanying environmental document summarizes environmental impacts of the proposed alternatives. Complex projects require a second programming step. This step uses reports from the PA&ED to select a preferred alternative that meets the purpose and need of the transportation problem, and to decide whether to fund the project through construction. A project is ready for the next step once it is funded through construction or programmed.

- **Design and Construction** includes two steps in which all the documents are used to finalize design details, draw up construction plans for bidding, acquire the necessary property rights and permits, and build the project based on the selected alternative.

The STP provides the GCCOG the ability to move forward to these next steps. Figure 4.5 illustrates the Gateway Cities freeway improvement concept areas identified in the STP, the Hot Spots Study and the resulting PSR-PDS project area limits for each of five recommended PSR-PDS project development packages. A summary of the five recommended PSR-PDS project development packages follows:

- **SR-91/I-605 PSR-PDS** was completed and approved by Caltrans and a portion of the project area (westbound SR-91 from Shoemaker Avenue to northbound I-605) is moving into the PA&ED phase in 2015;

- **I-605/I-5/I-105 PSR-PDS** was approved by Caltrans and a portion of the project area is moving into the PA&ED phase in 2015;

- **SR-91/I-710 PSR-PDS** is to be initiated in 2015;

- **I-405/I-605 Interchange Area** – No scheduled next steps as of this time; and

- **I-605/SR-60 PSR-PDS** is in progress, to be completed in 2015 or 2016.

The final steps for freeway system improvement include identifying funding and then proceeding to construction. Funding is discussed in a separate chapter of the STP report.
Figure 4.5 Freeway Improvement Concepts and Studies
5.0 Arterial Highway System

The Gateway Cities arterial highway system is the backbone of the transportation network in the Gateway Cities. It provides mobility not only for private vehicle travel but also for local delivery and commercial trucks, transit buses, bicycles and pedestrians. The arterial highway system is the most important transportation system in the subregion. It includes approximately 3,250 lane miles of roadways, nearly 2,300 signalized intersections and it carries nearly 14.4 million miles of vehicle travel per day. It also carries all local transit bus routes plus many of the bicycle routes in the GCCOG region and provides access to businesses, office centers, schools, parks and government centers. The arterial system also connects to and feeds traffic to the freeway system at numerous freeway/arterial interchanges. The Gateway Cities and the County own, operate, maintain and fund the arterial roadway system within their respective jurisdictions.

Figure 5.1 displays the Gateway Cities network of arterial roadways. Some of the arterials run the entire length of the Gateway Cities Subregion and cross multiple jurisdictions, while others primarily serve one or a limited number of cities. As arterials traverse the subregion, roadway names and characteristics may change, including number of lanes, roadway width, the presence of bike lanes, medians, on-street parking availability, and other features. In addition to the freeway system, Caltrans also owns and operates several conventional highways within the Gateway Cities.

Cities plan improvements along the arterial highway system according to their General Plan standards and policies. In many cases arterial highway designations are very similar from city to city, but in other cases there are distinct differences. For instance, one city may allow non-local trucks on an arterial street, while an adjacent city may prohibit such trucks from the same roadway. Most cities have established a hierarchy of streets that define the arterial system into classification types such as principal/regional arterial highway, major arterial highway, secondary/minor arterial highway and collector streets. Thus, while the arterial highway system is important for inter-city and subregional trips, each jurisdiction has some autonomy in planning, designing and operating its portion of the arterial highway system.

The intent of the STP arterial highway element is to assess the existing arterial network throughout the Gateway Cities, understand the most important issues and deficiencies affecting arterial performance, and identify proposed improvements to address these deficiencies. The STP will also enable cities to seek funding for multi-jurisdictional arterial projects, demonstrating arterial issues and solutions that go beyond jurisdictional boundaries.

For more detailed information on the arterial system analysis including level of service summaries for intersections and arterial corridor recommendations please refer to Appendix 2.
Figure 5.1 Gateway Cities Arterial Roadway System
5.1 Overview of Arterial Highway System

The arterial system analysis effort included the following key steps:

- Gather and analyze arterial highway system data;
- Identify the most important arterial corridors and those with operational deficiencies;
- Conduct one-on-one meetings with cities to discuss corridor deficiencies, locations and other local observations; and
- Refine the list of deficient corridors based on city comments;
- Identify concept improvements to address these deficiencies.

The following data was collected and utilized in the arterial system analysis:

- Existing and future peak period link level volume to capacity ratio (AM and PM)
- Existing and future daily traffic volume and projected growth in traffic volume
- Daily truck volumes
- AM and PM peak hour arterial speeds
- Three-year crash totals (2008-2011) organized by intersection
- Peak Hour Intersection LOS
- Countywide Significant Arterial Network (CSAN) status as identified by Metro
- Countywide Strategic Truck Arterial Network (CSTAN) status as identified by Metro
- Active transportation plans – including bicycle routes and pedestrian facilities
- Advanced signal systems and ITS network status
- Rail and/or bus rapid transit route status
- Existing and forecasted population and employment density
- Freeway connectivity
- Bridge condition/deficient bridges

These data sources were used to identify arterial segments that experience congestion and other problems as measured by LOS, speeds, accident history, and other information as listed above. In addition, the presence or absence of planned improvements or planned system features such as signal system improvements or active transportation projects are also considered to identify corridors with future needs for further review and analysis.
Table 5.1 displays the performance indicators used to assess arterial roadways, data sources, and thresholds chosen for each to indicate an issue along the corridor. Each performance measure and the thresholds applied are discussed in more detail later in the chapter.

<table>
<thead>
<tr>
<th>Performance Indicator/Criterion</th>
<th>Source</th>
<th>Thresholds</th>
</tr>
</thead>
<tbody>
<tr>
<td>2035 Peak Period link level Volume to Capacity Ratio (AM and PM)</td>
<td>SCAG Regional Travel Demand Model</td>
<td>2035 Peak period link volume to capacity ratio – over 1.0</td>
</tr>
<tr>
<td>2035 Daily Traffic Volume</td>
<td>SCAG Regional Travel Demand Model</td>
<td>2035 Daily Traffic Volume – over 50,000 vehicles per day</td>
</tr>
<tr>
<td>2012 Daily Truck Volume</td>
<td>SCAG Regional Travel Demand Model</td>
<td>2012 Daily Truck Volume – over 1,000 trucks per day</td>
</tr>
<tr>
<td>AM and PM peak hour arterial speeds</td>
<td>Vehicle Probe data/iPems (HERE)</td>
<td>18 miles per hour or less average speed</td>
</tr>
<tr>
<td>Three-year collision totals (2008-2011) organized by intersection</td>
<td>Statewide Integrated Traffic Record System (SWITRS)</td>
<td>Arterial segment includes one or more of top 100 arterial collision locations</td>
</tr>
<tr>
<td>Peak Hour Intersection level of service</td>
<td>Various studies in the Gateway Cities (same as the Int. analysis)</td>
<td>Arterial segment includes one or more intersections at LOS E or F</td>
</tr>
<tr>
<td>Countywide Significant Arterial Network (CSAN)</td>
<td>Metro CSAN study</td>
<td>On CSAN network</td>
</tr>
<tr>
<td>Countywide Strategic Truck Arterial Network (CSTAN)</td>
<td>Metro CSTAN study</td>
<td>On CSTAN network</td>
</tr>
<tr>
<td>Active Transportation Plans - bicycle routes</td>
<td>STP Active Transportation Plan</td>
<td>Arterial segment includes an existing or STP plan proposed bicycle route</td>
</tr>
<tr>
<td>Rail or bus rapid transit route</td>
<td>Routes of Metro, Long Beach Transit, Montebello, etc.</td>
<td>Arterial segment includes existing or planned LRT, Rapid Bus/BRT or High Frequency Transit Route</td>
</tr>
<tr>
<td>Existing and forecasted population and employment density</td>
<td>Census Data</td>
<td>Arterial segment is within cities of dense population and employment or areas of forecasted population and employment</td>
</tr>
<tr>
<td>Adjacent or connecting directly to freeway</td>
<td>Review network map</td>
<td>Arterial segment includes freeway ramp connection</td>
</tr>
<tr>
<td>Bridge Condition/Deficient Bridge</td>
<td>Caltrans Structure Maintenance &amp; Investigations Bridge List</td>
<td>Arterial segment includes one or more structurally Deficient or Functionally Obsolete Bridges</td>
</tr>
</tbody>
</table>
2035 Roadway Segment Volume/Capacity (V/C) Ratio (AM and PM)

The GCTM was used to identify arterial segments with volume to capacity (V/C) ratio$^{18}$ over 1.0. Those locations with forecasted year 2035 V/C over 1.0 indicate demand approaching or exceeding the available roadway capacity, thus indicating likely congestion areas. Figure 5.2 illustrates the forecasted 2035 PM peak hour roadway segment LOS.

2035 Daily Traffic Volume

The GCTM was used to identify arterial segments with high forecasted future traffic volumes. The thresholds applied for the arterial system analysis were as follows:

- 30,000 to 39,999 vehicles/day
- 40,000 to 49,999 vehicles/day
- 50,000 and above vehicles/day

Figure 5.3 illustrates the 2035 daily traffic volume with highlights for the higher volume street segments. Note that arterials with daily volume under 30,000 vehicles/day are not flagged as that level of traffic is consistent with low to moderate traffic flow conditions on a typical arterial roadway.

Projected Growth in Daily Traffic

The GCTM was used to forecast the potential growth of traffic on each arterial segment. Higher levels of growth correlate to possible decrease in operating performance and new congestion where none currently exists. The thresholds applied for the arterial system analysis were as follows:

- 0 to 9,999 added vehicles/day
- 10,000 to 19,999 added vehicles/day
- 20,000 and above added vehicles/day

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$^{18}$ Volume/capacity (V/C) ratio is the ratio of the traffic volume to capacity. Capacity is the maximum hourly rate at which vehicles can reasonably be expected to proceed through an intersection under prevailing roadway, traffic, and control conditions.
Figure 5.2  Forecasted 2035 PM Peak Hour Level of Service / Volume to Capacity Ratio
2035 Daily Truck Traffic Volume

The GCTM was used to identify arterial segments with high expected truck volumes. The thresholds applied for the arterial system analysis were as follows:

- 999 to 1,999 trucks/day
- 2,000 to 4,999 trucks/day
5,000 and above trucks/day

Figure 5.4 illustrates forecasted 2035 daily truck volume. Arterials with truck volume under 999 trucks per day are not flagged as that level of truck traffic is consistent with low to moderate truck flow conditions on a typical arterial roadway.

**Arterial System Speeds Analysis**

A database of historical traffic speed vehicle probe data in the Gateway Cities was obtained and analyzed. The database consists of measured and reported average speed from the mobile detection devices for vehicles on each traffic message channel (TMC) link in the Gateway Cities. For purposes of the STP analysis, speeds are presented as a representation of areas on the arterial network where vehicles are travelling at relatively slower speeds and may therefore experience greater delay which correlates to hot spots or congestion points.

The hour of 7:30 to 8:30 AM was chosen for the AM peak hour and 5:00 to 6:00 was chosen for the PM peak hour. Figure 5.5 illustrates the current PM peak hour speeds.

The speed data were reviewed to determine the locations, both intersection and corridor segments, that experience the slowest speeds. For purposes of the STP analysis, the locations that fall into the three lowest speed categories, representing speeds lower than 18 miles per hour, are used to identify the worst case locations and are therefore flagged for purposes of identifying segments in need of improvement. Segments with speeds lower than 18 mph are indicated by the red and black colors on the PM peak speed maps (Figure 5.5).
Figure 5.4  Forecasted 2035 Daily Truck Volume

Legend
Total Arterial Segment Truck ADT
- 0 - 1,999
- 2,000 - 4,999
- 5,000 and Above

Source: Gateway Cities Traffic Model
Figure 5.5  AM and PM Peak Hour Arterial Roadway Speeds
Intersection Peak Hour Level of Service

One hundred intersections were studied as part of the STP to determine LOS and type of deficiency. Currently available intersection LOS data was compiled and future LOS data was projected for select intersection locations. This analysis built upon the several hundred additional locations that were assessed as part of the SR-91/I-605/I-405 Hot Spots Study (230 locations) and the I-710 EIR/EIS, I-5 corridor studies and other efforts.

All of the intersection operational data was compiled to determine the locations with the poorest operating conditions as reflected by LOS. The data were then normalized on a per-mile basis for the arterial segmentation analysis. Figure 5.6 illustrates the intersection LOS results. As shown, out of more than six hundred intersections analyzed, ninety are operating at LOS E or LOS F during one or both peak hours. Those locations are considered to be deficient and warrant improvement.

Intersection Crash Totals

The SWITRS provides data on the total number of reported crashes on California roadways. SWITRS was used to identify intersections with a high crash total, which were normalized on a per-mile basis for the arterial segmentation analysis.

Key Networks – CSAN and CSTAN

There are two identified networks developed by Metro for purposes of planning the arterial roadway system. Those are the CSAN and the CSTAN. Both networks were developed by Metro by assessing various key indicators on the arterial networks. Presence of an arterial segment on these networks indicates that the segment is part of the key arterial or goods movement system in the Gateway Cities.

Population and Employment Density

Arterial segments that serve areas of particularly high current or forecasted future population or employment density are flagged in the analysis due to their importance in serving areas of probable high travel demand.

Freeway Connectivity

If an arterial segment is directly connected to the freeway system, then it serves as a key linkage between the arterial and freeway system and is thus flagged in the analysis.
Bridge Conditions and Deficiencies

The Caltrans Structure Maintenance & Investigation Bridge List identifies structurally deficient or functionally obsolete bridges. Any segment containing one of these bridges is flagged in the analysis.
Identification of Deficient Arterial Corridors

Based on analysis of all of these data sources, a network of key arterial corridors with identified deficiencies that require further analysis was developed. That network was then discussed with each jurisdiction and it was refined based on comments from the city and county staff. The resulting arterial system deficiency network is shown in Figure 5.7.

Gateway Cities Traffic Model Arterial Analysis

Figure 5.8 illustrates the intersections which are included in the GCTM model (nearly 2,300 intersections). At each intersection, detailed data was obtained from the GCCOG member cities and Los Angeles County, including signal timing information, as it was available. Other data input into the model includes lanes by type, such as through lanes, left and right turn lanes, and turn pocket length. The results of the GCTM for the arterial system and intersections generated a list of deficient arterial corridors and identified intersections in need of improvements. The model is also available for use by the jurisdictions for future planning and analysis on their arterial system.

5.2 Recommended Arterial System Concept Improvements

Arterial system improvements are located at both intersections and between intersections on mid-block arterial segments. Intersections often serve as the key bottlenecks on the arterial system since they share capacity between two roadways; therefore, improving problem intersections can significantly improve two arterial corridors. However, bottlenecks can also occur on mid-block arterial segments where lanes drop, at bridges with insufficient width, or at rail at-grade crossings which cause arterial bottlenecks.

As part of the STP, 100 intersections with identified deficiencies have been reviewed in detail and concept improvements have been developed at 84 of those locations, including development of concept drawings for all 84 locations. Concept improvements for an additional 33 intersections were developed as part of the SR-91/I-605/I-405 Hot Spots Study. In addition, each deficient arterial corridor identified previously had potential improvements along the length of the corridor developed to aid the cities with their master planning efforts.
Figure 5.7  Arterial System Deficiency Network

Legend

- Deficient Arterial Corridor for Analysis
Figure 5.8  Intersections Included in GCTM (approximately 2,300 intersections)
Other Improvements

In addition to intersection improvements, each arterial corridor has been assessed to develop a list of other potential improvements along the length of the corridor. Each corridor has been studied using aerial photography, geometric and striping plans, and field review to identify possible corridor level improvements. These improvements were then discussed with the staff of the jurisdictions. The improvements fall into the following categories:

- Active transportation improvements (bike lanes, pedestrian improvements) as discussed in the Active Transportation Element of the STP.
- Signal system improvements and other ITS improvements
- Transit operational improvements, including bus only lanes, bus rapid transit, bus queue jump implementation and other transit enhancements
- Manage access to consolidate driveways and eliminate conflict, including median installation, median enhancement or median closures
- Grade separations for at-grade rail crossings
- Widen/replace deficient bridges
- Peak period on-street parking restrictions to add roadway capacity
- Narrow travelled way and provide for Complete Streets features where appropriate
- Roadway spot widenings to eliminate bottlenecks where appropriate
- Improve freeway ramp connections/improve freeway ramp terminus intersections
- The Gateway Cities arterial system is extensive. A detailed table of each identified corridor’s recommended improvements is provided in Appendix 2 with the following information:
  - Limits of the corridor and jurisdictions included in the corridor
  - Number of travel lanes
  - Comments by the jurisdictions regarding corridor issues, problems and opportunities as documented in the meetings
  - Major cross streets and proposed STP intersection improvements
  - Right of way issues and constraints that may affect implementation of intersection improvements
  - Off-intersection improvements along the corridor at mid-block locations
  - Other proposed intersection improvements from other studies and sources in addition to those developed for the STP
5.3 Arterial System Improvement Implementation and Next Steps

The STP provides a comprehensive analysis of the entire arterial system in the Gateway Cities Subregion. This is the first time that all arterials in the GCCOG area have been studied together, modeled and assessed in for deficiencies with recommended improvement concepts developed. Next steps toward implementation of arterial and intersection improvements have already begun through efforts by Metro and the GCCOG for a set of intersections. As part of the SR-91/I-605/I-405 Hot Spots Study and the I-710 Early Action Program, both funded by Measure R, a number of intersections within the Measure R eligible areas/boundaries have been funded for further planning and environmental clearance and design. This work began in 2014 and will be completed in 2015 or early 2016.

In late 2014, the GCCOG Board took action to prioritize key arterial corridors in the Gateway Cities Subregion for Green Streets evaluation and planning. In late June 2015, the Master Planning and Complete Street Evaluation Study effort kicked off with the Artesia Master Plan and Complete Street Evaluation Study effort. Artesia is the first of 25 arterials corridors that could be evaluated by the jurisdictions for Complete Streets design implementation. The STP TAC provided each jurisdiction with a listing of the subregion’s arterials to gather their feedback on priority corridors in the Master Planning and Complete Street Evaluation. This effort to prioritize the arterial corridors is based on not only the technical deficiencies identified within the STP, but also additional criteria including sustainability, land use opportunity, interest and available funding.

Funding for Complete Streets and Master Planning of these arterial corridors will come from local jurisdictions and will not be funded by Metro or Measure R. While each study may last up to a

19 "Complete Streets” are roadways designed to accommodate not only vehicles but also bicyclists, transit riders, and pedestrians. The California Complete Streets Act requires cities and counties to integrate complete streets policies into their general plans.
year, based on the number of jurisdictions, the level of coordination and the approvals process
needed, the overall program is anticipated to last up to five to seven years. The timeframe with
further depend on the number of arterials ranked for further study and the resources to fund the
study efforts. Following the completion of an arterial study, the master plan deliverable will be
in a format, such as support for a grant application, which can be used to obtain additional
funding for final design and construction by individual jurisdictions, a multi-jurisdictional group,
or another agency such as Metro.

Table 5.2 Conceptual Arterial System Recommendations by Jurisdiction and Deficient Corridor

<table>
<thead>
<tr>
<th>Agency</th>
<th>STP Deficient Corridors Within Jurisdictions</th>
<th>Summary of Concept Improvement Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artesia</td>
<td>Artesia Blvd, Norwalk Blvd, Pioneer Blvd, South St</td>
<td>Consider traffic calming measures and bike lanes. Intersection improvements/turn lane additions. Signal coordination. Consider bridge improvements.</td>
</tr>
<tr>
<td>Bell</td>
<td>Atlantic Blvd, Bandini Blvd, Eastern Ave, Florence Ave, Gage Ave</td>
<td>Intersection improvements/turn lane additions. Signal coordination. Consider road diet or turn restrictions/access management. Consider safety improvements. Consider bridge widening and improvements.</td>
</tr>
<tr>
<td>Carson</td>
<td>Artesia Blvd, Del Amo Blvd</td>
<td>Intersection improvements/turn lane additions. Grade separate railroad crossings. Consider bridge improvements. Consider safety improvements.</td>
</tr>
<tr>
<td>Cerritos</td>
<td>Alondra Blvd, Artesia Blvd, Bloomfield Ave, Carmenita Rd, Del Amo Blvd, Norwalk Blvd, Pioneer Blvd, South St, Studebaker Rd, Valley View St</td>
<td>Intersection improvements/turn lane additions. Signal coordination. Consider bridge improvements. Grade separate railroad crossings. Consider safety improvements.</td>
</tr>
<tr>
<td>Agency</td>
<td>STP Deficient Corridors Within Jurisdictions</td>
<td>Summary of Concept Improvement Recommendations</td>
</tr>
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<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Compton</td>
<td>Alameda St, Alondra Blvd, Artesia Blvd, Long Beach Blvd, Rosecrans Ave, Santa Fe Ave, Willowbrook Ave</td>
<td>Synchronize traffic signals, access management. Flip parking lane and bike lane to create protected bike lane or study parking restrictions. Intersection improvements/turn lane additions. Grade separate railroad crossings. Consider bridge improvements. Consider safety improvements.</td>
</tr>
<tr>
<td>Hawaiian Gardens</td>
<td>Carson St, Pioneer Blvd</td>
<td>Consider safety improvements. Consider bridge improvements. Consider peak hour parking restrictions for additional capacity.</td>
</tr>
<tr>
<td>Huntington Park</td>
<td>Alameda St, Florence Ave, Gage Ave, Pacific Blvd, Santa Fe Ave, Slauson Ave</td>
<td>Synchronize traffic signals, access management. Intersection improvements/turn lane additions. Conduct a traffic study to determine road diet feasibility. Consider road diet or turn restrictions/access management. Consider bridge improvements. Grade separate railroad crossings. Consider safety improvements.</td>
</tr>
<tr>
<td>Industry</td>
<td>Valley Blvd</td>
<td>Consider bridge improvements. Consider widening near freeway ramps.</td>
</tr>
<tr>
<td>La Mirada</td>
<td>Artesia Blvd, Firestone Blvd, Imperial Highway, La Mirada Blvd, Rosecrans Ave, Telegraph Rd, Valley View St</td>
<td>Intersection improvements/turn lane additions. Consider bridge improvements. Consider safety improvements. Signal coordination. Grade separate railroad crossing.</td>
</tr>
<tr>
<td>Lakewood</td>
<td>Bellflower Blvd, Carson St, Clark Ave, Del Amo Blvd, Lakewood Blvd, Pioneer Blvd</td>
<td>Intersection improvements/turn lane additions. Consider bridge widening and improvements. Consider safety improvements. Consider a road diet. Consider bike lanes.</td>
</tr>
<tr>
<td>Agency</td>
<td>STP Deficient Corridors Within Jurisdictions</td>
<td>Summary of Concept Improvement Recommendations</td>
</tr>
<tr>
<td>--------------</td>
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</tr>
<tr>
<td>Long Beach</td>
<td>2nd St, 7th St, Anaheim St, Artesia Blvd, Carson St, Del Amo Blvd, Lakewood Blvd, Long Beach Blvd, Orange Ave, Pacific Coast Highway, Seaside Ave/Ocean Blvd, Spring St, Wardlow Rd, Willow St/</td>
<td>Narrow median to install bike lanes, potential buffered bike lanes. Consider bus only lanes, or intersection queue jumps. Signal timing improvements and coordination. Intersection improvements/turn lane additions. Access management. Improve I-405 interchange ramps. Consider safety improvements. Consider bridge improvements. Grade separate railroad crossings.</td>
</tr>
<tr>
<td></td>
<td>Sepulveda Blvd, Woodruff Ave</td>
<td></td>
</tr>
<tr>
<td>Lynwood</td>
<td>Alameda St, Atlantic Blvd, Imperial Highway, Long Beach Blvd, State St, California Av, Bullis Rd</td>
<td>Synchronize traffic signals, access management. Intersection improvements/turn lane additions. Evaluate widening. Drainage improvements due to arterial flooding. Consider bridge improvements. Consider safety improvements.</td>
</tr>
<tr>
<td>Maywood</td>
<td>Atlantic Blvd, Slauson Ave</td>
<td>Grade separate railroad crossings. Consider bridge improvements.</td>
</tr>
<tr>
<td>Montebello</td>
<td>Beverly Blvd, Garfield Ave, Montebello Blvd, Slauson Ave, Telegraph Rd, Washington Blvd, Whittier Blvd</td>
<td>Intersection improvements/turn lane additions. Conduct a parking study to determine feasibility of removing parking or reduce median width to install bicycle lanes, grade separate railroad crossings. Consider safety improvements. Consider bridge improvements.</td>
</tr>
</tbody>
</table>
### Summary of Concept Improvement Recommendations

<table>
<thead>
<tr>
<th>Agency</th>
<th>STP Deficient Corridors Within Jurisdictions</th>
<th>Summary of Concept Improvement Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Gate</td>
<td>Alameda St, Atlantic Blvd, Firestone Blvd, Garfield Ave, Imperial Highway, Long Beach Blvd, Paramount Blvd, State St, California Av, Bullis Rd, Tweedy Blvd</td>
<td>Synchronize traffic signals, access management. Grade separate railroad crossings. Intersection improvements/turn lane additions. Access management. Conduct a traffic study to see if a road diet is feasible. Consider widening where feasible. Consider bridge improvements.</td>
</tr>
<tr>
<td>Vernon</td>
<td>37th St, 38th St, Alameda St, Atlantic Blvd, Bandini Blvd, Lorena St/Grande Vista/Downey Road, Santa Fe Ave, Slauson Ave, Soto St, Washington Blvd</td>
<td>Extend one-way couplets. Consider peak-hour parking restrictions to add another through lane. Synchronize traffic signals between City of LA and Vernon. Grade separate railroad crossings. Consider bridge improvements. Consider safety improvements.</td>
</tr>
<tr>
<td>Port of Long Beach</td>
<td>Multiple local Port roads/corridors, Seaside Ave/Ocean Blvd</td>
<td>To be coordinated with Port Transportation Planning efforts</td>
</tr>
<tr>
<td>LACDPW (Wilmington, Hacienda Heights, etc.)</td>
<td>Alameda St, Alondra Blvd, Atlantic Blvd, Beverly Blvd, Carmenta Rd, Colima Rd, Del Amo Blvd, Florence Ave, Mills Ave, Garfield Ave, Imperial Highway, Norwalk Blvd, Pioneer Blvd, Rosecrans Ave, Rosemead Blvd, Slauson Ave, Telegraph Rd, Washington Blvd, Whittier Blvd</td>
<td>Synchronize traffic signals, access management. Flip parking lane and bike lane to create protected bike lane or study parking restrictions. Intersection improvements/turn lane additions. Access management. Consider bridge improvements. Consider safety improvements. Grade separate railroad crossings.</td>
</tr>
</tbody>
</table>
6.0 Transit / Park-and-Ride

Transit services are an essential component of an efficient, accessible, and sustainable multimodal transportation system. The Gateway Cities is home to a diverse existing transit network, including intercity rail (Amtrak), commuter rail (Metrolink), light rail (Metro Blue and Green Lines), and dozens of heavily-traveled bus routes operated by Metro and municipal transit agencies. Table 6.1 summarizes the existing transit services in the Gateway Cities, by service type. Figure 6.1 shows the location of existing transit services in the Gateway Cities.

