SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

RTP 2008 REGIONAL TRANSPORTATION PLAN

Making the Connections

ADOPTED

MAY 2008

To the Region:

The Regional Council of the Southern California Association of Governments (SCAG) proudly presents the 2008 Regional Transportation Plan (RTP): Making the Connections, adopted on May 8, 2008. Success in transportation and transportation planning is about making the connections, whether it's connecting from bike to bus or truck to rail, relating the travel choices we make with environmental consequences, ensuring that land-use and transportation planning go hand-in-hand, or more equitably linking our transportation finance mechanisms to those who benefit directly from the use of the system.

Southern California's transportation network is severely overburdened and underfunded. For at least the last two decades, we have consistently ranked as the nation's most congested metropolitan area. It is anticipated that over the next 25 years, the region's population will increase by 6 million people and cargo trade through our ports and airports will triple in the same time period, doubling our truck traffic. As a result, roadway speeds are expected to decrease and traffic delays to increase over the next 25 years, all changes that directly impact our environment and air quality.

The 2008 RTP strives to provide a regional investment framework to address the region's transportation and related challenges. It is a $531.5 billion Plan (in nominal or year-of-expenditure dollars) that emphasizes the importance of system management, goods movement, and innovative transportation financing. It looks to strategies that preserve and enhance the existing transportation system and integrate land use into transportation planning.

The RTP was developed in collaboration with agencies from across the region, including our 14 subregions. We worked with county transportation commissions, subregional organizations, transit agencies, tribal nations, non-profits and advocacy groups, and other interested stakeholders. The majority of projects that you will see in the Plan were submitted by our region's five county transportation commissions and the Imperial Valley Association of Governments.

Our region faces great challenges, and we cannot afford to try to solve them solely on a city or even county level. We must look at the bigger picture of Southern California as a region, to look at strategies and new transportation systems that will make this region function the best that it can, and at the end of the day, to make Southern California a place that we are all proud to call our home.

Sincerely,

Gary Ovitt

President, Southern California Association of Governments
Fourth District Supervisor, County of San Bernardino, California

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

REGIONAL TRANSPORTATION PLAN 2008

MISSION STATEMENT

Leadership Vision Progress

Leadership, vision and progress which promote economic growth, personal well-being, and livable communities for all Southern Californians.

The Association will accomplish this Mission by:

- Developing long-range regional plans and strategies that provide for efficient movement of people, goods and information; enhance economic growth and international trade; and improve the environment and quality of life.
- Providing quality information services and analysis for the region.
- Using an inclusive decision-making process that resolves conflicts and encourages trust.
- Creating an educational and work environment that cultivates creativity, initiative, and opportunity.

Funding: The preparation of this document was financed in part through funds from the Federal Highway Administration and Federal Transit Administration. Additional financial assistance was provided by the California State Department of Transportation.

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RESOLUTION NO. 08-497-2

RESOLUTION OF THE SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS APPROVING THE 2008 REGIONAL TRANSPORTATION PLAN (2008 RTP) AND RELATED CONFORMITY DETERMINATION

WHEREAS, the Southern California Association of Governments (SCAG) is a Joint Powers Agency established pursuant to Section 6500 et seq. of the California Government Code;

WHEREAS, SCAG is the designated Metropolitan Planning Organization (MPO) pursuant to 23 U.S.C. §134(d) for the counties of Los Angeles, Riverside, San Bernardino, Ventura, Orange, and Imperial, and as such is responsible for preparing the Regional Transportation Plan (RTP) and Regional Transportation Improvement Program (RTIP) pursuant to 23 U.S.C. §134 et seq., 49 U.S.C. §5303 et seq., and 23 C.F.R. §450.312;

WHEREAS, SCAG is the designated Regional Transportation Planning Agency (RTPA) under state law, and as such is responsible for preparing, adopting and updating the RTP pursuant to Government Code Sections 65080 et seq.;

WHEREAS, the projects included in the RTP must be based on the continuing, cooperative, and comprehensive transportation planning process mandated by 23 U.S.C. §134(c) (3) and 23 C.F.R. §450.312;

WHEREAS, on August 10, 2005, the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law, Pub. L. No. 109-59, Title VI, Section 6001(a), 119 Stat. 1839. SAFETEA-LU includes new and revised metropolitan transportation planning provisions and requires that all state and MPO actions on RTPs and RTIPs (including amendments, revisions or updates) comply with the SAFETEA-LU planning provision beginning July 1, 2007;

WHEREAS, SCAG staff conducted an analysis of the 2004 Regional Transportation Plan ("2004 RTP") which was in place at the time of the enactment of SAFETEA-LU, and thereafter identified the key issues or "gaps