### Table 6.1 Summary of Existing Transit Services in the Gateway Cities

<table>
<thead>
<tr>
<th>Rail Type</th>
<th>Rapid and Express Buses</th>
<th>Local and Municipal Buses</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commuter and Intercity Rail</strong></td>
<td>Metro Route 760, Metro Route 762, Other Metro Rapid and Express Routes</td>
<td>Metro, Montebello Bus Lines, Norwalk Transit, LADOT DASH, Other Metro Local and Shuttle Routes, Long Beach Transit, Bell Gardens Transit, Bellflower Bus, Cerritos on Wheels, City of South Gate, Commerce Municipal Bus Lines</td>
</tr>
<tr>
<td><strong>Light Rail</strong></td>
<td>Metrolink Orange, Metrolink 91, Metrolink Riverside</td>
<td>Compton Renaissance Transit System, Cudahy Area Rapid Transit, DowneyLink, El Sol Shuttle, Huntington Park Local Transit Bus, Lynwood Breeze, OCTA, Paramount Easy Rider, Sunshine Shuttle, Willowbrook Shuttle</td>
</tr>
</tbody>
</table>

### Transit Usage

Together the transit system provides nearly 320,000 trips each weekday. Approximately 98 percent of these trips feature a passenger either boarding or alighting in the Gateway Cities, while the remaining two percent are pass-through trips (e.g., an Orange County resident commuting to downtown Los Angeles via Amtrak or Metrolink).
Local and municipal buses provide a majority of transit trips in the subregion (sixty percent), followed by light rail (32 percent), rapid and express buses (5.5 percent), and commuter and intercity rail (2.5 percent). These existing services result in an estimated 125,880 fewer personal vehicle trips using the Gateway Cities roadway system each weekday, which is equal to 2.3 percent of all trips.

If socioeconomic growth occurs as forecasted between 2013 and 2035 but no additional transit improvements are made, average weekday transit ridership in the subregion is projected to
increase approximately eleven percent to about 353,000.\textsuperscript{20}

**Transit Capacity**

Together, Gateway Cities transit services provide about 14,000 peak-hour seats to potential travelers. Nearly half (49 percent) of this capacity is provided by local and municipal transit operators, followed by commuter and intercity rail (24 percent), light rail (22 percent), and rapid or express bus (five percent). Local bus route services operate on most major arterial roadways in the Gateway Cities. During peak hours, local buses run every 12-30 minutes on average, while express and rapid routes typically run every 10-12 minutes.

**Park & Ride**

The Gateway Cities are served by eighteen park-and-ride lots that provide access to Metrolink, Metro Blue and Green Lines, and local and express bus routes (see Figure 6.1). Table 6.2 provides an overview of existing park & ride facilities, which provide a total of 7,132 parking spaces.

**Table 6.2  Existing Gateway Cities Park-&-Ride Facilities Overview**

<table>
<thead>
<tr>
<th>Lot Name</th>
<th>Roadway Connections</th>
<th>Transit Connections</th>
<th>Existing Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>103rd Street</td>
<td>I-105, I-110, S Alameda St</td>
<td>Metro: Blue, 117, 254, 305, 612, 55/355; LADOT: DASH Watts</td>
<td>63</td>
</tr>
<tr>
<td>Artesia</td>
<td>CA-91, I-710, S Alameda St</td>
<td>Metro: Blue, 60, 130, 205, 260, 762; Compton: 5, LBT: 51, 61</td>
<td>287</td>
</tr>
<tr>
<td>Atlantic</td>
<td>CA-60, I-710 Pomona Blvd, S Atlantic Blvd, E Beverly Blvd</td>
<td>Metro: Gold, 68, 260, 762; Montebello: 10, 40, 341, 342</td>
<td>262</td>
</tr>
<tr>
<td>Commerce</td>
<td>I-5, E Washington Blvd, S Garfield Ave</td>
<td>Metrolink 91 and OC: Commerce: Green, Red, Yellow, Orange</td>
<td>135</td>
</tr>
<tr>
<td>Del Amo</td>
<td>I-710, CA-91, Del Amo Blvd, I-405</td>
<td>Metro: Blue, 202; LBT: 191, 192</td>
<td>367</td>
</tr>
<tr>
<td>Florence</td>
<td>E Florence Ave, Compton Ave, S Alameda St</td>
<td>Metro: Blue, 102, 110, 611, 111/311; LADOT: Chesterfield Square</td>
<td>115</td>
</tr>
<tr>
<td>Indiana</td>
<td>CA-60, I-5, N Indiana St</td>
<td>Metro: Gold, 30, 68, 254, 620, 665; LADOT: DASH Boyle Heights</td>
<td>42</td>
</tr>
<tr>
<td>Lakewood Blvd</td>
<td>I-105, Lakewood Blvd, Imperial Hwy</td>
<td>Metro: Green, 117, 265, 266; DowneyLink: Southeast</td>
<td>414</td>
</tr>
<tr>
<td>Lakewood West</td>
<td>I-5, I-605, Lakewood Blvd</td>
<td>Metro 62, 266 (Indirect connection)</td>
<td>83</td>
</tr>
<tr>
<td>Long Beach Blvd</td>
<td>I-105, Long Beach Blvd</td>
<td>Metro: Green, 60, 251, 760; Lynwood: A, C</td>
<td>646</td>
</tr>
</tbody>
</table>

\textsuperscript{20}Gateway Cities Transit Assessment, 2014.
<table>
<thead>
<tr>
<th>Lot Name</th>
<th>Roadway Connections</th>
<th>Transit Connections</th>
<th>Existing Parking</th>
</tr>
</thead>
<tbody>
<tr>
<td>MLK Jr. Transit Center (Compton Station)</td>
<td>S Alameda St, Rosecrans Ave, Compton Blvd</td>
<td>Metro: Blue, 51/52/352, 60,125,127 128,202; Compton: 1, 2, 3, 4, 5</td>
<td>330</td>
</tr>
<tr>
<td>Montebello/Commerce</td>
<td>I-5, S Garfield Ave, Whittier Blvd</td>
<td>Metrolink: Riverside; Metro: 18, 66; Montebello: 70</td>
<td>255</td>
</tr>
<tr>
<td>Norwalk</td>
<td>I-105, I-605, Imperial Hwy</td>
<td>Metro: Green, 115, 125, 270, 460, 111/311; Norwalk: 2, 4, 5</td>
<td>2,050</td>
</tr>
<tr>
<td>Norwalk/Santa Fe Springs 1 and 2</td>
<td>Imperial Hwy, Bloomfield Ave, I-5</td>
<td>Metrolink: 91; Metro: Orange; Norwalk: 3, 4</td>
<td>694</td>
</tr>
<tr>
<td>Taylor Ranch</td>
<td>I-60</td>
<td>Montebello Express 341, 20</td>
<td>40</td>
</tr>
<tr>
<td>Willow</td>
<td>Long Beach Blvd, E Willow St, I-405</td>
<td>Metro: Blue, 60; LBT: 52, 101, 102, 103, 104</td>
<td>899</td>
</tr>
<tr>
<td>Willowbrook</td>
<td>I-105, S Wilmington Ave, Imperial Hwy</td>
<td>Metro: Blue, Green, 120, 202, 205, 305,612, 55/355; LADOT: DASH Watts; Lynwood: D</td>
<td>335</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>7,132</strong></td>
</tr>
</tbody>
</table>

Source: Metro, 2014

### 6.1 Transit System Issues and Deficiencies

Existing transit services provide an invaluable service to Gateway Cities’ communities, but significant improvements are needed to meet forecasted demand and make progress toward a more safe, accessible, and competitive transit system.

The identification of existing transit system issues and deficiencies was informed by two primary sources:

**Technical analyses.** Two technical analyses were conducted in 2014: the *Gateway Cities Transit Assessment* and the *Gateway Cities Park-and-Ride Assessment*. These analyses included the collection of subregional ridership data, seated transit capacity, surveys of park-and-ride capacity and usage, input from Metro and municipal transit providers, and sketch analyses of future demand and capacity constraints. The analyses reported measures of system performance under existing conditions; a future 2035 No Build scenario in which only projected socioeconomic growth occurs; and a future 2035 STP scenario in which major planned transit and park-and-ride lot improvements were assumed to be implemented alongside projected socioeconomic growth. The detailed transit system analysis methodologies and results can be found in Appendix 3.

**Input from transit operators.** The GCCOG convened a roundtable of municipal transit operators in December 2014 to supplement the findings of these technical analyses with discussions of existing transit system deficiencies and identification of subregional transit policy goals.

These efforts provided valuable input to STP scenario modeling, and revealed the following
issues and deficiencies related to mobility, safety and accessibility in the transit system.

**Mobility**

**Limited transit capacity.** Multiple municipal transit operators report limited seated capacity at bus stations and on several high-demand bus routes under current existing conditions. Future forecasted socioeconomic growth suggests demand for bus and light rail transit services will increase substantially over the next 20 years, resulting in demand in excess of or approaching capacity across the Gateway Cities (see Table 6.3). Other capacity constraints include narrow streets, the need for multiple transit providers to share stops, and arterial traffic and right-of-way concerns. Limited transit capacity contributes to lower bus speeds, decreased reliability and lower service frequencies.

Table 6.3  **Forecasted Peak-Hour Ridership Demand (Year 2035)**

<table>
<thead>
<tr>
<th>Transit Service</th>
<th>Peak-Hour Utilization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metrolink</td>
<td>88%</td>
</tr>
<tr>
<td>Metro Blue Line</td>
<td>140%</td>
</tr>
<tr>
<td>Metro Green Line</td>
<td>156%</td>
</tr>
<tr>
<td>Metro Rapid/Express Bus</td>
<td>90%</td>
</tr>
<tr>
<td>Other Metro Local Bus</td>
<td>103%</td>
</tr>
<tr>
<td>Long Beach Transit</td>
<td>188%</td>
</tr>
<tr>
<td>Montebello Bus Lines</td>
<td>114%</td>
</tr>
<tr>
<td>Other Municipal Operators</td>
<td>94%</td>
</tr>
</tbody>
</table>

*Source: Gateway Cities Transit Assessment, 2014*

**Limited long-distance transit options.** The Metro Blue and Green Light Rail Lines provide competitive transit travel times to regional job centers, but most communities in the Gateway Cities do not have convenient access to rapid, long-distance transit routes that can serve as reasonable alternatives to the SOV.

**Need for real-time information.** One deterrent to transit usage is uncertainty regarding arrival and departure times. Most stops in the Gateway Cities do not feature clear, real-time information on bus arrivals/departures.

**Need for interagency cooperation.** Gateway Cities residents can choose from a large number of transit systems. However, transferring from one system to another is hampered by inter-agency barriers. For instance, municipal bus lines are frequently used as a means of accessing longer-distance fixed-guideway transit routes. For these users, transferring to another system could require multiple transit cards or cash transactions, which is a disincentive to taking transit. An improved fare box system that links municipal systems with Metro and other regional transit systems would be helpful.
agencies would improve overall transit mobility.

**Safety**

**Increased collisions involving pedestrians and bicyclists near stations and stops.** While overall traffic collisions are trending downward both regionally and nationally, collisions involving pedestrians and bicyclists are on the rise.

**Poorly lit or monitored buses, stations, and stops.** Many bus stops and stations are poorly lit and/or not frequently monitored by security personnel, contributing to real or perceived insecurity in parts of the subregional transit system. These factors serve as a deterrent to would-be transit users. To improve the safety and security of transit users as well as transit employees, municipal transit operators have called for improved lighting, closed-circuit cameras at bus stops and stations, and higher quality glass and lighting on buses.

**Accessibility**

- **Limited park-and-ride capacity.** Personal vehicle travel remains the only convenient means of accessing fixed-guideway transit for many residents. Current daily usage of existing park-and-ride lots averages over eighty percent systemwide, and one-third of subregional park-and-ride lots operate at or near capacity. Forecasted socioeconomic growth is expected to add further demand to the Gateway Cities park-and-ride system (see Table 6.4). Additional park-and-ride capacity is needed to provide a growing subregional population with access to an expanding regional rail network.

- **First mile/last mile pedestrian and bicyclist access.** Metro’s First/Last Mile Strategic Plan identified a countywide need to improve pedestrian and bicyclist access to transit facilities such as the Metro Blue and Green Lines. This sentiment is echoed by municipal transit operators, who stress the need for improved pedestrian and bicyclist access features at existing bus terminals and high-ridership stations. Specific challenges to accessing transit include hazardous road crossings, barriers such as freeways or long blocks without clear access points, poorly lit or otherwise unsafe access points, and poorly maintained infrastructure (e.g. broken sidewalks). Improving access to transit stations for bicyclists and pedestrians is a goal of the STP Active Transportation Element.

- **Limited bus stop amenities.** Many subregional bus stops remain inaccessible or inconvenient for people with disabilities and the elderly. Wheelchair access and bus stop infrastructure is a regional issue that requires regional coordination. Amenities such as benches, shelters, information kiosks, and real-time arrival information increase rider comfort and decrease the perceived wait-time of transit users. Municipal operators have called for benches as a basic amenity at bus stops, with additional amenities at higher ridership stations and transfer hubs.
Table 6.4 Forecasted Park-and-Ride Lots Over Capacity (Year 2035)

<table>
<thead>
<tr>
<th>Park-and-Ride Lot</th>
<th>Forecasted Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Del Amo</td>
<td>103-108%</td>
</tr>
<tr>
<td>Florence</td>
<td>105-109%</td>
</tr>
<tr>
<td>Lakewood Blvd</td>
<td>119-124%</td>
</tr>
<tr>
<td>Montebello/Commerce</td>
<td>102-232%</td>
</tr>
<tr>
<td>Norwalk</td>
<td>118-123%</td>
</tr>
<tr>
<td>Norwalk/Santa Fe Springs</td>
<td>96-219%</td>
</tr>
<tr>
<td>Wardlow</td>
<td>100-105%</td>
</tr>
<tr>
<td>Willow</td>
<td>102-107%</td>
</tr>
</tbody>
</table>


Farebox system improvements. Those more likely to take transit, such as students, persons with disabilities, or senior citizens, are often limited in their capacity to pay for these services on a daily basis. Allowing universal discounts through a coordinated regional farebox system for targeted users and participating employers would increase the visibility and affordability of transit in the subregion.

The STP addresses these system issues by outlining (1) a set of regionally-significant projects aimed at improving transit competitiveness in the Gateway Cities; and (2) a series of subregional policy priorities to guide future transit investments.

### 6.2 Regionally Significant Transit System Improvements

The STP recommends a series of regionally significant transit and park-and-ride improvements that address transit capacity, mobility and access in the Gateway Cities. Figure 6.2 shows the location of these improvements.

Transit Improvements

The Gateway Cities STP recommends nine regionally-significant transit service improvements (see Table 6.5).
Figure 6.2 Locations of Proposed Transit and Park & Ride Improvements

Source: Cambridge Systematics, Inc., 2015
Table 6.5 Proposed Regional Transit Improvements

<table>
<thead>
<tr>
<th>System</th>
<th>Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amtrak Pacific Surfliner</td>
<td>Various operational improvements, service enhancement</td>
</tr>
<tr>
<td>Metrolink</td>
<td>Various operational improvements, service enhancement</td>
</tr>
<tr>
<td>Metro Blue Line</td>
<td>Increase in service frequency</td>
</tr>
<tr>
<td>Metro Green Line</td>
<td>Increase in service frequency</td>
</tr>
<tr>
<td>Metro Gold Line</td>
<td>Eastside extension (Washington Blvd alignment)</td>
</tr>
<tr>
<td>Eco-Rapid Transit</td>
<td>New transit service from Los Angeles Union Station to Artesia</td>
</tr>
<tr>
<td>Atlantic Blvd Bus Rapid Transit (BRT)</td>
<td>New BRT service along Atlantic Blvd</td>
</tr>
<tr>
<td>OCTA Route 722</td>
<td>New express bus service from Santa Ana to California State University Long Beach</td>
</tr>
<tr>
<td>Long Beach Transit BRT</td>
<td>Six new BRT lines (Artesia, Del Amo, Willow, Lakewood, Norwalk, and 7th Street)</td>
</tr>
</tbody>
</table>

Each of the recommended transit improvements shown in Table 6.5 are important for the overall success of the transportation system. Amtrak and Metrolink serve key corridor demand for home to work travel during peak hours. The Metro Rail system serves a variety of trip types of trips during the day and the Metro Blue line provides service between Long Beach and downtown Los Angeles and is one of the most highly utilized light rail lines in the country. Similarly, ridership projections for the Eco-Rapid Transit line indicate up to 70,000 daily boardings, which would again be one of the most highly used light rail lines and it would serve the already congested I-5 corridor and connect the Gateway Cities to Los Angeles. Bus Rapid Transit is proving to be a cost effective mode to provide efficient travel opportunities for riders without the need for exclusive rights-of-way. All of the transit improvements together will help relieve congestion on the highway system, as well as serve the disadvantaged population of the Gateway Cities and other travelers who are looking for alternatives to the single occupant automobile trip.

Park-and-Ride Improvements

The Gateway Cities STP recommends eleven new or expanded park-and-ride facilities to address transit system access (see Table 6.6).
### Table 6.6 Proposed Park-and-Ride Improvements

<table>
<thead>
<tr>
<th>Park-and-Ride Lot</th>
<th>Location</th>
<th>Primary Service</th>
<th>Type</th>
<th>New Spaces</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third St / S. La Verne</td>
<td>County of LA</td>
<td>Metro Gold Line</td>
<td>New</td>
<td>87</td>
</tr>
<tr>
<td>CSULB</td>
<td>Long Beach</td>
<td>CSULB Transit Center</td>
<td>New</td>
<td>Undefined</td>
</tr>
<tr>
<td>Willow</td>
<td>Long Beach</td>
<td>Metro Blue Line</td>
<td>Expansion</td>
<td>920</td>
</tr>
<tr>
<td>Norwalk</td>
<td>Norwalk</td>
<td>Metro Green</td>
<td>Expansion</td>
<td>150</td>
</tr>
<tr>
<td>Lakewood Blvd</td>
<td>Downey</td>
<td>Metro Green Line</td>
<td>Expansion</td>
<td>230</td>
</tr>
<tr>
<td>Firestone Blvd</td>
<td>South Gate</td>
<td>Eco-Rapid Transit</td>
<td>New</td>
<td>150</td>
</tr>
<tr>
<td>Green Line / West Santa Ana Branch</td>
<td>Paramount</td>
<td>Eco-Rapid Transit, Metro Green Line</td>
<td>New</td>
<td>300</td>
</tr>
<tr>
<td>Paramount/Rosecrans</td>
<td>Paramount</td>
<td>Eco-Rapid Transit</td>
<td>New</td>
<td>200</td>
</tr>
<tr>
<td>Bellflower Blvd</td>
<td>Bellflower</td>
<td>Eco-Rapid Transit</td>
<td>New</td>
<td>270</td>
</tr>
<tr>
<td>Gridley Rd/183 St</td>
<td>Cerritos</td>
<td>Eco-Rapid Transit</td>
<td>New</td>
<td>400</td>
</tr>
<tr>
<td>Pioneer Blvd</td>
<td>Artesia</td>
<td>Eco-Rapid Transit</td>
<td>New</td>
<td>300</td>
</tr>
</tbody>
</table>

**Total**: 3,007

---

### 6.3 Transit Policy Issues

The Gateway Cities are home to millions of residents, hundreds of thousands of daily transit users, and an expansive service area spanning 27 cities and over twenty transit agencies. Over the next two decades, the transit system is expected to face increased demand for services, and a declining revenue stream needed to provide those services. Therefore, the top priority of Gateway Cities transit providers is to obtain the operating, maintenance, and capital funding necessary to continue providing a safe, effective and efficient transportation system to users.

In addition, Gateway Cities transit providers have identified the following transit policy issues and priorities aimed at maintaining and improving subregional mobility, safety, accessibility, environment and economy:

**Invest in service and operational improvements that improve the frequency and reliability of existing services.** Funding and financing should be used to preserve and maintain existing services. Where possible, investments should strive to enhance transit service frequency and reliability.

**Invest in enhanced personal security features.** Improve personal security of both patrons and employees at bus stops, stations and on buses by investing in enhanced lighting, closed-circuit cameras, and monitoring.

**Invest in transit access safety features.** Local jurisdictions and transit agencies share a mutual interest in improving first and last mile access to transit stations and stops. Transit agencies and jurisdictions should work together to improve the safety of bicyclists and pedestrians by
addressing hazardous road crossings, removing barriers to access, and improving station area maintenance (e.g. pavement conditions). The City of Lynwood Transit Area Strategic Plan (LTASP) is an example of this type of improvement project. The Lynwood Plan will redesign the I-105 interchange at Long Beach Boulevard to capitalize on numerous transportation modes and improve regional connectivity in the station area that will produce upgrades to pedestrian, bicycle and other transportation connectivity. The plan is intended to increase the use of transit services and result in improved safety and accessibility along paths of travel to and from the transit station.

**Invest in providing real-time arrival and departure information to customers.** Provide real-time bus arrival and departure information to improve system reliability and reduce uncertainty among transit users.

Invest in improved transit station and stop amenities to meet the needs of persons with disabilities and senior citizens. Ensure bus stops comply with Americans with Disabilities Act requirements.

**Invest in context-sensitive amenities at bus stops.** One size does not fit all when it comes to improving station/stop amenities. The needs of each station and stop in the transit system vary based on location, ridership demand, customer base, and other context-specific factors. Benches, shading, and other amenities should be implemented to meet the specific needs of each bus stop.

**Provide fare incentives to key transit users through regionally coordinated program.** Encourage targeted discounts for students, persons with disabilities, senior citizens, and/or participating employers.

**Improve coordination between transit agencies.** Regional constraints require regional solutions. Move toward improved regional cooperation between municipal transit providers and Metro to address system deficiencies, including a compatible fare collection payment system that meets the needs of customers.
Improving active transportation, including bicycling and walking, is a priority of the GCCOG. The STP Active Transportation Plan (ATP) Element seeks to better manage the Gateway Cities regional active transportation network, provide more transportation options, and improve quality of life by making bicycling and walking safer and easier. The ATP outlines a strategy designed to meet growing demand for bicycle and pedestrian infrastructure and in turn address regional goals of reducing air pollution, easing congestion, reducing energy consumption, and improving public health. The ATP is subregional in nature, with a focus on providing bicycle and pedestrian access across jurisdictional boundaries.

In the past, planning and implementing active transportation projects has generally occurred at the local level. Each of the Gateway Cities has developed designated bicycle and pedestrian facilities over the years and many cities have advanced active transportation planning by adopting plans that focus on the development of bicycle and pedestrian infrastructure, support facilities, public involvement, programs and practices, and potential funding sources. Many state, regional, and other strategic plans also facilitate coordinated planning across jurisdictional boundaries (see Table 7.1).

<table>
<thead>
<tr>
<th>Local Plans</th>
<th>Other Agency and County Plans</th>
<th>Regional, State, or Strategic Plans</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Los Angeles River Master Plan;</td>
<td>• Los Angeles County Bicycle Master Plan;</td>
<td>• SCAG RTP/SCS;</td>
</tr>
<tr>
<td>• San Gabriel River Master Plan;</td>
<td>• City of Los Angeles Bicycle Plan;</td>
<td>• Metro Countywide Sustainability Planning Policy and Implementation Plan/Sustainable Communities</td>
</tr>
<tr>
<td>• Compton Creek Regional Garden Park Master Plan;</td>
<td>• Los Angeles River Ecosystem Restoration Integrated Feasibility Report;</td>
<td>Strategies;</td>
</tr>
<tr>
<td>• Lynwood Bicycle and Pedestrian Transportation Plan;</td>
<td>• Rail to River Active Transportation Corridor Feasibility Study;</td>
<td>• Metro First-/Last-Mile Strategic Plan;</td>
</tr>
<tr>
<td>• Long Beach Blue Line Bicycle and Pedestrian Access Plan;</td>
<td>• Los Angeles County Transit-Oriented Districts Access Study;</td>
<td>• Metro Bicycle Strategic Plan;</td>
</tr>
<tr>
<td>• Long Beach Bicycle Master Plan;</td>
<td>• Adjacent Jurisdiction Bicycle/Pedestrian Plans.</td>
<td>• OCTA Commuter Bikeways Strategic Plan;</td>
</tr>
<tr>
<td>• Signal Hill Walkways and Trails Map;</td>
<td></td>
<td>• OCTA First and Second District Bikeways Collaborative; and</td>
</tr>
<tr>
<td>• South Gate Bicycle and Pedestrian Transportation Plan;</td>
<td></td>
<td>• OCTA Fourth District Bikeways Collaborative.</td>
</tr>
<tr>
<td>• Whittier Bicycle Transportation Plan.</td>
<td></td>
<td>• Caltrans’ Complete Streets Policy;</td>
</tr>
<tr>
<td>• Lynwood Transit Area Strategic Plan (LTASP)</td>
<td></td>
<td>• California Complete Streets Act;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• AB 32 and SB 375; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• B 1581 Caltrans Policy Directive 09-06</td>
</tr>
</tbody>
</table>
The ATP involved data collection, analysis, and an intensive two-year outreach and coordination process. The outreach effort sought to understand regional active transportation system deficiencies and identify multijurisdictional bicycle and pedestrian improvement priorities that further active transportation goals within the Gateway Cities Subregion (see Appendix 4). The ATP also included the identification of potentially supportive policies and programs to maximize the benefit of bicycle and pedestrian investments. This chapter summarizes the key findings of the ATP.

### 7.1 Existing Bicycle and Pedestrian Conditions

Bicycling and walking are efficient means of travel for shorter trips and connecting to other transportation modes for longer trips. Levels of bicycling and walking are influenced by the availability of safe facilities, weather, topography, and the density of population, employment, and retail centers.

Data on the level of walking and biking in the Gateway Cities Subregion is incomplete, but it is clear that vehicular travel remains the dominant mode choice for all trip purposes. Despite a mild climate, relatively flat topography, and surveys indicating that almost one-half of all trips in Los Angeles County are less than three miles, biking and walking account for 0.7 and 2.3 percent of Gateway Cities commute trips, respectively. Rates of active transportation are lower in the Gateway Cities than Los Angeles County and statewide averages (see Table 7.2). Travel to work makes up less than 20 percent of all travel, but little data exists regarding bicycle and pedestrian travel for non-work trips. Analysis of the California Household Travel Survey suggests walking accounts for 11.2 percent and bicycling accounts for 1.2 percent of all trips in Los Angeles County.

<table>
<thead>
<tr>
<th>Geography</th>
<th>Trip Type</th>
<th>Bike</th>
<th>Walk</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gateway Cities</td>
<td>Commute Trips</td>
<td>0.7%</td>
<td>2.3%</td>
<td>ACS 2013</td>
</tr>
<tr>
<td>Los Angeles County</td>
<td>All Trips</td>
<td>1.2%</td>
<td>11.2%</td>
<td>CHTS 2012</td>
</tr>
<tr>
<td>Los Angeles County</td>
<td>Commute Trips</td>
<td>0.9%</td>
<td>2.9%</td>
<td>ACS 2013</td>
</tr>
<tr>
<td>California</td>
<td>Commute Trips</td>
<td>1.1%</td>
<td>2.7%</td>
<td>ACS 2013</td>
</tr>
<tr>
<td>United States</td>
<td>Commute Trips</td>
<td>0.6%</td>
<td>2.8%</td>
<td>ACS 2013</td>
</tr>
</tbody>
</table>

Source: California Household Travel Survey – Cambridge Systematics analysis of LA County Data; U.S. Census Bureau, American Community Survey – 2013 – 5 year estimate.

### Existing Bicycle Network

The four primary types of bikeway facilities, as defined by Caltrans, are:

- Class I bike paths, or separated bike paths away from roadways, such as along the Rio
Hondo Channel;

- Class II bike lanes, or striped bike lanes on-street, such as on Del Amo Boulevard; and
- Class III bike routes, or routes indicated by signs only without striping or other measures, such as along sections of the Pacific Coast Highway.
- Class IV cycle tracks or bikeways adjacent to roadways but protected from vehicular traffic by grade separation, posts, physical barriers, or on-street parking.\(^{21}\)

As of 2012, the total network of bicycle facilities in the Gateway Cities included a total of 296 miles of bike paths, lanes, bike routes, and cycle tracks (see Table 7.3). Figures 7.1 and 7.2 display the existing bicycle network for the region. Some of the projects shown are located partially or entirely within cities or counties outside of the Gateway Cities.

### Table 7.3 Existing Bicycle Facilities in Gateway Cities (2012)

<table>
<thead>
<tr>
<th>Class/Type</th>
<th>Mileage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I - Bike Path</td>
<td>106</td>
</tr>
<tr>
<td>Class II - Bike Lanes</td>
<td>109</td>
</tr>
<tr>
<td>Class III - Bike Route*</td>
<td>79</td>
</tr>
<tr>
<td>Class IV – Cycle Track</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>296</strong></td>
</tr>
</tbody>
</table>

*Bike Routes include 1.5 miles of “bicycle friendly streets”

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\(^{21}\) Class IV bicycle facilities were codified in state law in 2014 pursuant to Assembly Bill 1193. In Figures 8.1 and 8.2, the two existing miles of cycle tracks are included with Class I bike paths.
Figure 7.2  Existing Bicycle Network (South)
Significant Pedestrian Features

Unlike designated bicycle facilities, the pedestrian network is much larger and generally designed with less detail regarding specific pedestrian facility types. The majority of arterial and collector streets in the study area provide sidewalks, while some residential streets have none or discontinuous sidewalks. Therefore, most pedestrian travel that occurs on major streets takes place on sidewalks, while travel in residential neighborhoods sometimes occurs on parkways and streets. Walking also takes place on shared-use facilities that have been implemented on flood control channels or as “rail to trail” conversions.

The ubiquity and quantity of sidewalks in the study area allow us to focus the attention of this effort on significant pedestrian-only facilities, not including typical sidewalks, such as:

- Regional greenways or shared-use paths;
- Pedestrian crossings of major regional barriers, such as freeways, flood control facilities, or utility corridors; and
- Access improvements to regional transit facilities.

7.2 Active Transportation Issues and Deficiencies

The existing bicycle network in the Gateway Cities Subregion has primarily been developed through individual city or county efforts, and regional efforts supported by Metro and other multi-jurisdictional agencies. The area provides an excellent environment for bicycling, including a temperate climate, a network of schools and open space, a major university and community college, a well-connected street grid, and relatively flat terrain. Despite the fact that bicycling is increasingly popular in Southern California, a safe, well-connected, and accessible bicycle network remains a significant challenge for many bicyclists in the Gateway Cities. The Gateway Cities ATP identified two primary challenges to increasing bicycling and walking in the region:

- **Safety.** Perceived safety and personal security are important determinants of whether one will choose to walk or bicycle over other means of transportation. Surveys indicate that many do not feel safe or comfortable riding on streets that exhibit high vehicle volumes and travel speeds, or that do not provide marked or separated bicycle lanes. Reported collisions involving bicyclists increased between 2007 and 2011 in California, while those involving pedestrians have decreased (see Tables 7.4 and 7.5). Collisions involving pedestrians were on average more severe than those involving bicyclists. Total collision rates can be misleading without knowing the level of bicycle and pedestrian activity. Research has shown that when bicycle ridership increases, overall

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collisions may increase, but the number of collisions per rider (and potential severity) decreases.

- **Connectivity.** The ability to access one’s destination is a critical factor when considering transportation modes. Common barriers to accessibility for bicyclists and pedestrians in the Gateway Cities include gaps in the network of bike routes, lanes, and paths; impassable or non-existent sidewalks; linear barriers such as freeways, train tracks, and long blocks; and insufficient infrastructure to facilitate roadway crossings. Traveling long distances can be a barrier to active transportation, thus connecting bicycling and walking to transit is vital for enabling longer trips.

### Table 7.4 Reported Collisions involving bicyclists in GCCOG (2007-2011)

<table>
<thead>
<tr>
<th>Severity</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>4</td>
<td>8</td>
<td>7</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Severe</td>
<td>32</td>
<td>41</td>
<td>47</td>
<td>39</td>
<td>48</td>
</tr>
<tr>
<td>Injury (Other Visible)</td>
<td>234</td>
<td>240</td>
<td>308</td>
<td>346</td>
<td>413</td>
</tr>
<tr>
<td>Injury (complaint of pain)</td>
<td>286</td>
<td>268</td>
<td>312</td>
<td>392</td>
<td>443</td>
</tr>
<tr>
<td>Total</td>
<td>556</td>
<td>557</td>
<td>674</td>
<td>782</td>
<td>914</td>
</tr>
</tbody>
</table>

Source: SWITRS accessed via [http://tims.berkeley.edu/](http://tims.berkeley.edu/)

### Table 7.5 Reported Collisions involving pedestrians in GCCOG (2007-2011)

<table>
<thead>
<tr>
<th>Severity</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>40</td>
<td>49</td>
<td>30</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>Severe</td>
<td>101</td>
<td>105</td>
<td>89</td>
<td>84</td>
<td>83</td>
</tr>
<tr>
<td>Injury (Other Visible)</td>
<td>330</td>
<td>343</td>
<td>296</td>
<td>315</td>
<td>272</td>
</tr>
<tr>
<td>Injury (complaint of pain)</td>
<td>328</td>
<td>349</td>
<td>371</td>
<td>357</td>
<td>334</td>
</tr>
<tr>
<td>Total</td>
<td>799</td>
<td>846</td>
<td>786</td>
<td>793</td>
<td>723</td>
</tr>
</tbody>
</table>

Source: SWITRS accessed via [http://tims.berkeley.edu/](http://tims.berkeley.edu/)
7.3 Proposed Active Transportation Network

To address the system deficiencies outlined above, the STP Active Transportation Plan Element envisions a complete regional system of bikeways and additional support facilities for both bicyclists and pedestrians. Because bicycle and pedestrian planning generally occurs at the local level, the STP reflects GCCOG member cities’ planned regionally significant active transportation facilities, as well as projects of regional significance that fall under the purview of Los Angeles County and/or Metro. The following project concepts were selected through the detailed ATP process, which included analysis of existing active transportation network, collision data, and agency and stakeholder input.

Bicycle Projects

The STP recommends 55 regionally significant bicycle projects, presented in Figures 7.3 and 7.4. Table 8.6 contains detailed information for each project. A project sheet was prepared for each of the 55 project ideas. The project sheets include a description of each project idea, its alignment, potential benefits, key connections to activity centers and destinations, challenges to implementation and issues associated with feasibility of each route. The project ideas are intended to assist member cities in exploring feasibility and implementation of regionally significant bikeway project ideas on the identified corridors or parallel roadways that can serve local and regional active transportation travel. It is not required that cities pursue the specific corridor, facility type, or strategies discussed, and such implementation is ultimately at the discretion of the local city or the County. In order to provide bicycle lanes along many of these segments, additional portions of the right-of-way may need to be made available through the conversion of parking or travel lanes, or the acquisition of right-of-way. Current conditions may not allow for these strategies to be implemented in the short-term due to a lack of support or resources. As conditions change, cities may choose to consider implementation within their city or in partnership with adjacent cities and the Gateway Cities COG that can help facilitate projects to serve regional active transportation. The project sheets can be found in Appendix 4.
### Active Transportation

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Potential Facility Type</th>
<th>Between</th>
<th>Length</th>
<th>Jurisdictions</th>
<th>Benefits</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alondra Blvd. Bikeway</td>
<td>II/III</td>
<td>Central Ave. &amp; La Mirada Blvd.</td>
<td>14.4 mi</td>
<td>La Mirada, Cerritos, Norwalk, Bellflower, Compton, LA County</td>
<td>Connects to existing river bike paths, numerous schools and parks, and an existing bike lane in Compton. It also improves bike accessibility to Cerritos College, the Bellflower Bike Trail, through I-710 and I-605, and commercial districts in Compton, Paramount, and Bellflower, in addition to a few employment clusters (at Santa Fe and Garfield Aves.).</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to connections with Class I bikeways and conflicts at freeway ramps. Raised medians are present in several sections. This project crosses the existing Blue Line light rail. This project also crosses planned transit ROW.</td>
</tr>
<tr>
<td>2</td>
<td>Beverly Blvd. Bikeway</td>
<td>II/III</td>
<td>3rd. St &amp; Turnbull Canyon Rd.</td>
<td>8.4 mi</td>
<td>Montebello, Pico Rivera, LA County, Whittier</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/proposed bike facilities to the west in Montebello and east in Whittier. It also improves bike accessibility to retail areas and through access at I-605.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>3</td>
<td>Bloomfield Ave. Bikeway</td>
<td>II/III</td>
<td>Whittier Blvd. &amp; Carson St</td>
<td>11.5 mi</td>
<td>Long Beach, Hawaiian Gardens, Lakewood, Cerritos, Norwalk, Santa Fe Springs, Whittier</td>
<td>Connects to existing river bike paths, numerous schools and parks, and a planned bike lane to the north in Whittier and south in Cerritos. It also improves bike accessibility to the Norwalk/Santa Fe Springs Metrolink Station, Cerritos Town Center, employment areas in Norwalk and Santa Fe Springs, and through access at SR 91.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to freeway crossings, particularly at I-5 via Rosecrans Ave. Raised medians are present in several sections. This project crosses planned transit ROW.</td>
</tr>
<tr>
<td>#</td>
<td>Name</td>
<td>Potential Facility Type</td>
<td>Between</td>
<td>Length</td>
<td>Jurisdictions</td>
<td>Benefits</td>
<td>Challenges</td>
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</tr>
<tr>
<td>4</td>
<td>Blue Line Bike Share</td>
<td>Bike Share</td>
<td>Blue Line Stations</td>
<td>N/A</td>
<td>Compton, LA County, Long Beach, City of Los Angeles</td>
<td>Provides a convenient alternative mode of travel for Blue Line riders and can help with the lack of last mile/first mile connections that can limit transit accessibility. The bike share equipment can be eliminated or relocated if it is underutilized.</td>
<td>Will have limited effectiveness if not part of a larger bike sharing system and bike share kiosks can become an eyesore if the facility is not routinely maintained.</td>
</tr>
<tr>
<td>5</td>
<td>Carson St. Bikeway</td>
<td>II/III</td>
<td>Long Beach Blvd. &amp; Bloomfield Ave.</td>
<td>7.3 mi</td>
<td>Lakewood, Long Beach, Hawaiian Gardens</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/proposed bike facilities to the west in Long Beach and east in Cypress. It also improves bike accessibility to retail areas and through access at I-605.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>6</td>
<td>Cherry Ave./Garfield Ave. Bikeway</td>
<td>III</td>
<td>Via Campo &amp; Ocean Blvd.</td>
<td>19.5 mi</td>
<td>Long Beach, Signal Hill, Lakewood, Paramount, South Gate, Downey, Bell Gardens, Commerce, LA County, Montebello</td>
<td>Connects to Commerce and Montebello/Commerce Metrolink stations, existing Rio Hondo bike path, Long Beach bike path, numerous schools and parks, employment clusters, existing/planned bike facilities in South Gate and Long Beach, and through access at SR 91, I-105, and I-5.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway ramps. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>7</td>
<td>Clark Ave. Bikeway</td>
<td>II/III</td>
<td>Lakewood Blvd. &amp; Pacific Coast Highway</td>
<td>9.5 mi</td>
<td>Long Beach, Lakewood, Bellflower, Downey</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/planned bike facilities to the south in Lakewood and Long Beach. It also improves bike accessibility to the Lakewood Blvd. Green Line Station, Cal State Long Beach, retail areas, and through access at I-405, SR 91, and I-105.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to freeway crossings.</td>
</tr>
<tr>
<td>#</td>
<td>Name</td>
<td>Potential Facility Type</td>
<td>Between</td>
<td>Length</td>
<td>Jurisdictions</td>
<td>Benefits</td>
<td>Challenges</td>
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</tr>
<tr>
<td>8</td>
<td>Compton Blvd./Somerset Blvd. Bikeway</td>
<td>II/III</td>
<td>Redondo Beach Blvd. &amp; easterly terminus</td>
<td>8.2 mi</td>
<td>Bellflower, Paramount, LA County, Compton</td>
<td>Connects to existing river bike paths and numerous schools and parks. It also improves bike accessibility to the Compton Blue Line Station, Bellflower Bike Trail, through I-710, and commercial districts in Compton and Paramount.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to connections with Class I bikeways.</td>
</tr>
<tr>
<td>9</td>
<td>Compton Creek Expansion</td>
<td>I</td>
<td>LA River &amp; I-105</td>
<td>4.4 mi</td>
<td>Compton, LA County, Long Beach</td>
<td>Connects to numerous schools, parks and bike facilities surrounding the study area. It also improves bike accessibility to the Artesia Blue Line Station, Los Angeles River, City of Long Beach and through the City of Compton.</td>
<td>The Blue Line tracks and commercial development north of the Crystal Casino act as barriers. Additionally, reaching the LA River and City of Long Beach will require coordination with I-710 expansion and LA County Flood Control District.</td>
</tr>
<tr>
<td>10</td>
<td>CSULB Bike Path Connection</td>
<td>I</td>
<td>Clark Ave. &amp; E/O Iroquois Ave.</td>
<td>2 mi</td>
<td>Long Beach</td>
<td>Enhances connectivity to Cal State Long Beach, local parks, schools, and a designated City of Long Beach Bike path. The bike path can be a family-friendly facility appealing to various levels of experience, since it has its own right-of-way.</td>
<td>Project limits cannot be extended to east or west and requires coordination with LA County Flood Control District.</td>
</tr>
<tr>
<td>11</td>
<td>Del Amo Blvd. / Blue Line Access Improvements</td>
<td></td>
<td>Alameda St &amp; Long Beach Blvd.</td>
<td>1.5 mi</td>
<td>LA County, Long Beach</td>
<td>Would improve safety, accessibility, and connectivity to and around the Del Amo Blue Line station and LA River, and provides the only designated bikeway with direct across I-710 in the area.</td>
<td>This segment of Del Amo Blvd. carries high vehicular volume, crosses under the I-710 freeway and over the LA River, resulting in right-of-way constraints.</td>
</tr>
<tr>
<td>#</td>
<td>Name</td>
<td>Potential Facility Type</td>
<td>Between</td>
<td>Length</td>
<td>Jurisdictions</td>
<td>Benefits</td>
<td>Challenges</td>
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</tr>
<tr>
<td>12</td>
<td>Firestone Blvd. Bikeway</td>
<td>II/III</td>
<td>Alameda St. &amp; Bloomfield Ave.</td>
<td>10.5 mi</td>
<td>Norwalk, Downey, South Gate</td>
<td>Connects to existing river bike paths, numerous schools and parks, and a planned bike lane to the west in South Gate. It also improves bike accessibility to the Norwalk/Santa Fe Springs Metrolink Station and retail districts in South Gate, Downey, and Norwalk.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to connections with Class I bikeways. High volumes and conflict zones near freeway ramps (I-710, I-605, I-5) also pose challenges. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>13</td>
<td>Florence Ave. Bikeway</td>
<td>III</td>
<td>Crockett Blvd. &amp; Whittier Blvd.</td>
<td>13.9 mi</td>
<td>Huntington Park, Bell, Cudahy, Bell Gardens, Downey, Santa Fe Springs, LA County, Whittier</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/proposed bike facilities to the west in Huntington Park and east in Whittier. It also improves bike accessibility to retail areas and through access at I-710, I-605, and I-5.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>14</td>
<td>Flotilla St. Bikeway</td>
<td>II</td>
<td>West City Limit &amp; Vail Ave.</td>
<td>0.3 mi</td>
<td>Montebello</td>
<td>Provides a direct connection to the Montebello/Commerce Metrolink Station and connectivity to future bikeways</td>
<td>Vehicles in surrounding area include high percentage of large trucks.</td>
</tr>
<tr>
<td>15</td>
<td>Fostoria St. / Shull St. Bike/Ped Bridge</td>
<td>Bridge</td>
<td>N/A</td>
<td>N/A</td>
<td>South Gate, Bell Gardens</td>
<td>Provides direct access for pedestrians and bicyclists over I-710 and to cross/access the LA River Path, currently only one crossing between Firestone Blvd. and Florence Blvd.</td>
<td>Must be coordinated with I-710 expansion and subject to additional limitations over freeway, also requires coordination with LA County Flood Control District.</td>
</tr>
<tr>
<td>16</td>
<td>Gage Ave. Bikeway</td>
<td>III</td>
<td>Alameda St. &amp; Slauson Ave.</td>
<td>6.4 mi</td>
<td>Commerce, Bell Gardens, Bell, Huntington Park</td>
<td>Connects to the City of Los Angeles and existing river bike paths. Various land use types are connected via this facility, including schools, parks, residences, and retail areas.</td>
<td>This project may require elimination of on-street parking and reduced lane widths.</td>
</tr>
</tbody>
</table>
### Active Transportation

<table>
<thead>
<tr>
<th>#</th>
<th>Name</th>
<th>Potential Facility Type</th>
<th>Between</th>
<th>Length</th>
<th>Jurisdictions</th>
<th>Benefits</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Gardendale St. Road Diet</td>
<td>II/III</td>
<td>Garfield Ave. &amp; Regentview Ave.</td>
<td>3.6 mi</td>
<td>Bellflower, Downey, Paramount, South Gate</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/planned bike facilities in South Gate. The Rd. diet would reallocate excess vehicular capacity to bicyclists or pedestrians.</td>
<td>May require additional study by local agency. Reallocation of right-of-way will require removal of travel lanes or parking; however, traffic counts indicate volumes are low enough to serve traffic with minimal impacts to operations.</td>
</tr>
<tr>
<td>18</td>
<td>Gardendale St. / Las Flores Blvd. Bike/Ped Bridge</td>
<td>Bridge</td>
<td>N/A</td>
<td>N/A</td>
<td>South Gate</td>
<td>Improves access to Los Angeles River bike path and provide only access through the river and I-710 between Imperial Highway and Rosecrans Ave.</td>
<td>Must be coordinated with I-710 expansion and subject to additional limitations over freeway, also requires coordination with LA County Flood Control District.</td>
</tr>
<tr>
<td>19</td>
<td>Ocean Blvd. Bike Path Gap Closure / Downtown Connector Project</td>
<td>I/II/III</td>
<td>Pico Ave. &amp; Pine Ave.</td>
<td>1 mi</td>
<td>Long Beach</td>
<td>Improves connectivity to/from downtown Long Beach with areas west and provides a designated bicycle facility over the Los Angeles River.</td>
<td>Must be coordinated with I-710 expansion and limited availability of right-of-way. May require modifications to vehicular capacity. Requires coordination with Port of Long Beach within Harbor area.</td>
</tr>
<tr>
<td>20</td>
<td>I-710 Ramp Improvements</td>
<td>Access Improvements</td>
<td>At Selected Ramps (i.e., Pacific Coast Highway, Anaheim St., Artesia Blvd.)</td>
<td>N/A</td>
<td>Long Beach</td>
<td>Would improve safety, accessibility, and connectivity for bicyclists adjacent to freeway ramps, address locations with bicycle-vehicle conflicts, improve conditions along routes frequented by local students, and improve access between Long Beach and Los Angeles.</td>
<td>Current ramp configurations, level of vehicular activity, and limited right-of-way on bridges pose challenges for designing improvements that accommodate bicyclists.</td>
</tr>
<tr>
<td>#</td>
<td>Name</td>
<td>Potential Facility Type</td>
<td>Between</td>
<td>Length</td>
<td>Jurisdictions</td>
<td>Benefits</td>
<td>Challenges</td>
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<tr>
<td>21</td>
<td>Imperial Hwy Bikeway</td>
<td>II/III</td>
<td>Alameda St &amp; Beach Blvd.</td>
<td>15.1 mi</td>
<td>La Mirada, Santa Fe Springs, Norwalk, Downey, South Gate, Lynwood</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/proposed bike facilities to the west in Lynwood and east in La Mirada. It also improves bike accessibility to retail areas and through access at I-710, I-605, and I-5.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>22</td>
<td>Imperial Hwy LA River/Rio Hondo Bike Path Improvement</td>
<td>Access Improvements</td>
<td>Imperial Hwy @ Bike Paths</td>
<td>N/A</td>
<td>Norwalk, Downey</td>
<td>Accessibility and connectivity to several significant north-south bike paths will be improved and conflicts with other modes addressed.</td>
<td>Six lane cross-section and proximity to freeway ramps results in high-levels of peak period vehicular activity, may requires coordination with Caltrans and LA County Flood Control District.</td>
</tr>
<tr>
<td>23</td>
<td>LA River North Gap Closure</td>
<td>I</td>
<td>37th St &amp; Atlantic Blvd.</td>
<td>2.3 mi</td>
<td>Vernon, LA County, City of Los Angeles</td>
<td>Extends the LA River trail north to connect with planned bikeways on Bandini Blvd./37th St. and Soto St., which eliminates the need for bicyclists to navigate city streets over approximately 2.5 miles. Also connects to proposed Rail-to-River project under study by Metro.</td>
<td>Will require substantial funding and coordination with LA County Flood Control District, additional facilities needed to close gap with LA River path existing north of downtown Los Angeles.</td>
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<td>#</td>
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<td>24</td>
<td>Ocean Blvd. Connector and LA River Access / Shoreline Dr. Gap Closure</td>
<td>Access Improvements / I</td>
<td>Linden Ave./ Shoreline Dr. &amp; Shoreline Dr./ Ocean Blvd.</td>
<td>0.5</td>
<td>Long Beach, LA County</td>
<td>Creating a designated bicycle facility connection between the Long Beach bike path and Los Angeles River bike path would improve safety, connectivity, and accessibility where a connection between existing facilities is lacking. / Would improve connectivity between the path in Long Beach and the LA River.</td>
<td>This project may require modifications to on-street parking or vehicular capacity / Area with high levels of activity at driveways.</td>
</tr>
<tr>
<td>25</td>
<td>LA/OC Beach Trails Gap Connection</td>
<td>Bike Blvd. / I</td>
<td>Bayshore Dr./ Ocean Blvd. &amp; Marina Dr./ Seal Beach</td>
<td>2.35 mi</td>
<td>Long Beach, Seal Beach, LA County, Orange County</td>
<td>Provides connectivity around the marina for bicyclists and connects to river bike paths.</td>
<td>This project may require modifications to on-street parking or vehicular capacity. Raised medians are present on Ocean Blvd.</td>
</tr>
<tr>
<td>26</td>
<td>Lakewood Blvd. Bikeway / Rosemead Blvd.</td>
<td>II/III</td>
<td>Gallatin Rd. &amp; PCH</td>
<td>16.7 mi</td>
<td>Pico Rivera, Downey, Bellflower, Paramount, Lakewood, Long Beach</td>
<td>Connects to numerous schools and parks, and existing/planned bike facilities to the south in Lakewood and Long Beach. It also improves bike accessibility to the Lakewood Blvd. Green Line Station, retail areas, and through access at I-5, I-405, SR 91, and I-105.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections. This project crosses planned transit ROW. Portions of Lakewood Blvd. are still a state highway and operated by Caltrans. Pedestrian access improvements are also requested by local agencies.</td>
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### Gateway Cities Strategic Transportation Plan
#### Active Transportation

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<tr>
<th>#</th>
<th>Name</th>
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<tbody>
<tr>
<td>27</td>
<td>LB/LA St. Access Improvements</td>
<td>Access Improvements</td>
<td>N/A</td>
<td>N/A</td>
<td>Long Beach, Los Angeles</td>
<td>Providing enhancements on regional east-west streets would improve safety, accessibility, and connectivity for bicyclists traveling between Long Beach and Los Angeles.</td>
<td>This project may require modifications to on-street parking or vehicular capacity.</td>
</tr>
<tr>
<td>28</td>
<td>Lincoln Ave.</td>
<td>II</td>
<td>Wilcox Ave. &amp; Rio Hondo Trail</td>
<td>4 mi</td>
<td>Montebello</td>
<td>Provides connectivity to bus stops, schools, a river bike path and parks</td>
<td>May require modifications to on-street parking. Raised medians are present in some sections.</td>
</tr>
<tr>
<td>29</td>
<td>Long Beach Airport Access Access Improvements</td>
<td>N/A</td>
<td>N/A</td>
<td>Long Beach</td>
<td>Would improve safety, accessibility, and connectivity to and around the Long Beach Airport. This project should include secure long-term bicycle parking.</td>
<td>The streets surrounding the Long Beach Airport carry high vehicular volume and crosses under the I-405 freeway, resulting in right-of-way constraints.</td>
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<tr>
<td>30</td>
<td>Los Angeles River Access Points</td>
<td>I</td>
<td>N/A</td>
<td>Long Beach, LA County</td>
<td>Would improve access to Long Beach Blvd., Del Amo Blvd., Del Mar Ave., Wardlow Rd., Spring St, Willow St, Hill St, and Pacific Coast Highway.</td>
<td>Surrounding streets serve high vehicular volumes and right-of-way may be limited.</td>
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<tr>
<td>31</td>
<td>Maintenance of LA River Open Space</td>
<td>N/A</td>
<td>Length of Facility</td>
<td>N/A</td>
<td>Long Beach, Paramount, Compton, Lynwood, South Gate, Bell Gardens, Cudahy, Bell, Vernon</td>
<td>Routine maintenance would improve bicyclists surroundings by reducing the amount of trash, graffiti, plant overgrowth, and debris found along the LA River.</td>
<td>Requires staff time and coordination for routine maintenance of large area of open space.</td>
</tr>
<tr>
<td>32</td>
<td>Mar Vista St. Bikeway</td>
<td>II/III</td>
<td>Whittier Blvd. &amp; Aurora Crest Dr.</td>
<td>3.9 mi</td>
<td>Whittier</td>
<td>Would improve safety, accessibility, and connectivity to and around Whittier. Residents and students would benefit the most from this improvement.</td>
<td>This project may require modifications to on-street parking or vehicular capacity.</td>
</tr>
<tr>
<td>33</td>
<td>Mines Ave. Bike Bridge / Bike Lanes</td>
<td>II</td>
<td>San Gabriel River &amp; Rio Hondo River</td>
<td>1.3 mi</td>
<td>Pico Rivera, LA County, Montebello</td>
<td>Would connect Class I Bikeways on Paramount Blvd. / Rio Hondo Bike Path to the west and San Gabriel River Bike Trail to the east. Corridor connects school, library and senior center to green space. Enhances E/W connectivity through Pico Rivera.</td>
<td>This project includes a bike bridge across LA County Spreading Grounds between Pico Rivera Bike Trail and San Gabriel River Bike Trail and will require coordination with LA County Flood Control District</td>
</tr>
<tr>
<td>34</td>
<td>MLK Jr. Blvd. / Century Blvd. Bike/Ped Bridge</td>
<td>Bridge</td>
<td>N/A</td>
<td>N/A</td>
<td>South Gate, Lynwood</td>
<td>Provides direct access for pedestrians and bicyclists over I-710 and to cross/access the LA River Path, currently no ped/bike crossings between Imperial Hwy and Rosecrans Bl. Directly serves two schools and parks in residential neighborhoods.</td>
<td>Must be coordinated with I-710 expansion and subject to additional limitations over freeway, also requires coordination with LA County Flood Control District.</td>
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### Active Transportation

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<tr>
<td>35</td>
<td>Montebello Blvd., Montebello Way &amp; Greenwood Ave. Bikeway</td>
<td>II/III</td>
<td>Plaza Dr. to Telegraph Rd.</td>
<td>5.1 mi</td>
<td>Montebello</td>
<td>Would provide connectivity to future Gold Line Eastside Extension (both route options), connects to regional shopping destinations, improves access to the Rio Hondo bike path, and serves three schools along the facility.</td>
<td>May require removal of on-street parking or vehicular capacity, changes in grade may be challenging for some cyclists, access to adjacent path provided from nearby streets.</td>
</tr>
<tr>
<td>36</td>
<td>Northern Atlantic Ave. Connection</td>
<td>II/III</td>
<td>McMillan St &amp; Artesia Bl</td>
<td>2.3 mi</td>
<td>Compton, LA County, Long Beach</td>
<td>Connects to the existing river bike paths, schools and parks, and a planned bike routes to the north in Compton and Lynwood, and to the south in Long Beach.</td>
<td>This segment of Atlantic Ave. serves high vehicular volume and crosses over the LA River and under the SR-91 freeway, resulting in right-of-way constraints.</td>
</tr>
<tr>
<td>37</td>
<td>Pacific Blvd. / Long Beach Blvd. Bikeway</td>
<td>II/III</td>
<td>Santa Fe Ave. &amp; Ocean Ave.</td>
<td>16.9 mi</td>
<td>Long Beach, Compton, LA County, Lynwood, South Gate, Huntington Park, Vernon</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/proposed bike facilities to the west in East Los Angeles and east in Whittier. It also improves bike accessibility to retail areas and through access at I-710 and I-605.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections. This project crosses the existing Blue Line light rail.</td>
</tr>
<tr>
<td>38</td>
<td>Paramount Blvd. Bikeway</td>
<td>II/III</td>
<td>Beverly Blvd. &amp; Cover St</td>
<td>14.1 mi</td>
<td>Pico Rivera, Downey, Bellflower, Paramount, South Gate, Lakewood, Long Beach</td>
<td>Connects to Long Beach Airport, retail districts, employment clusters, numerous schools and parks, existing/proposed bike facilities to the south in Lakewood and Long Beach, provide access through SR 91, I-105, I-5, and provide a dedicated north-south bicycle lane through most of the study area.</td>
<td>This project may require modifications to on-street parking or vehicular capacity and additional attention to conflicts at freeway ramps. Raised medians are present in several sections.</td>
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### Gateway Cities Strategic Transportation Plan

**Active Transportation**

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<tbody>
<tr>
<td>39</td>
<td>Randolph St. Bikeway</td>
<td>II/III</td>
<td>Slauson Ave. &amp; District Blvd.</td>
<td>4.3 mi</td>
<td>Huntington Park, Bell, Maywood</td>
<td>Connects Slauson Ave. Blue Line Station to Los Angeles River path and provides access to numerous schools and open space.</td>
<td>Route runs parallel to existing train tracks, which could result in conflicts with bicyclists and may require additional right-of-way.</td>
</tr>
<tr>
<td>40</td>
<td>San Gabriel River Access Points</td>
<td>I</td>
<td>N/A</td>
<td>N/A</td>
<td>Long Beach, LA County</td>
<td>Helps improve safety, accessibility, and connectivity to and around San Gabriel River.</td>
<td>This segment of Del Amo Blvd. carries high vehicular volume, crosses under the I-710 freeway and over the LA River, resulting in right-of-way constraints.</td>
</tr>
<tr>
<td>41</td>
<td>San Gabriel River / San Jose Creek Connection / Valley Blvd.</td>
<td>I</td>
<td>San Gabriel River &amp; Workman Mill Rd.</td>
<td>0.7 mi</td>
<td>City of Industry, LA County</td>
<td>Eliminates the need for bicyclists to navigate city streets or cross I-605 to connect between both paths.</td>
<td>Will require substantial funding and coordination with LA County Flood Control District.</td>
</tr>
<tr>
<td>42</td>
<td>Santa Fe Ave. / State St. Bikeway</td>
<td>II/III</td>
<td>Vernon Ave. &amp; 9th St</td>
<td>15.9 mi</td>
<td>Long Beach, Carson, Compton, Lynwood, South Gate, Huntington Park, Vernon</td>
<td>Connects to numerous schools and parks, and existing/proposed bike facilities in South Gate and Compton. It also improves bike accessibility to the Long Beach Blvd. Green Line Station and employment areas in Vernon and Carson.</td>
<td>This project may require modifications to on-street parking or vehicular capacity. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>43</td>
<td>Second St. / Westminster LA/OC Regional Connection</td>
<td>II</td>
<td>2nd St/ Marina Dr. &amp; 2nd St / Westminster</td>
<td>1.25 mi</td>
<td>Long Beach, Seal Beach, LA County, Orange County</td>
<td>Provides a regional connection between Orange County and Los Angeles County and connectivity to the San Gabriel River bike trail.</td>
<td>This project is on a major arterial and crosses Pacific Coast Highway.</td>
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<td>44</td>
<td>Shoemaker Bridge / North Harbor Coastal Connector</td>
<td>Bridge</td>
<td>N/A</td>
<td>1.15 mi</td>
<td>Long Beach</td>
<td>Provides direct access for pedestrians and bicyclists over I-710 and to cross/access the LA River Path.</td>
<td>Must be coordinated with I-710 expansion and subject to additional limitations over freeway; also requires coordination with LA County Flood Control District. Requires coordination with Port of Long Beach within Harbor area.</td>
</tr>
<tr>
<td>45</td>
<td>Pier J Bikeway</td>
<td>I/II</td>
<td>N/A</td>
<td>1.5 mi</td>
<td>Long Beach, LA County</td>
<td>Provides access to the Coastal Trail, the Queen Mary and Port of Long Beach facilities</td>
<td>Requires coordination with Port of Long Beach. Proximity to freight transportation and heavy truck traffic at the Port</td>
</tr>
<tr>
<td>46</td>
<td>Slauson Ave. Bikeway</td>
<td>II/III</td>
<td>Alameda St. &amp; Scott Ave.</td>
<td>14.6 mi</td>
<td>LA County, Whittier, Santa Fe Springs, Pico Rivera, Montebello, Commerce, Bell, Maywood, Vernon, Huntington Park</td>
<td>Connects to existing river bike paths, numerous schools and parks, and planned bike facilities in Los Angeles and Whittier. It also improves bike accessibility to the Slauson Blue Line Station.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to connections with Class I bikeways. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>47</td>
<td>South St. Bikeway and Gap Closures</td>
<td>II/III</td>
<td>De Forest Ave. &amp; Moody St.</td>
<td>9.6 mi</td>
<td>Cerritos, Artesia, Lakewood, Long Beach</td>
<td>Connects to existing river bike paths, numerous schools and parks, existing/planned bike facilities in Long Beach, Lakewood, and Cerritos Shopping Center.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to connections with Class I bikeways. Raised medians are present in several sections.</td>
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<tr>
<td>48</td>
<td>Spring St. LA/OC</td>
<td>II</td>
<td>Spring St./Studebaker Rd. &amp; Spring St/Cerritos</td>
<td>1.67 mi</td>
<td>Long Beach, Los Alamitos, LA County, Orange County</td>
<td>Connects to existing river bike paths, regional parks and nature centers.</td>
<td>Raised/divided medians are present.</td>
</tr>
<tr>
<td>49</td>
<td>Telegraph Rd. Bikeway</td>
<td>II/III</td>
<td>Atlantic Blvd. &amp; Imperial Hwy</td>
<td>11.0 mi</td>
<td>La Mirada, LA County, Santa Fe Springs, Downey, Pico Rivera, Montebello, Commerce</td>
<td>Connects to existing river bike paths, numerous schools and parks, and a planned bike facility to the east in South Whittier. This alignment parallels I-5 from Commerce to La Mirada, serving destinations accessible along this freeway.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention should be given to connections with Class I bikeways, truck volumes, and conflicts at freeway ramps. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>50</td>
<td>Terminal Island Fwy</td>
<td>I/II</td>
<td>I-710 &amp; Willow St</td>
<td>3.6 mi</td>
<td>Long Beach, City of Los Angeles</td>
<td>Terminal Island Fwy portion: Would utilize an existing right-of-way to provide a bicycle facility connecting west Long Beach to the south and can enhance connectivity with existing and planned east-west bikeways.</td>
<td>Terminal Island Fwy portion: This facility is currently designated exclusively for motor vehicles. Additional study for the design and implementation of the facility is needed.</td>
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<tr>
<td>51</td>
<td>Vincent Thomas Bridge Connection</td>
<td>Retrofit</td>
<td>N/A</td>
<td>N/A</td>
<td>Long Beach, Los Angeles</td>
<td>Improves access between the new bridge and downtown Long Beach and help fill the gap between the new bridge and bike path in San Pedro.</td>
<td>Requires coordination with Caltrans, Port of Los Angeles, and Port of Long Beach</td>
</tr>
<tr>
<td>52</td>
<td>West Santa Ana Branch Bikeway</td>
<td>I</td>
<td>Northern border of Vernon &amp; Coyote Creek (within the GCCOG limits)</td>
<td>15.1 mi</td>
<td>Cerritos, Artesia, Bellflower, Paramount, Downey, South Gate, Cudahy, Bell, Huntington Park, Maywood, Vernon</td>
<td>Connects to numerous schools, parks and bike facilities throughout the center of the Gateway Cities. It also improves bike accessibility to the LA River Trail, Rio Hondo Trail, San Gabriel River Trail, Coyote Creek Trail, and across the study area with a grade separated facility from Hawaiian Gardens to Vernon.</td>
<td>Will require substantial funding and coordination with LA County Flood Control District, Union Pacific, Metro, and Public Utilities Commission. Design of facility and at grade intersection crossings poses another challenge.</td>
</tr>
<tr>
<td>53</td>
<td>Whittier Blvd. Bikeway</td>
<td>II/III</td>
<td>Indiana St &amp; Valley Home Ave.</td>
<td>14.2 mi</td>
<td>Whittier, LA County, Pico Rivera, Montebello, Commerce</td>
<td>Connects to existing river bike paths, numerous schools and parks, and existing/proposed bike facilities to the north in Vernon and south in Long Beach. It also improves bike accessibility to retail areas and through access at I-5, SR-91, I-710 and I-405.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in several sections.</td>
</tr>
<tr>
<td>54</td>
<td>Willow St. / Katella Ave. / LA/OC Regional Connection</td>
<td>II</td>
<td>Willow St/ Studebaker Rd. &amp; Katella Ave.</td>
<td>1 mi</td>
<td>Long Beach, Los Alamitos, LA County, Orange County</td>
<td>Connects to existing river bike paths, regional parks and nature centers.</td>
<td>Raised/divided medians are present.</td>
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<tr>
<td>55</td>
<td>Woodruff Ave. Bikeway</td>
<td>II/III</td>
<td>Florence Ave. &amp; Willow St</td>
<td>9.9 mi</td>
<td>Long Beach, LA County, Lakewood, Bellflower, Downey</td>
<td>Connects to numerous schools and parks, and existing/proposed bike facilities to the south in Lakewood and Long Beach. It also improves bike accessibility to the Norwalk Green Line Station, retail areas, and through access at SR 91 and I-105.</td>
<td>This project may require modifications to on-street parking or vehicular capacity, and additional attention to conflicts at freeway crossings. Raised medians are present in the southern section. This project crosses planned transit ROW.</td>
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The appendix 4 includes additional information on each route including connections of each regionally significant project idea to schools, open space, existing Class I bike facilities. Potential alternative routes are also provided should the recommended project idea prove not to be feasible after further detailed study.
Pedestrian Projects

The STP recommends 16 regionally significant pedestrian projects, presented in Figures 7.5 and 7.6. Additional opportunities for pedestrian facilities are available through “rails to trails” or “rails with trails” conversions and the utilization of flood control channels as active transportation corridors. Also, although the City of Avalon on Catalina Island was not part of the STP technical analysis, the staff from Avalon were consulted and they provided information on transportation needs in the City including bicycle infrastructure, lighting, zero-emission vehicle usage to reduce mobile source air pollution and pedestrian access. One key project which is planned in Avalon (but is not part of the 16 regionally significant pedestrian projects) is the 5 Corners/Tremont Street/Avalon Canyon Road Pedestrian Project which would provide enhanced pedestrian access and vehicle flow.
Figure 7.3  Regionally Significant Bicycle Project Ideas (North)
Figure 7.4 Regionally Significant Bicycle Project Ideas (South)
Figure 7.5  Regionally Significant Pedestrian Project Ideas (North)
Figure 7.6  Regionally Significant Pedestrian Project Ideas (South)
7.4 Active Transportation Policy Issues

In addition to active transportation projects, the STP Active Transportation Element recommends a series of policy issues and priorities to support the broader regional goal of increasing bicycling and walking in the Gateway Cities.

Regional Coordination

Coordination across jurisdictional lines is critical to improving active transportation options. Priorities for regional coordination include:

- **Coordinated Planning.** Although regional connectivity requires regional coordination, active transportation infrastructure planning and implementation are typically conducted at the jurisdictional level. Differing local preferences and priorities can create institutional obstacles to planning and implementation of bicycle or pedestrian infrastructure. Enhanced coordination between jurisdictions, Metro and the GCCOG is a subregional priority.

- **Integrated Construction.** Transit, roadway, and major utility projects near major transit hubs should incorporate the improvements identified in this ATP and local plans. Interagency coordination will maximize the limited investment dollars available, and minimize disruptions associated with construction projects.

Increased Connectivity

An understanding of the condition of existing bicycle facilities in the Gateway Cities is necessary to determine future opportunities for improvement. Future improvements to the bicycle network will aim to close gaps in the existing system and provide connections to local and regional destinations; transit stations; and various schools, park, and other community destinations. The top connectivity priority of the STP transit element is:

- **First/Last Mile Transit Connectivity.** Safe and convenient bicycle and pedestrian connections to transit in the Gateway Cities Subregion are critical to supporting regional travel mode choice. Steps should be taken to improve bicycle and pedestrian access to Metro Blue and Green Line access points, as well as future services such as the Metro Gold Line Eastside Extension and Eco-Rapid Transit. The GCCOG and member cities should coordinate with Metro, neighboring cities, and regional agencies to ensure that upcoming projects provide safe access to regional transit via the surrounding bicycle and pedestrian environment.
Expand Active Transportation Support Programs

Support programs increase the safety, utility, and viability of infrastructure projects. To complement their infrastructure investments, municipalities should provide support to, and administer, a broad range of programs and activities related to bicycling and walking safety, education, promotion, and law enforcement. Priority support programs include:

- **Improved Enforcement.** One of the greatest deterrents to active transportation is a lack of real or perceived safety and security. Municipalities can support active transportation by enforcing speed limits, distracted driving regulations, and improper turning/stop at intersections, especially in areas with high bicycle and pedestrian activity, and other regulations aimed at limiting motorist conflicts with active transportation modes.

- **Educational and Promotional Programs.** Educational programs are among the most inexpensive tools to improve the walking and bicycling environment. Educational programs can help improve safety by training bicyclists and pedestrians how to avoid common roadway conflicts and by educating motorists about bicycle and pedestrian rights and concerns and how to safely share the road. Education programs can also be a collaborative effort between cities and local public health organizations. Examples of existing programs and initiatives include: billboards/electronic message boards and street smarts programs; citywide walking and bicycling maps; “Smart Trips” programs; safe routes to school programs; public service announcements; and educational signs for bicycle and pedestrian detectors.
8.0 Goods Movement

The Gateway Cities Subregion is home to a complex goods movement industry comprised of major ports, rail lines and rail yards, and warehouses, all of which are connected to the greater regional network of highways and railroads. Together, these facilities generate significant volumes of truck and train traffic while also providing employment opportunities and serving as the primary economic engine for the region. This chapter outlines the existing conditions and anticipated challenges for three components of the goods movement system -- ports, rail, and warehouses -- within as well as adjacent to the Gateway Cities.

8.1 Ports

Existing Facilities

Combined, the Ports of Long Beach and Los Angeles make up the largest container port complex in the United States and the eighth largest in the world. The Port of Long Beach is located within the Gateway Cities Subregion and the Port of Los Angeles is directly adjacent to the subregion. However, both ports combined impact the Gateway Cities transportation system and provide jobs and revenue to the subregion.

The Ports of Long Beach and Los Angeles complex handles 40 percent of the nation’s import traffic and 25 percent of the nation’s export traffic. These ports are supported by over half a billion square feet in warehousing space with over 1000 trucking and drayage companies. The ports handled 15.2 million TEUs in 2014. By 2035, the Ports are projected to handle nearly 36 million TEUs.

Local Cargo and IPI Cargo

The ports receive cargo that is consumed locally within the Gateway Cities and in the immediate region, as well as cargo that is transported out of the Gateway Cities for distribution to other parts of the country. This non-local cargo is usually referred to as “intermodal” or “inland points intermodal” (IPI) cargo because it must be transferred to another mode of transportation. The process of moving cargo from one transportation mode to another is known as “transloading.” Transloading may also refer to the transfer of goods from an international-sized import container to a larger domestic container, regardless of mode. Transloading is significant in the Gateway Cities Subregion because the transloading process results in truck trips, rail trips, and the need for land area to conduct the transloading operations near the ports.
Transloading cargo from marine containers to larger domestic containers has become an increasingly important logistics strategy used by goods movement operators. A significant number of local truck trips are required to support transloading and these trips use the streets and highways within the Gateway Cities Subregion. There are many reasons why importers transload cargo including: to reduce transportation costs, to save time and increase efficiency, to perform value-added services such as re-packaging, or to streamline operations by merging products by type or by shared destination.

**Container Truck Trips Generated by the Port**

In order to move freight to and from the marine ports, the goods movement industry relies heavily on Southern California’s regional highway network. In the peak month in 2012, the ports generated nearly 48,000 container truck trips per day, as seen in Table 8.1. The vast majority, about 41,600, were short trips to nearby transload facilities or warehouses. The remainder involved trucks traveling farther to off-dock rail yards in other parts of the region.
Table 8.1  Daily Port Primary Container Truck Trips by Market and by Rail Yard, 2012 and 2035

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Total Port Containerized Truck Trips</th>
<th>By Markets</th>
<th>Off-dock yard IPI truck trips by yard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local (includes primary transload and pure local)</td>
<td>ICTF</td>
<td>HOBART</td>
</tr>
<tr>
<td>2012 Daily Truck Trips using Average Month Throughput</td>
<td>45,270</td>
<td>39,450</td>
<td>5,820</td>
</tr>
<tr>
<td>2012 Daily Truck Trips using Peak Month Throughput</td>
<td>47,985</td>
<td>41,607</td>
<td>6,379</td>
</tr>
<tr>
<td>2035 Daily Truck Trips with SCIG &amp; ICTF Expansion using Peak Month Throughput</td>
<td>106,829</td>
<td>93,695</td>
<td>13,135</td>
</tr>
<tr>
<td>2035 Daily Truck Trips without SCIG &amp; ICTF Expansion using Peak Month Throughput</td>
<td>109,136</td>
<td>93,530</td>
<td>15,606</td>
</tr>
</tbody>
</table>

* Average month is used for emissions inventory work only (which is base year only), all other studies use peak month

Source: Cambridge Systematics, Inc., I-710-STP QuickTrip-Train Builder Model, December 11, 2013 version
8.2 Railroads

Existing Facilities

There are at least seven major rail yards that facilitate movement of goods from the area surrounding the ports outside the region and the state. Figure 8.2 shows the location of major rail yards in the Gateway Cities Subregion. To the north are the East Los Angeles and Los Angeles Transportation Center (LATC) yards, owned by Union Pacific (UP), as well as Hobart Yard, owned by BNSF. In the south is UP’s ICTF yard and the ports’ on-dock rail yards. On the eastern side is UP’s City of Industry Yard. Off the map, located further east is BNSF’s San Bernardino Yard. Combined, all rail yards account for approximately 4.6 million container lifts of various sizes in 2012. In total, an average of 59.4 intermodal rail trains per day passed through the yards.

It is important to note two major proposed changes may occur to the rail yards within the Gateway Cities. The existing ICTF facility is proposed to undergo a major renovation and modernization that would substantially increase its operational efficiency and capacity, allowing more truck to rail movements in the future but maintaining its current land coverage area. Also, an entirely new rail yard called the SCIG is proposed to serve the BNSF railway in an area just north of the ports and south of the existing ICTF facility. Combined, these two south end rail yards would serve the ports’ “near-dock” intermodal trips, moving containers from truck to rail.
Figure 8.1  Major Rail Yards in Gateway Cities Subregion

Source: Cambridge Systematics, Inc.
8.3 Warehousing and Transloading Facilities

Existing Facilities

Due to proximity to the ports, many warehouses and transloading facilities are located within the Gateway Cities. In 2008 there were 1,428 warehouses in the Gateway Cities Subregion, comprising 217.5 million square feet of warehouse space. Figure 8.3 illustrates the location of existing warehousing and transloading facilities within the Gateway Cities.

Including the nearby City of Carson (not shown on the map as Carson is part of the South Bay Cities Subregion), the total warehousing square footage in the area around the ports is 243.9 million, 87 percent of which was occupied, and 13 percent of which was available (vacant or about to become vacant) as of 2012.

The five Gateway Cities with most warehouse space are Industry, Commerce, Santa Fe Springs, Vernon, and La Mirada. Combined, these cities account for 154.5 million square feet of space. The top five cities plus the adjacent City of Carson constitute 74 percent of the total warehouse space in the area between Downtown Los Angeles and the Ports of Long Beach and Los Angeles.
Goods movement is projected to grow dramatically in the region between now and 2035, requiring investments in new highway and railroad infrastructure. While economically vital to the region by generating significant revenue and jobs, the San Pedro Ports also present many challenges to the Gateway Cities including increased traffic congestion, safety concerns, increased air emissions, and heightened noise levels. Freeway congestion on I-710, SR-91 and I-605 is in part caused by the high volumes of large trucks on those freeways that serve the ports as well as local industrial and warehousing land uses. In order to address these challenges, future infrastructure investment serving goods movement operators must be well-planned and accompanied by appropriate mitigation measures. This section describes the challenges faced by
the Gateway Cities regional goods movement system in the future as the amount of cargo handled by the ports grows.

**Port Challenges**

*Growth in Transload-to-Rail Trips*

A major study of transloading conducted for the ports in 2012 indicated that the transload-to-truck percentage will remain at thirteen percent of all loaded trips (trips with a loaded container), but the transload-to-rail percentage of all trips is projected to increase to twenty percent.\(^{23}\) This increase in transload-to-rail trips will need to be met with additional capacity.

*Increases in Container Truck Trips*

By 2035, the total number of truck trips is expected to increase to 106,800 assuming SCIG and ICTF rail yard improvements occur, and to 109,100 without these rail yard projects. It is assumed that the SCIG and ICTF would generate fewer bobtail trips (the truck engine unit itself making a trip without a chassis or container) than the older facilities due to improved efficiency.

**Rail Yard Challenges**

*Increase in Lifts and Train Volumes*

The northern rail yards near Downtown Los Angeles are expected to significantly increase in capacity, with Hobart Yard growing in capacity from 1.7 million annual container lifts in 2012 to 3 million lifts by 2035. The total number of lifts at all rail yards is expected to triple from 4.6 million in 2012 to 14.1 million by 2035. This increase is driven primarily by the projected growth in the ports’ containerized cargo volume. Assuming the SCIG and ICTF projects are completed, intermodal train volumes are expected to increase by 168 percent—from an average of 59.4 trains per day in 2012 to 159.4 in 2035. These totals were calculated based on the sum of trains hauling IPI cargo (intact marine containers), transload containers, and “pure” domestic containers and trailers\(^{24}\).

### 8.5 Goods Movement Projects

Goods movement has a major impact on the Gateway Cities, fostering economic development, shaping land use, and generating truck and train traffic. The Gateway Cities should consider

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\(^{23}\) Cambridge Systematics, Inc. and Starboard Alliance Company LLC, Transloading of Marine Containers in Southern California, December, 2012.

\(^{24}\) These figures were generated by the QuickTrip-Train Builder model, based on the estimated container loadings by rail yard. The model also includes assumptions about the distribution of trains by length. An increase in average train length is expected in the future, as railroads strive to be more efficient.
policies to prepare for future growth in ports throughput and necessary increases in local warehousing capacity. Policies and projects that can significantly enhance goods movement while also decreasing the impacts of goods movement on the Gateway Cities regional transportation system and residents are particularly important. Those include freeway improvements, ITS improvements along arterials to better manage goods movement traffic, rail yard improvements, and shifting to zero or near-zero emission vehicles at ports and warehousing facilities.

I-710 Freeway Corridor Project

The I-710 freeway corridor is undergoing a comprehensive environmental analysis to determine the most appropriate improvements to implement along the corridor to mitigate congestion for trucks and vehicles, reduce emissions, and enhance other modes of travel in the corridor, including transit, biking and walking. The I-710 Project encompasses the freeway itself as well as parallel and connecting arterial streets and bikeways. A significant component of the I-710 improvements will include zero emission or near-zero emissions (ZE/NZE) trucks that would use dedicated freight lanes to serve the ports and move containers to local warehouses, intermodal yards and transloading facilities. The proposed project as of the date of this STP report includes two alternatives described below. Alternative 7 has been included and assumed as part of the STP project model runs and analysis.

Alternative 5C – Modernize the I-710 Freeway

Alternative 5C proposes increasing the number of general purpose (GP) lanes on the freeway and reconfiguring the access points to/from I-710 and its crossing freeways. This alternative will add up to one GP through lane in each direction between Anaheim Street and Olympic Boulevard to address capacity deficient segments on the freeway. It will also add two truck bypass lanes in each direction around the I-405 freeway-to-freeway interchange to address safety and operational deficiencies. Other improvements include buffer lanes, interchange improvements, crossing improvements, transit improvements, aesthetic enhancements, transportation system management improvements, ITS improvements, and air quality improvement measures that consider funding of facilities needed to support ZE/NZE trucks, such as charging and/or refueling stations.

Alternative 7 – Add Clean-Emission Freight Corridor (Truck-Only Lanes)

Alternative 7 proposes adding two separate truck lanes in each direction between Long Beach and Commerce, adjacent to the freeway, approximately 16 miles in length. This principal feature is also referred to as a “Clean-Emission Freight Corridor.” Alternative 7 also includes modifications to the I-710 alignment, maintaining the same number of GP lanes on I-710, and reconfiguring the access points to/from I-710 and its crossing freeways. This alternative will add two controlled-access truck lanes in each direction (the Freight Corridor), within or adjacent to the I-710 freeway cross section, with termini connections to/from I-710 near Anaheim Street in Long Beach and near Washington Boulevard in Commerce. The Freight Corridor features include...
restricted use to ZE/NZE trucks and freeway access points (Freight Corridor-to-Freeway interchanges) at three locations on I-710 near Anaheim Street, near Del Amo Boulevard, and near Bandini Boulevard and one location on SR-91 near Cherry Avenue. Other improvements include buffer lanes, interchange improvements, crossing improvements, transit improvements, aesthetic enhancements, transportation system management improvements, ITS improvements, and air quality improvement measures that consider funding of facilities needed to support ZE/NZE trucks, such as charging and/or refueling stations.

Install Gantry at Northern Rail Yards

At the rail yards located in the northern area of the Gateway Cities, trucks deliver containers from the ports, which are then loaded on to rail cars. The rail yards are expected to significantly increase in capacity, with Hobart Yard growing in capacity from 1.7 million annual container lifts in 2012 to 3 million lifts by 2035. Capacity can be expanded without acquiring additional land by installing wide-span gantry cranes. For example, the East Los Angeles Yard could grow in capacity from 700,000 lifts to 1.3 million lifts per year.

SCIG and ICTF Projects

The proposed new SCIG rail yard and proposed modernization of ICTF have the potential to add to the goods movement rail capacity in the region. If completed, the SCIG and ICTF projects would add approximately 2.2 million lifts to the annual rail capacity of the southern end yards, as Table 8.2 shows. With the SCIG project in place, most of BNSF’s IPI loadings would shift from Hobart Yard in the north to the SCIG Yard in the south. This would mean fewer trucks moving up and down the I-710 freeway, but more local truck trips to and from the SCIG Yard.
Table 8.2  Rail Yard Demand and Capacity, 2012 and 2035

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2035 without SCIG and without ICTF Improvements</th>
<th>2035 with SCIG and with ICTF Improvements</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>On- and Off-Dock Rail Yard Demand (Annual Lifts in Millions)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North End</td>
<td>1.56</td>
<td>4.99</td>
<td>3.82</td>
<td>-1.18</td>
</tr>
<tr>
<td>South End</td>
<td>2.37</td>
<td>7.77</td>
<td>9.01</td>
<td>1.24</td>
</tr>
<tr>
<td>Eastern</td>
<td>0.67</td>
<td>1.31</td>
<td>1.24</td>
<td>-0.06</td>
</tr>
<tr>
<td>Total</td>
<td>4.61</td>
<td>14.07</td>
<td>14.07</td>
<td>0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>On- and Off-Dock Rail Yard Capacity (Annual Lifts in Millions)</strong></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>North End</td>
<td>2.7</td>
<td>5.2</td>
<td>5.2</td>
<td></td>
</tr>
<tr>
<td>LATC</td>
<td>0.3</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>East Los Angeles</td>
<td>0.7</td>
<td>1.3</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Hobart</td>
<td>1.7</td>
<td>3.0</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>South End</td>
<td>3.7</td>
<td>9.4</td>
<td>11.6</td>
<td>2.2</td>
</tr>
<tr>
<td>ICTF</td>
<td>0.8</td>
<td>0.8</td>
<td>1.5</td>
<td>0.7</td>
</tr>
<tr>
<td>SCIG</td>
<td>0.0</td>
<td>0.0</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>On-Dock</td>
<td>2.9</td>
<td>8.6</td>
<td>8.6</td>
<td></td>
</tr>
<tr>
<td>Eastern</td>
<td>0.9</td>
<td>1.7</td>
<td>1.7</td>
<td></td>
</tr>
<tr>
<td>City of Industry</td>
<td>0.2</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>SB</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7.3</td>
<td>16.3</td>
<td>18.5</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Intelligent Transportation Systems refer to the application of advanced information and communications technology to the transportation system. These tools are applied in order to maximize mobility, efficiency, and safety, reduce environmental impacts, and support economic growth. These types of applications include, but are not limited to, traveler information, ramp metering, traffic cameras, changeable message signs, signal systems, traffic detection and monitoring, and the application of advanced wireless technologies.

The Gateway Cities Technology Plan for Goods Movement study, completed in 2012, detailed how ITS and technology can be leveraged to improve goods movement efficiency in the Gateway Cities through the integration of traditional freeway, arterial and traveler information technologies, with intermodal freight, port, and truck technologies. As part of the Goods Movement Study, relevant ITS system overviews and inventories for key existing and planned ITS data and transportation management entities in the Gateway Cities subregion were summarized. The summary is provided in the next section. The study also identified seven unique yet interrelated projects to improve the efficiency of goods movement in the Gateway Cities subregion within a Concept of Operations and Business and Implementation Plans.

This STP Technology Element builds on earlier efforts, such as the Gateway Cities Technology Plan for Goods Movement Study (2012), the I-710 DEIR/DEIS, CALSTART zero emissions vehicle research, and U.S. Department of Transportation connected vehicle and freight ITS research. The Technology Element provides guidance and preliminary design information on six key ITS and technology areas. For each of these areas, one or more detailed technical reports were developed, and they can be found in Appendix 5.

1. ITS Development for the I-170 Zero Emissions Freight Corridor
2. Truck Automation Systems Development for the I-710 Zero Emissions Freight Corridor
4. Freeway Smart Corridor Development for the Gateway Cities Subregion
5. Arterial Smart Corridor Development for the Gateway Cities Subregion
6. Freight-Centric Traveler Information for the Gateway Cities Subregion

The last section of this chapter provides a summary of these six technology program areas.
9.1 Existing ITS System Overview

The Gateway Cities and Southern California have numerous ITS and technology projects and programs in place to help manage the transportation system and provide traveler information. Some of these existing systems are described below.

Southern California 511

Los Angeles County Service Authority for Freeway Emergencies (LA SAFE), in partnership with Metro, the OCTA, Ventura County Transportation Commission (VCTC), and Caltrans, implemented the Southern California 511 traveler information system. The system went into operation in 2010 and provides traffic, public transit, commuter assistance, and other related information to the public for free via a web site (http://www.go511.com), phone (dial toll free 511 within the Los Angeles County, Orange County, or Ventura County areas) and the Go511 mobile app.

The traffic map webpage displays real-time speed and travel time information for main line freeways and HOV lanes from data received from Caltrans. Orange icons on the map indicate incidents, and red icons indicate road closures. Users can view messages posted on the Caltrans changeable message signs (CMS) in real-time and streaming video from Caltrans closed circuit TV (CCTV) traffic cameras. The “Alert” box located above the map is used to scroll important traffic and transit-related alert messages.

In addition to traffic information, 511 provides information on bus and train schedules, real-time bus arrival and departure times, transit providers, park-and-ride lots, carpool and vanpool information, Freeway Service Patrol motorist assistance, FasTrak® electronic toll collection system information, and other transportation-related information such as weather. The trip planner feature allows the users to plan their trip and generate an itinerary.

Information for the 511 system is maintained and updated through the Traveler Information Center (TIC). The TIC facility, located in Irvine, is a small transportation management centers with six flat-panel TV monitors and five work stations for use by TIC operators.

Freeway Service Patrol (FSP)

LA SAFE, in partnership with Metro, Caltrans, and the California Highway Patrol (CHP), provides free towing services and motorist assistance within Los Angeles County through a service called Metro Freeway Service Patrol (FSP). By quickly moving inoperable vehicles from the roadway, traffic can be kept flowing, thus reducing secondary incidents, saving fuel, and reducing air polluting emissions by reducing stop-and-go traffic. FSP assistance can be requested in Los Angeles County by dialing 511 from a mobile phone, or calling for help from a freeway callbox. The FSP service provides more than 20,000 motorist assists per month. Figure 9.1 presents the FSP roadway coverage.
Figure 9.1  Freeway Service Patrol Beats in the Gateway Cities Subregion
Caltrans District 7 ATMS

Caltrans District 7 operates its Advanced Transportation Management System (ATMS) from its transportation management center located in Glendale. The center is manned 24 hours, seven days per week with trained operators who monitor freeway conditions, support CHP and other field personnel during traffic incidents, and provide information to the public through CMS. The CMS show travel times to downstream destinations as a default, but are also used to advise motorists on incidents, construction or other activities. The regional ramp metering system is also managed from the transportation management center.

Caltrans operates vehicle detectors on most freeway mainlines and ramps, which collect volume, average occupancy, and average speed data which are used for traveler information systems, CMS travel time display, detecting traffic issues, and traffic management. CCTV cameras enable Caltrans operators to remotely observe conditions on the region’s freeways in order to improve mobility and assist motorists. The traffic camera live feed is also available to the public on the 511 travel information system.

Performance Measurement System (PeMS)

Caltrans headquarters administers the freeway PeMS, a real-time archived data management system for vehicle detector traffic data, toll tag readers, and a variety of other transportation-related data collected from systems throughout the state, including District 7 (http://pems.dot.ca.gov/). PeMS collects detector data in real-time, stores and processes the data, and displays the information on web pages that transportation professionals can use to analyze freeway system performance. PeMS is a source of both raw detector data collected from the various freeway management systems and processed data. Some of the real-time and archived information available in PeMS includes traffic detectors, incidents, lane closures, toll tags, census traffic counts, vehicle classification, axle weights and gross vehicle recorded by weigh-in-motion, and roadway inventory. Figure 9.2 presents a sample screen for PeMS, which shows real-time speeds, incidents, lane closures, and messages for CMS on a map.
PeMS is also a source of performance measure data and reports on monitored roadways, including current and historical traffic flow, speeds, delay, occupancy, truck proportions, VHT, VMT, travel times, detector health, bottlenecks, and others.

**Regional Integration of Intelligent Transportation System (RIITS)**

Metro’s Regional Integration of Intelligent Transportation System (RIITS) collects transportation-related data from nine management centers owned by seven agencies in the Los Angeles area. The overarching objectives of RIITS are to facilitate the exchange of information between multiple agencies, to improve their current transportation management and operations, and better serve the needs of the traveling public (https://map.riits.net/riits/).

**Advanced Transportation Management and Information System (ATMIS)**

The Ports of Long Beach and Los Angeles have enhanced real-time transportation operations in the ports area by implementing and operating various field devices, central management software, and data communications known as the Advanced Transportation Management and Information System (ATMIS). ATMIS provides real-time monitoring and control of connected field devices and real-time communication with selected external systems involved in travel.
Gateway Cities Strategic Transportation Plan
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information, emergency response, and traffic management such as CCTV traffic cameras, CMS, and vehicle detection (Figure 9.3). ATMIS objectives are to improve incident response time, emergency response, enhance goods movement, reduce travel delay and emissions, improve reliability and predictability of the transportation system, and improve multimodal mobility.

Figure 9.3 ATMIS CCTV and CMS Equipment
Los Angeles County Department of Public Works (LACDPW) Arterial Traffic Control Systems

LACDPW has developed software to integrate individual ATMS for arterial traffic control systems into a regional framework to synchronize traffic signals across jurisdictional boundaries. Los Angeles County operates a transportation management center at LACDPW’s Headquarters located in Alhambra. Using roadway sensors and CCTV cameras to monitor traffic conditions, staff is able to better manage congestion caused by incidents and special events. In addition, LADPW is able to synchronize signals across several jurisdictions to reduce congestion and delays. Figure 9.4 presents the LADPW ITS equipment in the Gateway Cities Subregion.
Figure 9.4  LACDPW ITS Equipment

Source: Los Angeles County Department of Public Works, November 2011.
City Traffic Signal Management Systems

The cities of Long Beach and Los Angeles each operate a traffic signal management system. These systems are used to monitor the status of traffic signals, upload and download signal timings, and collect volume and occupancy data from vehicle detectors. The City of Los Angeles uses traffic signal management software called Automated Traffic Surveillance and Control (ATSAC). Signals on Caltrans highways in the area are maintained by the respective city agencies under agreements.

Separate from the traffic signal systems, each city also operates CCTV cameras at some major intersections. The live video feed is transmitted from the camera to the Long Beach TMC or Los Angeles ATSAC for remote monitoring of traffic conditions. Other cities in the study area that have TMCs or ITS equipment include Commerce, Downey, Norwalk, Santa Fe Springs, and South Gate.

Private Sector ITS and Technology Applications

The private sector is an important source of general traffic data in the Los Angeles area. Companies such as SigAlert, which provides both general and customized traveler information, and TrafficLand, which posts roadway camera feeds and real time speeds, are well-established vendors in the Los Angeles traveler information market, and serve both individual customers and other commercial vendors. There are also numerous Smartphone and web applications providing traveler information, trip planning, trip navigation, and other transportation related services.

9.2 ITS and Technology Issues & Deficiencies

Many of the issues and deficiencies identified below can be addressed or improved using ITS and technology applications. Key needs identified in the Gateway Cities Technology Plan for Goods Movement Study (2012) are discussed below:

- **Arterial Systems.** Improved arterial system operations and coordination in the Gateway Cities Subregion is a major need and priority. Systems are operated by a combination of Los Angeles County and local municipalities, with some signals also controlled by Caltrans. Fragmentation of management and control inhibits the ability to implement signal coordination strategies. ITS deployments, including CCTV and portable CMS, are taking place on some major arterials; however, most arterials still lack this technology in locations where management is needed most, such as congested and high priority freight corridors. Maintaining the equipment already in place is another major concern.

- **Performance Measurement.** The Gateway Cities can benefit from the development of a structured performance management system using the large volume of traffic and
speed data already being collected in the region.

- **Incident Management.** There is a need to extend coverage of heavy duty tow trucks, and provide more contractual flexibility in their deployment for the FSP program. Feedback from the trucking community on their incident management needs is also needed. Data can be mined to help improve truck positioning and better identify the delay impacts of incidents. It also was noted that implementing direct communications between CHP, which dispatches the Freeway Service Patrol, and Metro/LA SAFE, which manages it, could help to improve response and clearance time.

- **Traveler Information.** A variety of public and private sector sources provide traveler information for the Gateway Cities Subregion, but many locations are still missing data for the arterials and the ports. This lack of information particularly impacts the public sector’s management and planning capacity. Providing traveler information in the Spanish language is another improvement identified for traveler information systems in the Gateway Cities.

**Freeway and Drayage Management and Operations.** ITS infrastructure on freeways, arterials, and roadways in the area surrounding the ports needs to be expanded and integrated with other ATMS in the area, as well as commercial management/dispatching systems used in the trucking industry. A clear need was identified for an emergency operations and detour plans for the port areas and the Gateway Cities subregion. Another major issue raised was the condition of the Caltrans ATMS ITS equipment and services in the subregion. Budget limitations are making it increasingly difficult to keep the current system in good repair and replace aging equipment. Consequently key gaps exist in freeway ITS field devices along three major study area freeways: I-110, I-710, and SR-47, which connects I-110 and I-710 through the ports area.

- **Dynamic Route Guidance.** Dynamic route guidance is one of the major initiatives of private vendors in traveler information, navigation and fleet management markets. Dynamic route guidance uses origin and destination information, historical data and real-time traffic information from multiple sources to provide drivers with the optimal route to their destinations. The freight industry necessarily places a high value on travel time and is thus seen as a strong market for this service. One of the elements necessary to make dynamic route guidance more effective is the ability to forecast traffic speeds and congestion within one hour of an inquiry.

- **Policy/Institutional.** On the policy level, there is a need for better integration of ITS and technology applications into planning, deployment, and management of the transportation systems in the Gateway Cities. Data management and quality control of the multiple data sources is another major issue. Another important issue is how to keep up with the rapidly changing technology in an area where the planning/design/deployment cycle can be slow. It is important for agencies to work with research institutions to hasten the evaluation and testing of new technologies. Major advances in technology are planned for the I-710 Corridor, which will bring challenges in
deployment, management, operations, and maintenance of these systems. Traffic enforcement is another important policy issue; it is critical for both the viability of the goods movement industry and the safety of the public. New technologies are emerging in the enforcement area; these advances should be tracked and incorporated in coordination with enforcement policies.

9.3 ITS and Technology Improvements

As noted previously in the chapter, the proposed ITS and technology improvements were grouped into six subject areas and make up a complete technology based program. It’s a program of coordinated and interconnected projects all with the goal of leveraging technology to improve goods movement efficiency, reduce congestion, improve air quality, and maintain economic vitality. The primary users of this region’s transportation facilities - the trucking/freight companies, and the traveling public - are the focus of the benefits of the transportation technologies addressed under this program. Reduced travel times, more reliable travel times, increased throughput - and the associated air quality benefits that these translate to - provide the driving purpose behind this program. Additionally, significant improvements in safety, reductions in fuel usage, and other operational efficiency gains will significantly benefit the private sector and the public.

Individual technical reports were developed for each major project in the program; they are detailed below.

- **ITS Development for the I-170 Zero Emissions Freight Corridor**
  - Gateway Cities I-710 ITS Infrastructure Report;
  - This report created preliminary designs for the ITS and connected vehicle field devices needed on the proposed I-710 Freight Corridor.

- **Truck Automation Systems Development for the I-710 Zero Emissions Freight Corridor**
  - Truck Autonomous Connected Commercial Vehicles Test Plan; and
  - Initial Concept of Operations for the I-710 Zero Emissions Freight ITS Corridor.
  - This report created an in-depth system engineering concept of operations that described how the I-710 freight corridor would operate on a daily basis when all of these advanced technologies were deployed. It details the components of the system, how it would interface with existing systems, who the main stakeholders are and who would care-and-feed for the system once operational.

- **Zero Emission Vehicles Program Development and Infrastructure Projects for the I-710 Zero Emissions Freight Corridor**
  - Technologies, Challenges and Opportunities: I-710 Zero-Emission Freight Corridor Vehicle Systems; and

- This report evaluated which ZE truck technologies might meet the needs of the drayage users that serve the San Pedro Bay Ports, developed a preliminary business case for the more feasible technology alternatives, and described a commercialization plan for these ZE capable trucks based on the technologies recommended.

- It is recommended to coordinate ITS and ZE vehicle programs and funding with the Port of Long Beach and Zero Emission Collaborative lead by LA Metro.

• Freeway Smart Corridor Development for the Gateway Cities Region
  - This report provided conceptual designs and cost estimates for installing ITS devices along the I-710 and I-110.

• Arterial Smart Corridor Development for the Gateway Cities Region
  - Arterial Smart Corridor Projects: Final Report.
  - The report provided conceptual designs and cost estimates for creating eight arterial smart corridors that are critical to goods movement in the region.

• Freight-Centric Traveler Information for the Gateway Cities Region
  - The report documents the functional requirements for a regional traveler information system based on the region’s 511 system that is designed to meet the unique needs of the freight community such as wait times at terminal gates and travel conditions along the eight key corridors designed above.

More information on all of these projects can be found in Appendix 5.
Transportation systems and stormwater quality are closely interconnected because much of the water runoff into storm drains comes directly from streets, highways and freeways. Thus, as part of the STP a stormwater quality review effort has been conducted that has involved considerable outreach to GCCOG member cities. Transportation projects are required by various regulatory mechanisms to provide adequate stormwater quality treatment. The purpose of this chapter is to coordinate the planning of stormwater quality treatment for transportation infrastructure improvements in the Gateway Cities region.

The chapter outlines the purpose and objective of the stormwater quality review and provides an overview of the stormwater quality regulations along with a strategy for addressing stormwater quality. Finally, it makes recommendations regarding how to collaborate with local or statewide agencies and comply with permit requirements. Potential funding opportunities to achieve stormwater quality compliance for transportation projects in the region are also discussed. More details regarding stormwater quality can be found in the STP Stormwater Quality Element Report provided in Appendix 6.

10.1 Purpose and Objectives

The purpose of this chapter is to coordinate planning for transportation infrastructure improvements that includes stormwater pollution prevention and runoff water quality treatment. This planning includes the development of the costs associated with stormwater pollution prevention and treatment and the identification of potential funding opportunities for the projects identified in the STP. The plan will enable GCCOG member jurisdictions to effectively implement their Green Streets Policies and comply with Municipal Separate Storm Sewer System (MS4) requirements.

The primary objectives of this chapter are the following:

1) Identify a strategy for stormwater quality for the Gateway Cities STP;
2) Identify an approach for stakeholder collaboration on stormwater quality treatment locations that will benefit the Gateway Cities watersheds and the public;
3) Identify an approach for evaluation the STP projects, both municipal and Caltrans projects for integration of stormwater quality measures as well as evaluation of regional projects to meet compliance with the transportation project requirements of the MS4 permits.
Ultimately this chapter is designed to help GCCOG member agencies ensure that the best stormwater quality measures and green streets applications are implemented and the permit requirements are met.

10.2 Background and Regulations

GCCOG and Stormwater Quality Planning

The primary entity engaged in overall stormwater quality planning for the Gateway Cities Subregion is the Gateway Water Management Authority (GWMA). The GWMA is a coalition of 26 cities and government entities responsible for the regional watershed planning needs for the Gateway Cities region.

There are four watersheds in the GCCOG area:

- Los Cerritos Channel Watershed
- Lower Los Angeles River Watershed
- Lower Los Angeles River Upper Reach 2 Watershed, and
- Lower San Gabriel River Watershed

The GWMA was formed in 2007 and led the creation of the Integrated Regional Water Management Plan (IRWMP). The IRWMP was completed in 2011 and identifies stormwater quality. The IRWMP includes specific sections dedicated to the identification of stormwater quality issues and problem areas in the Gateway Cities Subregion and also discusses best management practices (BMPs) that can be used to help alleviate some of the stormwater quality issues in the Gateway Cities region.

Representatives of the four watersheds in the Gateway Cities Subregion also meet periodically as watershed groups in order to jointly implement the requirements of the Total Maximum Daily Loads (TMDLs). TMDLs are the total volume of pollutants a water body may receive while still meeting water quality standards. The groups have each developed a Watershed Management Program and a Coordinated Integrated Monitoring Program in compliance with the Los Angeles

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25 Members of the GWMA are 24 city members of the GCCOG, including Artesia, Bell, Bellflower, Bell Gardens, Cerritos, Commerce, Cudahy, Downey, Hawaiian Gardens, Huntington Park, La Mirada, Lakewood, Long Beach, Lynwood, Maywood, Montebello, Norwalk, Paramount, Pico Rivera, Santa Fe Springs, Signal Hill, South Gate, Vernon, and Whittier plus the Central Basin Municipal Water District, and the Long Beach Water Department.

26 A watershed is the land area where water collects and drains onto a lower level property or drains into a river, ocean or other body of water.
Gateway Cities Strategic Transportation Plan
Stormwater Quality

Region MS427 Permit.

Regulatory Drivers for Stormwater Quality

Gateway Cities are subject to requirements of the federal Clean Water Act28 and the state Porter-Cologne Water Quality Control Act29 to implement activities or measures required by the MS4 NPDES30 Permits. These include the following permits or mandates:

- **Los Angeles County Municipal Separate Storm Sewer System MS4 Permit (Order R4-2012-0175)** -- The County of Los Angeles, the Los Angeles County Flood Control District, and 84 incorporated cities within it are subject to Order No. R4-2012-0175, NPDES Permit No. CAS004001 – Waste Discharge Requirements for MS4 Discharges within the coastal watersheds of Los Angeles County, except those discharges originating from the City of Long Beach MS4.31 For projects encompassing 10,000 square feet or more of new impervious surface area, the permit requires that construction shall follow the United States Environmental Protection Agency (U.S. EPA) guidance, *Managing Wet Weather with Green Infrastructure: Green Streets* to the maximum extent practicable. The MS4 Permit encourages Green Street design elements including the use of street trees, permeable pavements, porous concrete, bioretention32 and bioswales, with the goal of better controlling the source of stormwater, and limiting it from conveying transport and pollutants to the larger system. The Los Angeles County MS4 Permit and Long Beach MS4 Permit provide the option for permittees to develop watershed-based compliance plans. GWMA would be responsible for the development for these watershed management plans (WMP). This is a critical regulation with respect to

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27 MS4 is a Municipal Separate Storm Sewer System. An MS4 is a conveyance or system of conveyances that is: 1) owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.; 2) designed or used to collect or convey stormwater (including storm drains, pipes, ditches, etc.); 3) not a combined sewer; and 4) not part of a Publicly Owned Treatment Works (sewage treatment plant). [http://cfpub.epa.gov/npdes/stormwater/munic.cfm](http://cfpub.epa.gov/npdes/stormwater/munic.cfm)

28 The Clean Water Act is the primary federal law in the United States governing water pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation’s waters by preventing point and nonpoint pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands.

29 The Porter-Cologne Water Quality Control Act of 1969 established the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards, granting these agencies the responsibility for controlling water quality in California. This act created a water quality policy, enforced standards for water quality, and regulated the discharge of pollutants from point and non-point sources.

30 National Pollutant Discharge Elimination System (NPDES) is a permit program that addresses water pollution discharge by regulating point sources that discharge pollutants into waters of the United States.

31 Within L.A. County, the cities of Palmdale, Lancaster, Avalon, and Long Beach are excluded. Long Beach has its own MS4 permit.

32 Bioretention is a process in which stormwater is collected into a treatment area with plants, soil, and other organic material, which filter contaminants and sedimentation from stormwater runoff.
implementation of STP because many of the STP transportation improvement projects that result in 10,000 or more feet of impervious surface will need to comply. This has been taken into account in all of the freeway and arterial intersection concept improvement designs that have been developed as part of the STP.

- **Long Beach MS4 Permit (Order R4-2014-0024)** -- Similar to the Los Angeles MS4 Permit, Long Beach has their own MS4 Permit, which would apply to all projects taking place within the City of Long Beach.

- **Caltrans MS4 Permit (SWRCB Order No. 2012-0011-DWQ)** -- Any highway facility project creating one acre or more of new impervious surface area is required to implement post-construction treatment requirements. These Caltrans roadway projects must develop a Storm Water Data Report (SWDR) evaluation the BMPs throughout all phases of project development, including both permanent treatment control best practices and temporary construction site best practices. If Caltrans determines that any or all portions of on-site treatment for a project is infeasible within the project limits, alternative compliance may be achieved outside project limits within the Caltrans right-of-way, including within another Caltrans project.

- Highway improvement projects within and around the Gateway Cities Subregion are subject to the requirements of the Caltrans MS4 Permit and the Caltrans Stormwater Data Report process.

- The Clean Water Act (Section 303(d)) establishes a list of receiving water bodies that exceed pollutant limits of the water quality standards. For water bodies on this list, the state is required to develop TMDLs.

- Based upon the review of the 303(d) list, there are fifteen waterbodies in the Gateway Cities study area exceed their TMDLs.34 Table 10.1 lists a few of the names of impaired water bodies, the pollutant of concern, the TMDL status and responsible stakeholder cities.

- **Caltrans Corridor Studies**

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33 State Water Resources Control Board [http://www.swrcb.ca.gov/](http://www.swrcb.ca.gov/)

34 These include: Artesia-Norwalk Drain, Compton Creek, Coyote Creek, Dominguez Channel, Eldorado Lakes, Long Beach City Beaches, Los Angeles River Estuary, Los Angeles River Reach 1, Los Angeles River Reach 2, Los Cerritos Channel, San Gabriel River Estuary, San Gabriel River Reach 1, San Gabriel River Reach 2, San Gabriel River Reach 3, San Jose Creek
### Table 10.1  List of Receiving Waterbodies, Pollutants of Concern, TMDL Status and Stakeholder Cities

<table>
<thead>
<tr>
<th>Water Body Name</th>
<th>Pollutant</th>
<th>GCCOG Stakeholder Cities</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Gabriel River Estuary</td>
<td>Copper, Dioxin, Nickel, Dissolved Oxygen</td>
<td>Artesia, Bellflower, Cerritos, Downey, Lakewood, Long Beach, Norwalk, Santa Fe Springs</td>
</tr>
<tr>
<td>San Gabriel River Reach 1</td>
<td>Coliform Bacteria, pH</td>
<td>Bellflower, Cerritos, Downey, Lakewood, Long Beach, Norwalk, Santa Fe Springs</td>
</tr>
<tr>
<td>San Gabriel River Reach 2</td>
<td>Coliform Bacteria, Cyanide, Lead</td>
<td>Downey, Pico Rivera, Santa Fe Springs, Whittier</td>
</tr>
<tr>
<td>San Gabriel River Reach 3</td>
<td>Indicator Bacteria</td>
<td>Pico Rivera, Whittier, Industry</td>
</tr>
<tr>
<td>Los Cerritos Channel</td>
<td>Ammonia, Bis(2ethylhexyl)phthalate (DEHP), Chlordane (sediment), Coliform Bacteria, Copper, Lead, Trash, Zinc, pH</td>
<td>Bellflower, Cerritos, Downey, Lakewood, Long Beach, Paramount, Signal Hill</td>
</tr>
<tr>
<td>Coyote Creek</td>
<td>Ammonia, Copper, Dissolved Diazinon; Indicator Bacteria; Lead; pH; Toxicity</td>
<td>Artesia, Cerritos, Hawaiian Gardens, La Habra Heights, La Mirada, Lakewood, Long Beach, Norwalk, Santa Fe Springs, Whittier</td>
</tr>
<tr>
<td>San Jose Creek Reach 1</td>
<td>Ammonia, Coliform Bacteria, Total Dissolved Solids, Toxicity, pH</td>
<td>La Habra Heights, Whittier, Industry</td>
</tr>
<tr>
<td>LA River Estuary</td>
<td>Chlordane (sediment); DDT (sediment); Indicator Bacteria; PCB (sediment); Sediment Toxicity; Trash</td>
<td>Carson*, Lakewood, Long Beach, Los Angeles, Signal Hill</td>
</tr>
<tr>
<td>Los Angeles River Reach 1 (Estuary to Carson Street)</td>
<td>Ammonia; Cadmium; Coliform Bacteria; Copper, Dissolved; Cyanide; Diazinon; Lead; Nutrients (Algae); pH; Trash; Zinc (Dissolved)</td>
<td>Carson*, Compton*, Lakewood, Long Beach, Paramount, Signal Hill</td>
</tr>
<tr>
<td>Los Angeles River Reach 2 (Carson To Figueroa Street)</td>
<td>Copper, Coliform Bacteria, Lead Nutrients (Algae), Oil, Trash</td>
<td>Bell, Bell Gardens, Commerce, Compton*, Cudahy, Downey, Huntington Park, Long Beach, Lynwood*, Maywood, Paramount, South Gate, Vernon</td>
</tr>
<tr>
<td>Compton Creek</td>
<td>Benthic-Macroinvertebrate Bioassessments Coliform Bacteria, Copper, Lead, Trash, pH</td>
<td>Compton*, Long Beach, Lynwood*, South Gate</td>
</tr>
</tbody>
</table>

35 The cities of Carson, Compton, and Lynwood have not been involved in the GWMA and the associated WMPs but are listed here as stakeholder cities within the Gateway region.
Caltrans, under order from a federal court ruling, must prepare Corridor Storm Water Management Studies on projects within its District 7 Drainage System located in Los Angeles and Ventura Counties (Corridor Studies). The federal order also requires Caltrans to implement the recommendations from these Corridor Studies into all new construction and major reconstruction projects within the corridor as they are developed.

Eight Corridor Study reports have been prepared within the Gateway Cities study area, with over 400 potential opportunities identified for treatment BMP installation (see Figure 10.1). The Corridor Studies provide preliminary design plans that show the footprint, drainage area tributary, and the tie in locations to the adjacent drainage systems of the proposed BMP. The Caltrans-approved treatment BMP list includes: Infiltration Devices, Biofiltration Strips, Biofiltration Swales, Wet Basins, Delaware Sand Filters, Austin Sand Filters, Detention Devices, and Gross Solids Removal Devices. Highway transportation improvement projects in Caltrans right-of-way within District 7 must consider the findings of the Caltrans Corridor Studies.

36 This Stipulation and Order was signed by Judge Edward Rafeedie of the United States District Court on January 17, 2008, in the case between the Natural Resources Defense Council (NRDC) and Caltrans.
Figure 10.1  Caltrans Corridor Study Potential Treatment BMPs
10.3 Stormwater Quality Strategy for Transportation Projects

The purpose of this Section is to 1) define a coordinated transportation-related stormwater quality strategy among the Gateway Region Watershed Groups, GWMA, GCCOG, and Caltrans, and 2) to identify the likely areas of mutual benefit and opportunities for coordination. Planning will proceed on a watershed basis. Optimizing the watershed plans will require that the stakeholders have identified viable locations and instances where transportation related collaborative stormwater quality projects would be feasible.

GCCOG and Stakeholder Coordination

The primary vehicle for coordination of transportation related stormwater quality for the GCCOG is a voting member stormwater quality seat on the STP TAC, which was recently added. This seat informs the STP TAC regarding transportation related stormwater quality issues for the GCCOG and is responsible for coordination and collaboration among the GWMA, Caltrans, GCCOG, the Gateway Cities WMPs, and the Los Angeles Regional Water Quality Control Board and other interested agencies regarding transportation related stormwater quality.

Caltrans Right-of-way Projects

Improvements made within Caltrans’ right-of-way require compliance with Caltrans MS4 Permit and evaluation of BMPs proposed within the Corridor Studies. If future highway improvements are planned in Corridor Study locations, the site should be re-evaluated for alternative BMP placement addressing the treatment of the equivalent tributary drainage area. For improvements within Caltrans’ right-of-way that do not have a Corridor Study-proposed BMP, Caltrans-approved treatment BMPs should be evaluated and implemented as required by the Caltrans MS4 Permit. If implementation of a BMP is not feasible, methods of alternative compliance that are allowed by the Caltrans MS4 Permit may be used, including collaboration with GCCOG municipalities on stormwater quality treatment opportunities within the municipality jurisdictional boundary. This collaboration would likely involve Caltrans District 7 staff and the Caltrans Watershed Manager and be focused on specific corridors.

Cities Transportation Projects

The GCCOG has identified numerous potential local agency transportation improvement projects within the region through development of the Gateway Cities STP. These projects that meet the thresholds identified in the Los Angeles County and Long Beach MS4 Permits are required to meet the stormwater quality requirements identified in those permits. The local transportation projects include intersection improvements and segments of arterial roads.
For projects within a city’s jurisdiction such as intersection projects, the stormwater quality requirements of the relative Los Angeles County and/or Long Beach MS4 Permits as well as the cities Green Street policies will need to be followed. These include green street design elements consistent with the U.S. EPA Guidelines including bioretention or vegetated swales incorporated into the shoulders or medians.

As each of these transportation projects is planned, an evaluation the potential opportunities for integration of Green Street design elements that meet the requirements of the MS4 permits and the city Green Street policies should be performed. Then, as each of the transportation projects is developed, a conceptual plan for stormwater quality using the U.S. EPA Guidelines should also be developed. As these projects are reviewed, technical constraints should be identified that make implementation of Green Street elements infeasible both technical and economic. Regional BMP projects, as identified in the STP Stormwater Quality Element Report, in the same drainage area of the transportation project could then be considered for implementation where a Green Street approach cannot be implemented.

As a part of the stormwater quality evaluation of each of the STP transportation projects, an evaluation should be performed to increase the size of the BMPs and Green Street elements to provide treatment for drainage areas larger than the project footprint should be performed. Opportunities for upsizing stormwater quality BMPs for transportation projects have the potential to help achieve the intent of the WMPs.

10.4 STP Stormwater Quality Element Outreach

As part of development of the Stormwater Quality Element of the STP, a series of meetings and outreach presentations have occurred to discuss transportation stormwater quality and the format and contents of the Stormwater Quality Element of the STP. This includes the following meetings and presentations:

- GCCOG Public Works Officials Meeting – presentation on July 25, 2013
- Gateway Water Management Authority Board – presentation on September 12, 2013
- GCCOG PWO Meeting – presentation on January 23, 2014
- GCCOG Meeting – presentation/discussion March 25, 2014
- GCCOG Meeting – presentation/discussion August 26, 2014
- GCCOG Meeting – presentation/discussion February 4, 2015
- GCCOG Meeting – presentation/discussion August 10, 2015
- Gateway Water Management Authority Board – presentation on September 10, 2015
10.5 Stormwater Quality Implementation Recommendations

Summary

Transportation infrastructure is considered a significant source of stormwater pollutants and increases the volume of stormwater runoff in comparison to other surface areas such as parks or lawns or even landscaped portions of the transportation system, such as natural medians. While stormwater quality planning efforts in the area have been ongoing through both the development of the IRWMP and the efforts of the four watershed groups in the Gateway Cities Subregion, there are still opportunities for further coordination on transportation related stormwater quality projects.

Next Steps and Implementation Recommendations

It is recommended that the steps listed below be taken to fully implement the transportation water quality strategy are as follows:

1. Maintain one voting member stormwater quality seat on the STP TAC to coordinate integration of storm water quality treatment for transportation projects. This person is also responsible for reporting back to the GWMA on the STP progress, opportunities and other information necessary to optimize collaboration.

2. Set up a collaborative process with Caltrans to determine whether coordination between stormwater treatment projects between freeways and local streets can be delivered.

3. Finalize stormwater quality treatment sites (and extent) for freeway improvement plans being developed for the STP through evaluation of the corridor study sites for planned Caltrans transportation projects and evaluation of the capital costs. These sites would include Caltrans-owned land adjacent to on and off ramps.

4. Continue to develop conceptual plans to improve arterial highways and intersections within Gateway Cities. Perform an evaluation of the type, extent, and costs of stormwater quality treatment that can be achieved for these local transportation improvement projects, including projects that do not meet the thresholds identified in the MS4 permits. Develop conceptual stormwater quality plans for each of the arterial highways and intersection projects.

5. Evaluate the potential for upsizing the stormwater quality treatment BMPs to be integrated in the arterial highways and intersection projects to provide enhanced treatment in the watershed and help achieve the intent of the WMPs.
6. Determine the need and evaluate the additional regional and/or local BMP treatment locations identified that may be necessary to achieve stormwater quality compliance for transportation projects.

10.6 Funding Opportunities

A major barrier to implementing stormwater quality measures for transportation projects is lack of funding. In some cases, capital funding is restricted and, in general, many maintenance responsibilities are underfunded. Together and separately, the GCCOG and GWMA can apply for funding to assist in implementing the stormwater quality measures for transportation projects. In many cases, state and federal funding can be combined to meet their respective matching requirements. Funding for stormwater quality projects and green infrastructure may be available at the federal, state, regional and local levels. The following is a list of some of the available resources:

Caltrans Funding Opportunities

Money may be available through Caltrans or as part of cooperative implementation program if the stormwater quality measures help Caltrans increase the number of units in compliance with stormwater quality measures. A compliance unit is defined as one acre of Caltrans right-of-way from which “runoff is retained, treated, and/or otherwise controlled prior to discharge to the relevant reach.” The estimated cost of each compliance unit is $176,000.

Federal Funding Opportunities

The U.S. EPA has identified the following funding sources for green infrastructure:

- **Community Action for a Renewed Environment (CARE) grants.** CARE grants are available for up to $275,000 for a two-year period, and are focused on reducing community exposure to toxics in the environment.

- **U.S. Department of Transportation Enhancement Activities.** Transportation enhancements must fall under one of 12 categories.\(^{37}\)

- **U.S. Housing and Urban Development Sustainable Communities Regional Planning Grants.** Targets infrastructure investments to create more jobs and regional economic

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\(^{37}\) These include: Provision of facilities for pedestrians and bicycles; Provision of safety and educational activities for pedestrians and bicyclists; Acquisition of scenic easements and scenic or historic sites; Scenic or historic highway programs, landscaping and other scenic beautification; Historic preservation; rehabilitation and operation of historic transportation buildings, structures, or facilities; Preservation of abandoned railway corridors; Inventory, control, and removal of outdoor advertising; Archaeological planning and research; Environmental mitigation to address water pollution due to highway runoff or to reduce vehicle-caused wildlife mortality, and; Establishment of transportation museums.
activity, specifically through providing transportation choices.

- U.S. EPA 205j Planning and 319h Implementation Grants. Provides grant funding for planning and implementation of water quality projects. Requires a local match.

**State & Regional Funding Opportunities**

State funding opportunities are provided through the statewide initiative process. Funds are administered by the Department of Water Resources (DWR), based on the specific language in the originating proposition.

- California DWR provides grants through competitive statewide propositions. Current funding opportunities through DWR include Proposition 84 and Proposition 1E. Each of these propositions is targeted toward drinking water, water quality, river protection, coastal protection and flood management. Planning grants are funded by Proposition 84. Implementation grants can be funded by either proposition.

- 2014 Water Bond
- Future water bonds or stormwater bonds.
- State Water Resources Control Board has several grant and loan programs that should be considered when available.

The U.S. EPA identified funding sources in a municipal handbook entitled, *Managing Wet Weather with Green Infrastructure*.

The National Association of Flood and Stormwater Management Agencies (NAFSMA) developed a similar publication entitled, *Guidance for Municipal Stormwater Funding*.

The WMPs developed by the stakeholders will serve as useful vehicles to apply for alternative funding. Projects that are linked to an overarching strategy are more attractive for grant programs since they are able to demonstrate cumulative positive impacts in the environment.

In addition, the costs for all the proposed transportation improvement projects developed from the STP should include the costs for stormwater quality treatment. These costs should also be augmented to include regional and local BMPs as needed if sufficient on-site stormwater treatment within transportation projects cannot be achieved.

GCCOG may also explore regional funding initiatives. A good example of this is the OCTA Measure M funds. As a part of Measure M, the OCTA Environmental Cleanup Program helps improve overall water quality in Orange County from transportation-generated pollution. Program funds are allocated on a countywide competitive basis to assist jurisdictions in meeting the Clean Water Act for controlling transportation-generated pollution.
Local Funding Opportunities

Local funding for stormwater treatment for transportation projects is available via local Measure R funds, Measure R local returns and any transportation improvement projects funded via Metro Call-for-Projects. Stormwater treatment, however, doesn’t meet Measure R eligibility requirements as a stand-alone project, and must be an element integrated into a transportation project. Therefore, any new local funding sources for transportation improvement projects should include costs for associated stormwater treatment. Metro should consider the recommendation in the *Stormwater Funding Options* report to include a stormwater funding allocation as part of any future transportation bonds.
11.0 Benefits of the Plan

11.1 Overview

The Gateway Cities Strategic Transportation Plan coordinates subregional planning efforts and presents a comprehensive and inclusive approach for addressing the subregion’s transportation challenges. The STP aims to improve mobility by reducing congestion and increasing transportation choices, to advance subregional accessibility by improving transit and active transportation infrastructure, to enhance safety through multimodal facility upgrades, and to address sustainability and air quality concerns through mode shifts and clean technology.

This chapter provides summary of the estimated local, subregional, and regional benefits associated with implementation of the Gateway Cities STP.

Benefits Estimation Process

A total of 16 scenarios of future transportation investment were developed and evaluated using the GCTM to compare the performance and efficacy of various transportation project proposals considered in the development of the STP. Each scenario was compared to a hypothetical future scenario in which no additional improvements are made to the Gateway Cities transportation system— the No Build scenario. The year 2035 was selected as the forecast year because it was the most distant future year in which socioeconomic forecast data was available.

This chapter summarizes the aggregate benefits of the STP, and where possible isolates forecasted benefits by transportation mode. All benefits are reported in year 2035, compared the year 2035 No Build scenario. Forecasted benefits are presented quantitatively where possible.

11.2 Transportation System Performance

The goals of the STP are organized into four broad themes: Mobility, Accessibility, Safety, and Sustainability. Table 11.1 lists the goals set for each theme, and the performance measures used to evaluate progress toward meeting each goal.

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38 For more information on the GCTM, see chapter 3.0.

39 Population and employment forecasts developed by the Southern California Association of Governments. For more information on evaluation methodology, see Chapter 3.0.
Table 11.1  STP Performance Measures

<table>
<thead>
<tr>
<th>Theme</th>
<th>Goal</th>
<th>Performance Measure</th>
<th>Travel Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobility</td>
<td>Improve Mobility</td>
<td>Reduced vehicle miles traveled</td>
<td>Arterials and Freeways</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced vehicle hours traveled</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reduced vehicle hours of delay</td>
<td></td>
</tr>
<tr>
<td>Mobility</td>
<td>Reduce Congestion</td>
<td>Reduced delay per mile</td>
<td>Arterials and Freeways</td>
</tr>
<tr>
<td>Mobility</td>
<td>Improve Travel Times</td>
<td>Increase average vehicle speeds</td>
<td>Arterials and Freeways</td>
</tr>
<tr>
<td>Accessibility</td>
<td>Increase Transit and Active Transportation Options</td>
<td>Households within ½ mile of fixed guideway transit</td>
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</tr>
<tr>
<td>Accessibility</td>
<td>Increase Accessibility for Low Income Residents</td>
<td>Low-income households within ½ mile of fixed guideway transit</td>
<td>Transit; Active Transportation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Low-income households within ¼ mile of dedicated bikeway</td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td>Reduce Safety Incidents and Collisions</td>
<td>Address high fatality and severe-injury collision locations</td>
<td>Arterials and Freeways, Active Transportation</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Improve Air Quality</td>
<td>Reduce criteria pollutants</td>
<td>All</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Reduce GHG Emissions</td>
<td>GHG emissions reduced</td>
<td>All</td>
</tr>
<tr>
<td>Sustainability</td>
<td>Increase Active Transportation</td>
<td>Increased bike/pedestrian trips</td>
<td>Arterials and Freeways; Active Transportation</td>
</tr>
</tbody>
</table>

The following sections highlight the system performance of the STP 2035 scenario under each theme.

**Mobility**

The STP measures current and future levels of mobility in terms of reduced congestion, improved travel times, and reduced vehicle travel, among other performance measures. With projected increases in population and employment, vehicle travel and congestion are expected to increase between 2012 and 2035. Without transportation system improvements, the Gateway Cities will see increased congestion in 2035, as described in Chapter 2. The STP improvements will improve AM and PM peak travel conditions across each measure of mobility compared to the 2035 No Build scenario.

**VMT, VHT and VHD**

Figure 11.1 provides a brief snapshot of peak period travel benefits on arterials and freeways under the STP, as measured in vehicle miles of travel (VMT), vehicle hours of travel (VHT), and vehicle hours of delay (VHD).

On arterial roadways, the STP is forecasted to reduce VMT by eight percent, to VHT by seven percent, and VHD by eight percent. On average, the cumulative impact of the STP results in
fewer vehicle miles traveled on local roadways, trips of slightly shorter length, and a small but significant reduction in congestion as compared to a future without the STP.

On freeways, VMT are forecasted to decrease by one percent, while VHT is reduced by eight percent and VHD by fifteen percent.

The addition of significant new lane capacity and efficiency improvements on the regional freeway system allows for additional vehicle trips, and therefore a minimal reduction in VMT. However, reductions in travel times (VHT) and delay (VHD) suggest that drivers on the system will enjoy more efficient travel on regional freeways in the future than they would have without these improvements.

**Figure 11.1  Peak Period Reductions in VMT, VHT and VHD, 2035**

![Graph showing peak period reductions in VMT, VHT, and VHD](image)

**Delay Per Mile**

Delay per mile measures the average congestion faced by motorists by normalizing it by miles of roadway. Figure 11.2 indicates delay per mile for all freeways in the Gateway Cities. Delay per mile is forecasted to increase by 2035 on all freeways. The cumulative impact of the STP is a reduction of delay per mile on every freeway corridor except SR-60, on which there are no proposed mainline freeway improvements other than the I-605/SR-60 interchange. With the recommended STP improvements, increased freeway and roadway capacity and efficiency will enable lower travel times in the future.
Average Vehicle Speed

Average freeway speeds under the 2035 STP are forecasted to rise by eleven percent compared to No Build conditions in the AM peak period, and by six percent in the PM peak period. Figure 11.3 illustrates the improvement in average speed for the arterial and freeway systems as a result of the STP during the AM peak period. Figure 11.4 illustrates the improvement in speed by freeway corridor under the STP during the AM peak period.
Average arterial roadway speeds are forecasted to decrease by four percent in the AM, and eight percent during the evening peak between 2012 and 2035. The STP projects would result in overall higher speeds on the arterial system.

Figure 11.5 indicates average AM peak travel times on a selection of principal arterial corridors: Arterial Blvd, Florence Ave, Lakewood/Rosemead Blvd, and Long Beach Blvd. The STP results in decreased or unchanged travel times on all corridors, with the exception of a minor uptick in eastbound travel times on Artesia Boulevard, likely due to lingering capacity constraints on the SR-91/Artesia Blvd Corridor.
Accessibility

The STP will improve resident and visitor access to Gateway Cities destinations through expanded access to non-vehicle transportation modes. New and upgraded transit services and expanded bikeways will offer improved access to jobs, retail, and activity centers. The STP measures accessibility in terms of improved access to fixed guideway transit, and new low-income household access to dedicated bikeways and fixed guideway transit stations.

Improved Transit Access

In 2012, an estimated seven percent of households in the Gateway Cities were located within one half mile of a fixed guideway transit stop (Metro Gold Line, Metro Blue Line, Metro Silver Line, and Metrolink Orange County and Riverside Lines). The STP includes the Gold Line Eastside Extension Phase 2B (Washington Blvd Alignment) and the Eco Rapid Transit project. Together, these projects would add sixteen to seventeen new fixed guideway transit stations to the subregion. Depending on the chosen alignment for the Eco Rapid Transit project, the number of existing households within one half mile of transit would be twelve to thirteen percent of Gateway Cities households, nearly double what it is today.

Transit and Bicycle Accessibility for Low Income Residents

In 2012, an estimated eight percent of low-income households in Gateway Cities were within one half mile of a fixed guideway transit stop. Depending on the Eco Rapid Transit alignment, fourteen or fifteen percent of the Gateway Cities’ low-income households would be within one half mile of a station following implementation of the STP, again nearly doubling the low-income population in close proximity to high quality transit.

Bicycle system coverage for the STP is measured as the number of households within one quarter mile of existing dedicated bikeways; those designated as Class 1 bike paths, Class 2 bicycle lanes, or Class 4 cycle tracks. In 2012, an estimated 35 percent of all Gateway Cities households were within one quarter mile of a dedicated bikeway. With the implementation of the bikeways planned in the STP, close to 85 percent of Gateway Cities households will be within one quarter mile of a dedicated bikeway. The number of low-income households within one quarter mile of

40 The Metro Silver Line bus rapid transit line, while not a completely fixed-guideway system, operates generally as such in the Gateway Cities subregion.

41 Household data based on ACS 2013 – 5 year estimates at the block group level

42 All projected household percentages based on location and income levels of households in 2012


44 All projected household percentages based on location and income levels of households in 2012
a dedicated bikeway will increase from 31 percent to 86 percent with the implementation of the STP.

**Safety**

The STP analyzed the arterial network and identified the top one hundred intersections with the highest number of collisions. A separate analysis of state collision data revealed 89 locations on Gateway Cities freeways with accident rates 30 percent higher than statewide averages. Twenty-five of these locations were on freeway mainlines. Other high accident locations occurred on the merge or diverge areas where ramps meet the freeway, or in weaving sections between ramps where traffic merges between lanes to access ramps and HOV lanes.

The STP plan recommends arterial intersection improvements to address each high-collision location, including those identified in the SR-91/I-605/I-405 Congestion Hot Spots Study and the I-710 EIR/EIS project. All of these improvements will result in updated intersection geometric designs, added lanes, improved traffic signal control and other elements, which will help improve safety at these locations.

Freeway improvements recommended in the STP are accompanied by new geometric designs intended to mitigate the high crash locations on the freeway system, defined as locations with crash rates thirty percent or greater than the statewide average for similar freeway facilities. These freeway improvements feature improved geometry, standard lane widths and shoulders, improved weaving distances, improved merge and diverge sections.

Combined, these arterial and freeway improvements constitute a broad and comprehensive mitigation of known safety issues on Gateway Cities roadways.

**Sustainability**

The STP will help Gateway Cities make progress towards environmental sustainability and improved quality of life. Measuring the impact of the STP projects includes monitoring the region’s air quality and GHG emissions from transportation sources and increasing active travel.

**Air Quality**

Air quality in Gateway Cities is measured in terms of two localized air pollutants: \( \text{PM}_{2.5} \) and DPM.

\( \text{PM}_{2.5} \)

Figure 11.6 shows estimated \( \text{PM}_{2.5} \) concentration levels across the Gateway Cities in 2009. Figure 11.7 shows forecasted \( \text{PM}_{2.5} \) concentrations in 2035, including implementation of the STP.
Figure 11.6  Annual Average PM$_{2.5}$ Concentration in the Gateway Cities (2009)

Figure 11.7  Annual Average PM$_{2.5}$ Concentration in the Gateway Cities – STP (2035)
In 2009, the mean PM$_{2.5}$ concentration across the Gateway Cities was 14.4 µg/m$^3$, exceeding the national air quality standard of 12.0 µg/m$^3$. By 2035, with the implementation of the STP and other policies, this concentration is forecasted to decrease by 30 percent to 10.1 µg/m$^3$, meeting air quality conformity requirements across the region.

In 2009, city concentrations of PM$_{2.5}$ ranged from 8.2 µg/m$^3$ in Hawaiian Gardens to over 20 µg/m$^3$ in Commerce. By 2035, concentrations range from 9.1 µg/m$^3$ in Long Beach and the highest of 11.4 µg/m$^3$ in Walnut Park.

**DPM**

Diesel particulate matter is the principal pollutant contributing to cancer risk from motor vehicles. Figures 11.8 and 11.9 indicate average DPM concentrations in 2009 and 2035 with the STP, respectively.
Figure 11.8  Annual Average DPM Concentration in the Gateway Cities (2009)

Figure 11.9  Annual Average DPM Concentration in the Gateway Cities – STP (2035)
In 2009, estimated average DPM concentration across the Gateway Cities was 4.0 µg/m³. By 2035, with the implementation of the STP and other policies, this concentration is forecasted to decrease by 82 percent to 0.72 µg/m³ by 2035.

In 2009, the majority of the Gateway Cities households had an air pollution lifetime cancer risk between 800 and 2,000 per million. With implementation of the STP and other policies, the majority of households will be subject to a lifetime cancer risk rate of less than 700 per million.

**GHG Emissions**

By 2035, without implementation of the STP, annual on-road GHG emissions in the Gateway Cities are forecasted at roughly 9.7 million metric tons (MT) per year. The STP is forecasted to reduce on-road GHG emissions by 9.3 percent, to 8.8 million MT. This is the equivalent to the annual GHG emissions from about 20,000 gasoline-fueled cars.

About 77 percent of the GHG emissions reductions resulting from the STP are attributable to the zero emission I-710 truck corridor, with the remainder of the STP freeway expansion projects showing a net benefit in GHG emission reductions as a result of the trade-off between reduced congestion but with increased traffic volumes.

**Active Transportation**

The STP recommended bicycle network includes the addition of 462 miles of bike paths, lanes, bike routes, and cycle tracks, a 158 percent increase in total mileage. Due to these improvements, the number of bicycle trips in the Gateway Cities is forecasted to rise by 26 percent to approximately 124,000 per day.

**11.3 Summary**

The projects identified in the STP will provide a range of both transportation and air quality benefits to the Gateway Cities Subregion, including alleviating roadway congestion, improving access to transit and active modes, and improving air quality and sustainability. Highlights of the STP’s benefits include:

- Reduces future peak period arterial vehicle miles traveled by eight percent and freeway miles traveled by one percent, despite a significant increase in freeway capacity, which will accommodate more vehicle trips
- Reduces future peak period arterial hours traveled by seven percent, and freeway hours traveled by eight percent
- Reduces future peak period arterial delay by six percent and freeway peak period delay by fifteen percent
- Increases average freeway and arterial speeds by several miles per hour
• Addresses safety and level of service at nearly 100 deficient intersections
• Doubles the number of households within ¼-mile of a fixed-guideway transit stop.
• Results in a large increase in the number of residents within one-quarter mile of a dedicated bikeway (from 35 percent to 85 percent)
• Provides greater efficiency for port trucks traveling to and from rail yards and warehouses
• Contributes to extraordinary reductions in pollutants linked to cancer risk
• Reduces transportation-related greenhouse gases by nearly ten percent
• Establishes efficient coordination and implementation of storm water BMPs to improve the health of Gateway Cities watersheds
• Provides a comprehensive set of data and modeling tools for future analysis of the transportation system, including the new three-tier Gateway Cities Travel Model
• Provides a funding and financing plan that clearly identifies current and future sources of funding as well as recommended strategies to close the funding gap for STP implementation
12.0 Funding the Strategic Transportation Plan

The STP for the Gateway Cities Subregion consists of several hundred surface transportation projects proposed by GCCOG member jurisdictions to be delivered over the next 30 years. Their aggregate cost is estimated at $24.9 billion, and is expressed in 2014 dollars rather than “year-of-expenditure” (inflated) dollars because the phasing of the various projects has not yet been determined. The STP only considers capital costs; no operating and maintenance expenses have been included. More detailed information on funding and financing of the STP can be found in Appendix 7 of this document.

For ease of analysis, these capital projects have been classified into five major functional groups (Project Groups). Similar, smaller capital projects likely to be funded from the same revenue sources have been combined into sub-groups. For example, dozens of separate proposed arterial highway improvements within the Gateway Cities Subregion are listed in one of two sub-groups—Arterial Highway corridor improvements (labeled AH1) and Arterial Highway intersection improvements (AH2), and seven grade crossings along one rail corridor have been aggregated into one Goods Movement sub-group: Alameda Corridor East (GM3):

Table 12.1 Summary of STP, by Project Group (2014 Dollars in millions)

<table>
<thead>
<tr>
<th>Group Designator</th>
<th># of Projects</th>
<th>Group Description</th>
<th>2014 $ in millions</th>
<th>% of Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>MF</td>
<td>8</td>
<td>Major All Freeway Improvements</td>
<td>$13,250</td>
<td>53.3%</td>
</tr>
<tr>
<td>AH</td>
<td>88</td>
<td>Arterial Highway Intersection Improvements</td>
<td>$680</td>
<td>2.7%</td>
</tr>
<tr>
<td>PT</td>
<td>6</td>
<td>Public Transportation (transit and P&amp;R)</td>
<td>$6,500</td>
<td>26.1%</td>
</tr>
<tr>
<td>AT</td>
<td>55</td>
<td>Active Transportation (bike and ped.)</td>
<td>$760</td>
<td>3.1%</td>
</tr>
<tr>
<td>IT</td>
<td>14</td>
<td>Intelligent Transportation Systems</td>
<td>$1,773</td>
<td>7.1%</td>
</tr>
<tr>
<td>EM</td>
<td>4</td>
<td>Environmental Mitigation/Storm Water Imp.</td>
<td>$800</td>
<td>3.2%</td>
</tr>
<tr>
<td>GM</td>
<td>7</td>
<td>Goods Movement Projects</td>
<td>$1,100</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

218 TOTAL $24,863 100.0%

The ability of the Gateway Cities Subregion to advance these projects depends upon identifying sufficient funding resources over the 30-year forecast period to fund the associated capital outlays (the Funding Strategy). The Funding Strategy is based on estimates of the likely magnitude of federal, state, regional and local sources, and, to a lesser extent, user charges or private sources of capital. For consistency, these annual cash flow revenue estimates are expressed in 2014 dollars.
as well. In most instances, the indicated resources are revenue streams rather than financing mechanisms, such as bonds or equity investments, since financing is dependent upon the project sponsor pledging an underlying annual cash flow. However, in certain cases, where a financing mechanism will be used in connection with a specific revenue stream, such as sales tax revenue bonds, the proceeds from the borrowing are indicated, also expressed in 2014 dollars.

Funding resources are classified into three categories:

- "Category A" revenues represent an estimate of existing revenue sources deemed currently available to the Gateway Cities Subregion based on Metro’s most recent Long-Range Transportation Plan. Examples are uncommitted Proposition C and Measure R revenues.

- “Category B” revenues are derived from funding programs under existing law, but where a specific allocation would be required by federal, state or regional policymakers in order for the Gateway Cities Subregion to obtain resources. Examples are the FTA New Starts grants and state allocations of cap-and-trade revenues.

- “Category C” revenues are proposed new funding programs that would require the enactment of new legislation at the federal, state or local level in order to be implemented. Only those new sources deemed reasonably likely to be enacted in the next decade have been included. Examples are the proposed federal Multimodal Freight Funding program and the approval by Los Angeles County voters to extend Measure R sales tax collections for an additional 30 years after 2039.

- “Category D” represents the remaining funding gap.

The status of the funding sources for each of the major Project Groups is shown in the table below.

<table>
<thead>
<tr>
<th>Table 12.2</th>
<th>STP Funding Status, based on Category of Revenues (2014 Dollars in millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category A: Existing and Programmed Resources</td>
<td>$2,186</td>
</tr>
<tr>
<td>Category B: Existing but Unprogrammed Resources</td>
<td>$5,083</td>
</tr>
<tr>
<td>Category C: Proposed New Sources</td>
<td>$12,904</td>
</tr>
<tr>
<td>Category D: Remaining Funding Gap</td>
<td>$4,690</td>
</tr>
<tr>
<td>Total Resources Required</td>
<td>$24,863</td>
</tr>
</tbody>
</table>

Only 9 percent of the total funding sources ($2.2 billion) has been identified as already programmed for projects on the STP (Category A). Another 20 percent ($5.1 billion) is estimated to be available from existing funding programs (Category B). A total of $12.9 billion—51 percent of the STP capital cost—would be dependent upon the enactment of new measures at the federal, state or local level (Category C). Even taking these new sources into account, a funding gap of $4.7 billion (20 percent) remains (Category D). Stated differently, less than one-third of the resources needed to fully fund the STP are available under current law.
Of the 21 separate funding sources included in the Funding Strategy, seven major existing or proposed programs account for $16 billion of the $25 billion needed for the STP, and one—Mileage-Based User Fees/VMT—accounts for nearly one-third of the total.

### Table 12.3 Largest Funding Sources in STP Funding Strategy (2014 Dollars in millions)

<table>
<thead>
<tr>
<th>Revenue Code</th>
<th>Funding Source Description</th>
<th>Amount</th>
<th>Percent of STP Total Sources</th>
<th>Funding Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>R8</td>
<td>Mileage-based User Fees/VMT</td>
<td>$8,225</td>
<td>32.8%</td>
<td>C</td>
</tr>
<tr>
<td>R6</td>
<td>Extension of Measure R</td>
<td>$2,328</td>
<td>9.3%</td>
<td>C</td>
</tr>
<tr>
<td>F2</td>
<td>FTA Section 5309 New Starts</td>
<td>$1,500</td>
<td>6.0%</td>
<td>B</td>
</tr>
<tr>
<td>S1</td>
<td>Cap and Trade Allocations</td>
<td>$1,500</td>
<td>6.0%</td>
<td>B</td>
</tr>
<tr>
<td>R4</td>
<td>Metro Call for Projects</td>
<td>$1,042</td>
<td>4.2%</td>
<td>B</td>
</tr>
<tr>
<td>F5</td>
<td>FHWA Multi-modal Freight Funds</td>
<td>$837</td>
<td>3.3%</td>
<td>C</td>
</tr>
<tr>
<td>S5</td>
<td>State Truck Weight Fees (SB 1418)</td>
<td>$621</td>
<td>2.5%</td>
<td>C</td>
</tr>
</tbody>
</table>

**SUBTOTAL** (sources > $500 million) $16,053 64.1%

### 12.1 Potential Funding and Financing Tools

There are number of the funding and financing sources which may lend themselves to financing techniques that could monetize or capitalize the revenue streams into an upfront sum available to make larger capital investments rather than the more limiting pay-as-you-go funding permits. Implicit in arranging external financing; i.e., the direct issuance of local debt, Public-Private Partnership (P3) project delivery approach, is the assumption that the benefits of accelerating project delivery—avoided cost inflation, earlier attainment of mobility, safety and environmental benefits—will substantially outweigh the added, nominal financing cost of interest or other charges for the use of capital. More information is contained in Appendix 7 of the STP.

Summarized below are examples of proposed funding and financing tools, which could assist in advancing elements of the STP:

#### Community Infrastructure Partnership Program

California cities, including the 27 cities comprising the Gateway Cities Subregion, are finding it increasingly difficult to invest in much needed community infrastructure. A number of cities in the Gateway Cities Subregion have responded to Metro’s Call for Projects with proposals for intersection improvements, signalization projects and street widening. These projects generally require local community matching funds of 20 percent for signalization and 35 percent for intersection improvements and street widening, which fall under the category of regional surface transportation improvements. In many cases, the local match required may exceed cities’ available resources.
Each of the Gateway Cities receive annually a portion of the “Local Allocation” or “Local Return” component defined in the ordinances authorizing Los Angeles County’s three dedicated ½ percent sales taxes under Prop A, Prop C and Measure R:

<table>
<thead>
<tr>
<th>Sales Tax</th>
<th>Percent Local Return</th>
<th>Approx. Annual Share for GCCOG*</th>
<th>Eligible Purposes (from 2012 Metro Funding Sources Guide)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prop A</td>
<td>25%</td>
<td>$25</td>
<td>Bus Operating &amp; Capital</td>
</tr>
<tr>
<td>Prop C</td>
<td>20%</td>
<td>$21</td>
<td>Bus Operating &amp; Capital; Highway Capital &amp; TDM</td>
</tr>
<tr>
<td>Measure R</td>
<td>15%</td>
<td>$16</td>
<td>Bus &amp; Rail Operating &amp; Capital; Highway Capital &amp; TDM</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>$62</td>
<td></td>
</tr>
</tbody>
</table>

*Annual revenue projections are derived from 2012 LA Metro Funding Sources Guide, based on Gateway Cities Subregion cities comprising approximately 19 percent of the County’s population.

The funds are allocated by Metro among the local cities based upon their pro-rata share of Los Angeles County’s population.

In December, 2013, GCCOG staff and its advisors met with Metro staff to discuss a pooled financing program through which Metro could monetize the annual Local Return/Local Allocation funding component of the countywide dedicated sales taxes on behalf of participating cities—the Community Infrastructure Partnership Program (CIPP). This innovative financial partnership would allow communities to obtain upfront cash to accelerate the delivery of their larger surface transportation projects exceeding any one year’s available capacity. This approach could also be helpful for coordinating the financing of inter-jurisdictional projects extending across two or more municipalities.

Under the CIPP, a city seeking to obtain upfront cash for eligible highway and transit improvements could request Metro to enter into a financing agreement. Metro or another designated entity would issue bonds and remit bond proceeds to the cities to pay for specified projects.

The CIPP would assign to a trustee Metro’s monthly payments of the Local Return sales tax revenue attributable to a participating city. The trustee would set aside funds required for the next debt service payment and remit the remainder to the city for eligible transportation operating expenses and/or pay-as-you-go projects. Once the CIPP obligations issued to fund a city’s project were retired, the city would receive the full amount of its Local Return sales tax revenues each year. This approach could be used for transportation projects funded entirely with local resources as well as projects partially funded by Metro.

A city desiring to enter into this arrangement with Metro would require only a majority vote of the City Council members; no voter approval would be required since the city is not incurring any indebtedness or liability. The city would not be responsible for the CIPP bonds. Even if a city were to file for bankruptcy, its status should not affect the CIPP, since the sales tax revenues
to pay debt service are Metro revenues, not city revenues.

Further consultation with the bond rating agencies would be required; however, it is estimated that if the CIPP financed a portfolio of advances to cities, each of which demonstrated a 1.75 times coverage level of current year’s Pledged Revenues over maximum annual debt service, and had a similar additional bonds test, the CIPP bonds would obtain a bond rating in the high Single-A category, or better.

Many cities in the subregion presently spend their entire Prop A local allocation to subsidize annual transit operating expenses, and are expected to continue doing so in the future. For this reason, it is assumed that the maximum level of debt service attributable to a city would be capped at the sum of its share of Prop C and Measure R revenues, with the Prop A revenues effectively providing the “coverage” factor.

If implemented countywide, the theoretical funding capacity of the CIPP is estimated at more than $1.3 billion. However, a conservative assumption of only 10 percent of the cities participating would yield a financing of more than $100 million—well above the minimum threshold for financial feasibility. It is estimated that the Gateway Cities Subregion could realize at least $92 million of proceeds over the 30-year projection period (two financing cycles of 20 years each).

Table 16.5 demonstrates the potential capital that could be raised by each municipality within the Gateway Cities Subregion over the 30-year STP time frame. The analysis assumes that each city participates in two cycles of the CIPP using 10 percent of its available resources (20 percent in aggregate). In actuality, some cities would elect not to participate at all, and others might seek to utilize more than 10 percent of their available capacity.

In response the innovative nature CIPP concept, GCCOG and Metro Board member Diane DuBois introduced a motion stating in part: “This innovative tool...would allow Los Angeles County Cities to participate in a bond pool that would allow a participating city to obtain cash to fund transportation projects exceeding the cities available annual Local Return revenues.” The motion was adopted by the Metro Board and directed the Metro staff to develop an implementation program.
Table 12.5  Potential Financing Capacity of the Local Return by Gateway Cities under the Community Infrastructure Partnership Program

<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Percent of Countywide Allocation</th>
<th>Measure R</th>
<th>Prop C</th>
<th>Prop A (used for coverage, not debt service)</th>
<th>Annual Aggregate Local Return</th>
<th>Available Annual Aggregate Local Return</th>
<th>Prop C &amp; Measure R Annual Funds for Debt Service @</th>
<th>Total Funds for Debt Service over life of bonds @</th>
<th>Debt Capacity @</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artesia</td>
<td>0.150%</td>
<td>140,752</td>
<td>187,170</td>
<td>224,604</td>
<td>552,527</td>
<td>110,505</td>
<td>63,146</td>
<td>1,262,918</td>
<td>821,398</td>
</tr>
<tr>
<td>Avalon</td>
<td>0.045%</td>
<td>42,226</td>
<td>56,151</td>
<td>67,381</td>
<td>165,758</td>
<td>33,152</td>
<td>18,944</td>
<td>378,875</td>
<td>246,419</td>
</tr>
<tr>
<td>Bell</td>
<td>0.321%</td>
<td>301,375</td>
<td>400,765</td>
<td>480,917</td>
<td>1,183,057</td>
<td>236,611</td>
<td>135,207</td>
<td>2,704,130</td>
<td>1,758,758</td>
</tr>
<tr>
<td>Bell Gardens</td>
<td>0.392%</td>
<td>368,439</td>
<td>489,946</td>
<td>587,935</td>
<td>1,446,320</td>
<td>289,264</td>
<td>165,294</td>
<td>3,305,873</td>
<td>2,150,130</td>
</tr>
<tr>
<td>Bellflower</td>
<td>0.716%</td>
<td>673,126</td>
<td>895,114</td>
<td>1,074,137</td>
<td>2,642,377</td>
<td>528,475</td>
<td>301,986</td>
<td>6,039,719</td>
<td>3,928,214</td>
</tr>
<tr>
<td>Cerritos</td>
<td>0.439%</td>
<td>412,321</td>
<td>548,299</td>
<td>657,958</td>
<td>1,618,578</td>
<td>323,716</td>
<td>184,980</td>
<td>3,699,607</td>
<td>2,406,212</td>
</tr>
<tr>
<td>Commerce</td>
<td>0.115%</td>
<td>107,634</td>
<td>143,130</td>
<td>171,756</td>
<td>422,520</td>
<td>84,504</td>
<td>48,288</td>
<td>965,761</td>
<td>628,128</td>
</tr>
<tr>
<td>Compton</td>
<td>0.860%</td>
<td>808,082</td>
<td>1,074,577</td>
<td>1,289,493</td>
<td>3,172,153</td>
<td>634,431</td>
<td>362,532</td>
<td>7,250,634</td>
<td>4,715,790</td>
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<td>Cudahy</td>
<td>0.240%</td>
<td>225,203</td>
<td>299,472</td>
<td>359,367</td>
<td>884,043</td>
<td>176,809</td>
<td>101,033</td>
<td>2,020,669</td>
<td>1,314,236</td>
</tr>
<tr>
<td>Downey</td>
<td>1.081%</td>
<td>1,015,898</td>
<td>1,350,929</td>
<td>1,621,115</td>
<td>3,987,942</td>
<td>797,588</td>
<td>455,765</td>
<td>9,115,296</td>
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<td>Hawaiian Gardens</td>
<td>0.137%</td>
<td>129,161</td>
<td>171,756</td>
<td>206,107</td>
<td>507,024</td>
<td>101,405</td>
<td>57,946</td>
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<td>Huntington Park</td>
<td>0.596%</td>
<td>560,524</td>
<td>745,378</td>
<td>894,454</td>
<td>2,200,356</td>
<td>440,071</td>
<td>251,469</td>
<td>5,029,385</td>
<td>3,271,096</td>
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<td>Industry</td>
<td>0.002%</td>
<td>1,656</td>
<td>2,202</td>
<td>2,642</td>
<td>6,500</td>
<td>1,300</td>
<td>743</td>
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<td>La Habra Heights</td>
<td>0.057%</td>
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<td>71,565</td>
<td>85,878</td>
<td>211,260</td>
<td>42,252</td>
<td>24,144</td>
<td>482,880</td>
<td>314,064</td>
</tr>
<tr>
<td>La Mirada</td>
<td>0.465%</td>
<td>437,159</td>
<td>581,329</td>
<td>697,595</td>
<td>1,716,083</td>
<td>343,217</td>
<td>196,124</td>
<td>3,922,474</td>
<td>2,551,165</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Percent of Countywide Allocation</td>
<td>Measure R</td>
<td>Prop C</td>
<td>Prop A (used for coverage, not debt service)</td>
<td>Annual Aggregate Local Return</td>
<td>Available Annual Aggregate Local Return</td>
<td>Prop C &amp; Measure R Annual Funds for Debt Service @</td>
<td>Total Funds for Debt Service over life of bonds @</td>
<td>Debt Capacity @</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------</td>
<td>-----------</td>
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<td>------------------------------</td>
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<td>-----------------------------------------------</td>
<td>-------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Lakewood</td>
<td>0.710%</td>
<td>667,330</td>
<td>887,407</td>
<td>1,064,889</td>
<td>2,619,626</td>
<td>523,925</td>
<td>299,386</td>
<td>5,987,717</td>
<td>3,894,392</td>
</tr>
<tr>
<td>Long Beach</td>
<td>4.704%</td>
<td>4,422,098</td>
<td>5,880,449</td>
<td>7,056,539</td>
<td>17,359,085</td>
<td>3,471,817</td>
<td>1,983,895</td>
<td>39,677,909</td>
<td>25,806,386</td>
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<tr>
<td>Lynwood</td>
<td>0.654%</td>
<td>615,169</td>
<td>818,044</td>
<td>981,653</td>
<td>2,414,866</td>
<td>482,973</td>
<td>275,985</td>
<td>5,519,694</td>
<td>3,589,991</td>
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<td>Maywood</td>
<td>0.247%</td>
<td>231,827</td>
<td>308,280</td>
<td>369,936</td>
<td>910,044</td>
<td>182,009</td>
<td>104,005</td>
<td>2,080,100</td>
<td>1,352,890</td>
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<td>Montebello</td>
<td>0.585%</td>
<td>549,761</td>
<td>731,065</td>
<td>877,278</td>
<td>2,158,104</td>
<td>431,621</td>
<td>246,640</td>
<td>4,932,809</td>
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<tr>
<td>Norwalk</td>
<td>1.006%</td>
<td>945,522</td>
<td>1,257,344</td>
<td>1,508,812</td>
<td>3,711,679</td>
<td>742,336</td>
<td>424,192</td>
<td>8,483,837</td>
<td>5,517,860</td>
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<td>Paramount</td>
<td>0.551%</td>
<td>518,299</td>
<td>689,227</td>
<td>827,072</td>
<td>2,034,598</td>
<td>406,920</td>
<td>232,525</td>
<td>4,650,509</td>
<td>3,024,677</td>
</tr>
<tr>
<td>Pico Rivera</td>
<td>0.617%</td>
<td>580,395</td>
<td>771,802</td>
<td>926,162</td>
<td>2,278,360</td>
<td>455,672</td>
<td>260,384</td>
<td>5,207,679</td>
<td>3,387,058</td>
</tr>
<tr>
<td>Santa Fe Springs</td>
<td>0.179%</td>
<td>168,074</td>
<td>223,503</td>
<td>268,204</td>
<td>659,782</td>
<td>131,956</td>
<td>75,404</td>
<td>1,508,073</td>
<td>980,846</td>
</tr>
<tr>
<td>Signal Hill</td>
<td>0.114%</td>
<td>106,806</td>
<td>142,029</td>
<td>170,435</td>
<td>419,270</td>
<td>83,854</td>
<td>47,917</td>
<td>958,332</td>
<td>623,296</td>
</tr>
<tr>
<td>South Gate</td>
<td>0.969%</td>
<td>910,748</td>
<td>1,211,102</td>
<td>1,453,322</td>
<td>3,575,172</td>
<td>715,034</td>
<td>408,591</td>
<td>8,171,822</td>
<td>5,314,927</td>
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<tr>
<td>Vernon</td>
<td>0.001%</td>
<td>828</td>
<td>1,101</td>
<td>1,321</td>
<td>3,250</td>
<td>650</td>
<td>371</td>
<td>7,429</td>
<td>4,832</td>
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<td>Whittier</td>
<td>0.797%</td>
<td>749,298</td>
<td>996,406</td>
<td>1,195,688</td>
<td>2,941,391</td>
<td>588,278</td>
<td>336,159</td>
<td>6,723,181</td>
<td>4,372,735</td>
</tr>
<tr>
<td>Gateway Cities</td>
<td><strong>16.748%</strong></td>
<td><strong>15,743,528</strong></td>
<td><strong>20,935,543</strong></td>
<td><strong>25,122,652</strong></td>
<td><strong>61,801,723</strong></td>
<td><strong>12,360,345</strong></td>
<td><strong>7,063,054</strong></td>
<td><strong>141,261,081</strong></td>
<td><strong>91,875,758</strong></td>
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<tr>
<td>Subtotal</td>
<td></td>
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</tr>
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</table>
Federal Policy Initiatives for Financing

Federal policymakers traditionally have supported state and local highway and transit investment through grant assistance. However, the principal funding source—the federal Highway Trust Fund (HTF)—has suffered in recent years from stagnation in vehicle miles traveled, improved fuel efficiency, and increasing use of alternative-fueled vehicles. The federal General Fund has heavily subsidized transportation spending in recent years; the Highway Trust Fund has received over $54 billion in General Fund transfers. As of the date of the STP, the Congress has continued to pass extensions to the HTF. Additionally, it is uncertain when or if Congress will increase federal fuel taxes, as part of new comprehensive federal surface transportation funding. Consequently, Federal policymakers are continuing to explore other approaches to and/or approve continued General Fund support assist state and local transportation project sponsors.

Aside from grants, federal policymakers have three broad categories of policy tools they can use to stimulate capital investment in surface transportation projects: tax code incentives, credit assistance (loans and loan guarantees); and regulatory reforms.

- Tax incentives use the Internal Revenue Code to encourage debt and/or equity capital investment in surface transportation projects.
- Credit assistance involves federal loans or loan guarantees through programs such as Transportation Infrastructure Finance and Innovation Act (TIFIA)\textsuperscript{45} and Railroad Rehabilitation Improvement and Financing (RRIF) that operate under the Federal Credit Reform Act of 1990.
- Regulatory reforms include streamlining or relaxing certain federal requirements, giving greater flexibility to state and local agencies for obtaining approvals (such as the 2012 Executive Order 13604 on environmental streamlining and federal permitting of infrastructure projects) or allowing them to generate additional revenues (such as the Administration’s 2014 reauthorization proposal to allow Interstate highway tolls for capital renewal).

The tax policy and credit assistance measures can help induce the investment of additional private debt and equity capital into infrastructure projects on attractive terms to the project sponsors. For example, one of the proposed financing tools advocated by Metro—America Fast Forward (AFF) Bonds—has the potential of more than doubling the debt capacity of a given revenue stream, compared to traditional tax-exempt debt financing, while providing a competitive risk-adjusted rate of return to bondholders. In this way, financing tools can help project sponsors support a larger capital program within existing resource levels.

\textsuperscript{45} The Transportation Infrastructure Finance and Innovation Act (TIFIA) provides Federal credit assistance in the form of direct loans, loan guarantees, and standby lines of credit to finance regionally and nationally significant surface transportation projects.
Additional information on potential financing options is contained in Appendix 7 of the STP.

**Proposed State Multi-Year Transportation Funding Program**

In July 2015 Governor Brown called for the Legislature to convene a special legislative session to address the state’s transportation infrastructure funding needs. Later in September, the Brown Administration and legislative leadership released its transportation-funding proposal, which incorporates input from stakeholders that have been engaged in negotiations to craft a package that can achieve the required 2/3’s vote threshold likely to be required to pass.

The Administration’s proposal consists of two pieces. The first piece is a funding bill that would raise revenues, allocate funding for specific purposes including California’s most congested trade corridors, increase the use of Construction Manager/General Contractor project delivery method, extend sunset of public-private partnership project authority by 10 years, provide CEQA relief to rebuild/repair the existing infrastructure, and other provisions. The second piece is a proposed Constitutional Amendment to protect expenditure of these funds for transportation related purposes only.

The funding bill, which has yet to be introduced, would affect funding possibilities and make changes to the following existing laws:

- Existing sources of funding for the state highway system and the local street and road system, which include fuel excise taxes, commercial vehicle weight fees, local transactions and use taxes, and federal funds (*Section 2103, State Streets and Highway Code*);

- Existing registration fees on vehicles with revenues from these fees deposited in the Motor Vehicle Account and used to fund the Department of Motor Vehicles and the California Highway Patrol, but which also provides for the monthly transfer of excess balances in the Motor Vehicle Account to the State Highway Account (*Section 9250, State Motor Vehicle Code*);

- The 2011 ‘Gas Tax Swap’ which, as of July 1, 2011, increased the sales tax on diesel fuel and decreased the excise tax on diesel, while reducing the sales tax on gasoline and increasing the excise tax on gasoline, with the requirement that the State Board of Equalization annually modify both the gasoline and diesel fuel excise tax rates so that the changes in the taxes over time are revenue neutral (*Sections 7360 & 7361, State Revenue & Taxation Code*).
The proposed funding proposal would increase the gasoline excise tax by $0.06 per gallon and the diesel fuel excise tax by $0.11 per gallon beginning in 2016. While this is smaller than the proposed $0.10 per gallon gasoline excise tax increase and $0.12 per gallon diesel excise tax increase proposed by SB 16 (Beall), it would fund many of the transportation needs of the Southern California region and Los Angeles County, including congested trade corridors. Additionally, the proposal would eliminate the annual tax rate adjustments by the State Board of Equalization to maintain revenue neutrality, and instead require the board to adjust gasoline and diesel fuel excise tax rates annually for inflation, beginning in 2017. The bill would also impose a road improvement charge of $65.0 on every vehicle subject to registration fees.

**Road Maintenance and Accountability Program**

The proposal would create the Road Maintenance and Accountability Program (RMAP) to address deferred maintenance on the state highway system and the local streets and road system. The proposal would provide for the deposit of various funds for the RMAP program in the Road Maintenance and Rehabilitation Account, which it creates, including revenues attributable to the $0.11 per gallon increase in the diesel fuel excise tax, future inflation adjustments to the gasoline and diesel excise tax rates, and the road improvement charge. The proposal would provide for revenues attributable to the $0.06 increase in the gasoline excise tax to be distributed under an existing formula. RMAP funds may be used for projects that include, but are not limited to, the following:

1. Road maintenance and rehabilitation
2. Safety projects
3. Railroad grade separations
4. Active transportation and pedestrian and bicycle safety projects in conjunction with any other allowable project
5. Trade corridor investments

To the extent possible, Caltrans and cities and counties receiving an apportionment of funds under the RMAP program would be required to use advanced technologies and material recycling techniques that reduce the cost of maintaining and rehabilitating the streets and highways.
The proposal would allocate the following estimated monies for local agencies:

- $1,150,000,000 to local streets and roads, which includes one hundred million dollars ($100,000,000) for the Low Carbon Road Program (described below);
- $250.0 million annually for a local partnership program to fund road maintenance and rehabilitation purposes in counties that have leveraged taxes or fees dedicated to transportation improvements;
- $400.0 million for rail and transit grants;
- $1.600 billion for state highway, bridge, and culvert repair and maintenance; and
- $200.0 million for high priority freight corridors (described below).

The proposal would impose various accountability and efficiency requirements on California State Transportation Agency (CalSTA) and local agencies receiving funds under RMAP. The proposal would require the California Transportation Commission (CTC) to annually evaluate CalSTA and each city and county receiving revenues from RMAP for effectiveness in reducing deferred maintenance and improving road conditions and meeting other performance goals. Included among these is a requirement that CalSTA implement efficiency measures to generate $100.0 million per year in savings to invest in maintenance and rehabilitation of the state highway system. Additionally, the CTC is empowered to develop guidelines for allocation of RMAP funds, and must do so on or before July 1, 2016 in cooperation with CalSTA, transportation planning agencies, county transportation commissions, and other local agencies. Finally provisions authorize a city or county to spend its portion of funds under the program on transportation priorities other than those allowable pursuant to the program if the city’s or county’s average Pavement Condition Index meets or exceeds 85.

**Trade Corridor Enhancement Account**

The proposal would also set aside $200 million annually from the RMAP program for the Trade Corridor Enhancement Account created by the bill and funded by the increased diesel excise tax to fund trade corridor improvement projects. This is a more modest set aside of funds than the estimated $300 million annually that would have been allocated pursuant to SB 16. However, the funding from the Trade Corridor Enhancement Account would go directly towards identified high volume trade corridors, among the most congested of which are located in the Gateway Cities Subregion. Funding from the Trade Corridor Enhancement Account would be allocated according to the existing statutory framework and CTC guidelines in place for TCIF, providing for 70 percent of funds to be allocated to trade corridors within the Southern California region including San Diego.

The proposal would continuously appropriate 40 percent of the remaining revenues from the RMAP program to be apportioned to cities and counties by a specified formula. It would require 60 percent of the remaining revenues from the RMAP program to be transferred to the State Highway Account for expenditure by the Caltrans for maintenance of the state highway system.
or allocation to projects in the State Highway Operation and Protection Program.

**Cap-and-Trade**

Existing law requires all moneys, except for fines and penalties, collected by California Air Resources Board from the auction or sale of allowances to be deposited in the Greenhouse Gas Reduction Fund (GGRF). These funds are collected as part of a market-based compliance mechanism relative to reduction of GHG emissions. Existing law continuously appropriates 25 percent of the annual proceeds of the fund to the high speed rail project, and further appropriates 35 percent of the annual proceeds of the fund purposes including transit and intercity rail capital, low-carbon transit operations, and affordable housing and sustainable communities.

The Governor’s funding proposal includes a “Low Carbon Road Program” to provide capital funds to cities and counties, and for road projects to reduce greenhouse gas emissions and improve mobility, as specified. The bill would require the California State Transportation Agency (CalSTA) to evaluate and select applications for funding. Under program provisions, projects eligible for funding include all of the following:

1. Complete streets programs;
2. Roundabouts replacing stop-controlled intersections;
3. Optimization of traffic signals;
4. Safety improvements to roads that improve safety for pedestrians and bicyclists to increase active transportation;
5. Other street improvements expected to reduce greenhouse gas emissions, and authorized in program guidelines.

The proposal would appropriate $100 million from the GGRF to CalSTA for the program. Additionally, the proposal would also appropriate an additional $400 million from the GGIF for transit and intercity rail capital projects. At least 50 percent of funding provided must be allocated to projects benefiting disadvantaged communities.

**CEQA Exemption**

The California Environmental Quality Act (CEQA) requires a lead agency to prepare and certify the completion of an environmental impact report (EIR) on projects that may have a significant effect on the environment or to adopt a negative declaration if it finds that the project will not have that effect, subject to certain exceptions. This proposal exempts some projects from CEQA, such as the inspection, maintenance, repair, rehabilitation, replacement, or removal of existing transportation infrastructure, or the addition of an auxiliary lane or bikeway to existing transportation infrastructure under specified conditions.
Public-Private Partnerships

Current law authorizes CalSTA and regional transportation agencies to enter into comprehensive development lease agreements with public and private entities for certain transportation projects that charge users of those projects tolls and user fees. These P3 agreements are subject to various terms and requirements. Existing law provides that a lease agreement may not be entered into under these provisions on or after January 1, 2017. This bill would extend this authorization until January 1, 2027.

Project Delivery

Existing law sets forth the requirements for solicitation and evaluation of bids and the awarding of contracts by state agencies for public works of improvement. Existing law authorizes the Department of Transportation to alternatively use the Construction Manager/General Contractor project delivery method for no more than six transportation projects when it is anticipated that it will reduce project costs or expedite project completion in a manner that is not achievable through the design-bid-build method. This bill would authorize use of this project delivery method for no more than twelve transportation projects.

Contracting of Architectural and Engineering Services Requirement

Article XXII of the California Constitution provides that the State of California and all other governmental entities shall be allowed the choice to contract for architectural and engineering services for all public works of improvement as an alternative to the employment of civil service employees to perform those services. The proposal would require CalSTA to increase its annual use of contract staff resources so that 20 percent of its capital outlay staff consists of contract resources by the 2020–21 fiscal year. The proposal as currently drafted is an urgency statute, taking effect immediately upon passage and requires a 2/3’s threshold to pass.

Constitutional Amendment

In addition to the funding bill, the Administration’s proposal contains a proposed Constitutional Amendment that would require revenues from fees and taxes imposed by the state on vehicles or their use or operation and transferred to the Road Maintenance and Rehabilitation Account, or a successor account, pursuant to the Road Repair and Accountability Act of 2015 to be used solely for street, highway, and mass transit purposes. The measure would prohibit expenditure of these revenues for the payment of principal and interest on state general obligation bonds that were authorized by the voters on or before November 4, 2014. The measure would prohibit the Legislature from amending the statutory provisions of the Road Repair and Accountability Act of 2015 to appropriate revenues required to be transferred to the Road Maintenance and Rehabilitation Account, or a successor account, pursuant to the Road Repair and Accountability Act of 2015 for any other purposes or to authorize expenditures from the account for any other purposes.

Responding to the Governor’s proposed transportation funding program the State Legislature
has been conducting a series of “informational hearings” in various parts of the state. It is anticipated that the State Legislature will continue to consider this comprehensive transportation-funding program during the special legislative session anticipated to continue in 2016.

Potential Countywide Ballot Measure:

Metro is actively exploring placing a countywide sales tax measure on the November 2016 ballot to support a range of transportation improvements. Currently, Metro is evaluating ballot options, which could include both extending the existing Measure R sales tax rate and presenting a new sales tax to the voters for their consideration. These options have implications for accelerating the Measure R program and the potential of generating revenues to support new projects.

In the fall of 2015, the GCCOG provided Metro with an initial list of potential multimodal transportation projects for consideration as part of the ballot assessment process. The STP Project List, included among other projects, I-5 Corridor Improvements (I-605 – I-710), I-710 Corridor projects, and West Santa Ana Branch Transit Corridor. It is anticipated that Metro will continue the “bottom up” approach to developing a potential ballot measure providing GCCOG with an enhanced opportunity to be engaged in this important transportation revenue initiative.

Proposed Early Action Program Funding Opportunities

It is recommended that GCCOG adopt an Early Action Program (EAP) with federal, state and local policymakers to enhance its prospects of implementing the Funding Plan. Implementation of the EAP will be contingent on a number of factors, including legislative and policy developments taking place at the federal, state and regional levels of decision-making.

The highest priority for the EAP should be accessing state cap-and-trade auction revenues allocated by various state agencies. As noted in this chapter, the GCCOG has begun to engage key state and regional decision makers regarding accessing a fair share of cap-and-trade revenues to support elements of STP.

Allocation of Cap and Trade Auction Revenues [Category B initiative]

In 2006, California established the nation’s benchmark for greenhouse gas emission reductions with the passage of AB 32, the “California Global Warming Solutions Act” (Pavley). AB 32 required the California Air Resources Board (CARB) to develop a scoping plan, including direct regulations, performance-based standards, and market-based mechanisms to achieve the targeted levels of GHG emission reductions. The FY2014-15 California State Budget, approved by the State Legislature and signed into law by the Governor (June, 2014) along with “trailer bill” SB 862, sets forth the allocation process for new cap-and-trade revenues. In the first year of the program’s funding (FY 2014-15), transportation-related programs will receive over 70 percent of

46 Assembly Bill (AB) 32 is a California State Law that fights climate change by establishing a comprehensive program to reduce greenhouse gas emissions from all sources throughout the state.
the $872 million allocated through this program. This includes:

- $250M for High-Speed Rail;
- $25M for Transit and Intercity Rail Capital Program;
- $25M for Low Carbon Transit Operations;
- $65M for Affordable Housing;
- $65M for Sustainable Communities; and
- $200M for Low Carbon Transportation.  

Complementing the designation of the funds to support the Low Carbon Transportation Program, the Legislature passed and the Governor signed SB 1204 (Chapter 524) entitled “The California Clean Truck, Bus, and Off-Road Vehicle and Equipment Technology Program.” The bill authored by Senator Lara contained a provision sponsored by the CGCOG designating technologies identified in the STP as eligible for cap-and-trade funding: “Projects that support general commercial motor vehicle and equipment freight efficiency and greenhouse gas emissions, including, but not limited to, advanced intelligent transportation systems, autonomous vehicles, and other freight information and operation technologies.”

In future years (beginning in FY2015-16), 35 percent of cap-and-trade proceeds will go to the Sustainable Communities Program and transit on an annual basis, in the following distribution:

- 35 percent for Sustainable Communities:
  - 10 percent for Transit and Intercity Rail Capital Program;
  - 5 percent for Low Carbon Transit Operations;
  - 20 percent for Affordable Housing and Sustainable Communities;
- 25 percent for High Speed Rail; and
- 40 percent for a variety of projects, with specific amounts to be decided each year (including Low-Carbon Transportation, Energy Efficiency, Urban Forestry, Forestry, Water, and Waste).

The Legislative Analyst’s Office (LAO) has estimated that, if the auction price for carbon allowances were in the $15 to $20 per ton range, the anticipated cap-and-trade revenues between 2014 and 2020 would total approximately $15 billion—roughly $2 billion per year. The STP Funding Strategy uses this estimate in its projection of revenue sources, which may be conservative in comparison to other forecasts. One of the key elements of the cap-and-trade allocation program is the legislative requirement contained in SB 535 (DeLeon, Chapter 830, 2012)

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47 Expenditures for low-carbon transportation include, but are not limited to: cleaning up cars, trucks, buses, and freight movement to meet federally mandated clean air requirements and long-term greenhouse gas emissions reduction goals; funding for heavy-duty freight; electric vehicle programs and rebates; and off-road vehicles.
that 25 percent of the revenues must be invested to benefit “disadvantaged communities” (DCs) and an additional 10 percent be invested directly in “disadvantaged communities.” Provisions of SB 862 require the California Environmental Protection Agency (CalEPA) to develop guidelines addressing how state agencies will incorporate DCs into the allocation of cap-and-trade revenues. CalEPA has developed methodology known as the CalEnviroScreen, which is currently under revision as version “2.0”. The CalEnviroScreen has produced maps showing that the Gateway Cities Subregion contains the largest concentration of DCs in the state.

The cap-and-trade provision is relevant for STP projects that reduce carbon emissions, including several of the goods movement railroad grade separation projects, transit and active transportation projects, stormwater management and zero emission truck projects.

As part of an EAP to access cap-and-trade revenue, proposed projects should demonstrate the following:

- Project readiness: ability to implement the program within 12 months after receipt of funds;
- System integration and connectivity to multi modal transportation improvements: e.g., implementation of low carbon vehicles operating on surface streets and in freeway corridors;
- Quantifiable GHG reductions: Demonstrate the project/program will reduce GHG and support the implementation of AB 32, CARB Scoping Plan and the SCAG RTP/SCS; and
- Directly benefiting “disadvantaged communities” consistent with the provisions of SB 535 (DeLeon, Chapter 830, 2012).

Consistent with provisions that were adopted as part of the 2014-15 state budget, 60 percent of cap-and-trade auction revenue in 2015-16 will be continuously appropriated to high-speed rail ($500.0 million/25 percent), affordable housing and sustainable communities ($400 million/20 percent), transit and intercity rail capital ($200 million/10 percent), and low carbon transit operations ($100 million/5 percent). These programs are expected to receive a total of about $1.2 billion in 2015-16. In addition, the budget includes $27 million for state departments to administer cap-and-trade funds that were allocated as part of the 2014-15 budget, including ongoing oversight of previously funded projects. However, the budget does not include funding to support new programs or projects from the 2015-16 revenue that will not be continuously appropriate or from unspent revenue generated in prior years. The Legislature and Governor report that they will decide on additional cap-and-trade funding allocations, which range between $1.5 billion to $2.0 billion in separate legislation, during 2016 legislative session.

In July 2015 CARB released the Draft Second Investment Plan for the allocation of cap-and-trade auction revenues. (CARB’s first investment plan was released in 2013.) The investment plan is meant to identify general strategies for allocating auction proceeds over the next three years, and release of CARB’s draft is the first step in the public process of developing the final investment
The purpose of the investment plan is to provide information that will help the Legislature and Governor target cap-and-trade funding to programs and projects that maximize the achievement of policy goals, particularly the reduction of GHG emissions. In other words, the investment plan can provide a general framework for how policymakers evaluate different spending options to weigh the relative costs and benefits of these options. For example, the framework could guide how to compare different investment options that are estimated to yield different GHG emission reduction totals and different types of co-benefits, such as improved air quality or improved natural habitats. The investment plan could also provide information about estimated GHG reductions associated with different types of programs to the extent that such data is available. The Legislature could then rely on this framework and associated data to evaluate specific budget proposals in order to better target funding to the mix of programs that would best maximize policy goals.

The proposed CARB investment plan identifies spending options in three broad categories: (1) transportation and sustainable communities, (2) clean energy and energy efficiency, and (3) natural resources and waste diversion. The investment plan also provides, among other things, a “needs assessment,” which identifies the types of projects that should be considered for additional funding within each category of spending.

CARB is scheduled to adopt the investment plan in December 2015 and transmit it to the State Legislature in 2016.
Figure 12.1  Disadvantaged Communities in the Gateway Cities
In response to the State’s action on the cap-and-trade auction program and revenue allocations, the GCCOG has taken a series of actions focusing on generating new grant funds from the cap-and-trade revenues allocation program to benefit member cities. The actions include:

- Established a GCCOG Sustainability Committee. This committee serves as the policy mechanism for coordinating cap-and-trade revenue allocation activities;

- Worked closely with members of the State Legislature to secure legislative provisions supporting the allocation of cap-and-trade programs, which more equitably served “Disadvantaged Communities”, including funds to provide technical assistance for member cities; and

- Served as a catalyst in the development of grant application to access the CARB-administered Low Carbon Transportation Program. The GCCOG worked with GCCOG and Metro Board member Diane DuBois to secure adoption by the Metro Board of a motion supporting a zero emission drayage and ITS technology grant proposal. Responding to the GCCOG’s leadership in the initiation of a grant application to CARB, an application was transmitted to CARB by a multi-agency consortium proposing the implementation of a program entitled “California Collaborative Advanced Technology Drayage Truck Demonstration.” In a letter supporting the $23 million grant request, the GCCOG stated in part: “…The GCCOG is developing, in cooperation with the Los Angeles County Metropolitan Transportation Authority, a comprehensive STP with a major focus on sustainable transportation improvements supporting zero and near zero emissions technologies.

As of the drafting of the STP, the GCCOG continues to be active in securing new state funds, including cap-and-trade revenues, to support zero emission transportation technologies. In the fall of 2015, the GCCOG was engaged with Metro and other regional partners in developing a zero emission/ITS technologies “pilot project” associated with the Governor’s Executive Order (B-32-15) relating to a State Sustainable Freight Plan; and

Additionally, in October 2015, the GCCOG sent a letter to the Strategic Growth Council commenting on the draft program guidelines for the “Affordable Housing and Sustainable Communities Program” (AHSC). Two key points in the letter included: (1) “We continue to believe that targeted technical assistance to disadvantaged communities is an essential element of this grant program…Without well-organized effort to assist disadvantaged communities, the AHSC program will only widen economic disparities in the state”; and (2) “We would be supportive of regional allocations of the AHSC funds based on population, so that Southern California could be assured of having a competition for its fair share of statewide funding.”

The GCCOG continues to work closely with regional partners, including Metro and SCAG, along with members of the GCCOG’s state legislative delegation of both key legislative and administrative issues associated with accessing cap-and-trade revenues to support the reduction of carbon emissions and benefiting GCCOG member cities.
12.2 Next Steps

The funding and financing plan presented in this chapter will result in the ability to complete many of the recommended STP projects and initiatives. Key next steps toward implementation of needed improvements in each modal area include the following:

- **Freeway System** – Continue to move freeway projects through environmental clearance, engineering design and construction. Current efforts include the I-710 corridor RDEIR/RDEIS, the I-605/SR-91 PA/ED, the I-710/SR-91 PSR, the I-605/I-5 Interchange PA/ED. Future efforts would target other interchanges and freeway segments for environmental review and implementation. The GCCOG should continue to work closely with both Metro and Caltrans on a range of freeway improvement projects, working within the Gateway Cities Guiding Principles.

- **Arterial Highway System** – Fund and implement the GCCOG’s Arterial Complete Streets Corridor program. This program will take the identified deficient corridors and initiate more detailed complete streets studies to include not only transportation issues, but also urban design, complete streets policies, economic development and land use policies along the corridors. Implement intersection improvements for the 100 locations with STP concept designs and seek opportunities for arterial corridor improvement projects.

- **Transit/Park-and-Ride** – Continue coordination between municipal transit agencies to seek funding for investments in safety, technology, and context-sensitive amenities. Work with Metro and regional partners to ensure implementation of key projects such as Eco-Rapid Transit and Gold Line Eastside Extension (Washington Blvd alignment), and to pursue targeted investments in first/last-mile and supportive park-and-ride infrastructure.

- **Active Transportation** – Conduct further detailed review of the 55 regionally significant bikeway projects and implement those projects as cities and the County refine and approve the specific project elements. Work with Metro on implementation of pedestrian and bicycle improvement projects around all transit stations. Pursue the next steps in implementation of the Eco-Rapid Transit corridor project including alternatives analysis studies and environmental clearance.

- **Good Movement** – Recognize the importance of goods movement in all Gateway Cities transportation planning and implementation. Continue to work closely with the Ports of Long Beach and Los Angeles with respect to key projects including I-710, other freeway improvements and the freight technology element including arterial smart corridor improvements to benefit goods movement. Seek funding for innovative goods movement improvements including improvements on the freeway and arterial systems and for zero emissions technologies.
• **Technology Element** – Look for Cap and Trade funding opportunities to implement the STP’s Smart Corridor Concepts (both arterial and freeway) as well as growing the successful FRATIS concept. It should be noted that FRATIS is a direct product of this project’s efforts. Finally, as Metro recasts their 511 traveler information system, look for opportunities to take the functional designs as part of this effort and integrate into those regional efforts.

• **Stormwater Quality** – Continue to coordinate transportation projects with stormwater quality review and work with the Gateway Water Management Authority on all key transportation initiatives. Continue stakeholder collaboration, including evaluation of STP projects that move into implementation for the provision of appropriate stormwater quality measures and to meet compliance with all applicable permits and regulations.

• **STP Update** – Determine the appropriate cycle for update of key STP elements including data, analysis and tools. Update elements of the plan as needed to respond to changing conditions such as changes to existing congestion patterns and levels, changes in future socioeconomic forecasts and revised regional forecasts and changes to the funding outlook. Utilize STP tools including the three-tier traffic model to assess key projects and further understand future impacts of congestion and benefits of improvement projects. Implement the STP funding and financing element recommendations to provide needed funding for STP improvements. Through regular review and monitoring, ensure the STP is a living document that responds to changing local, regional, state and national conditions.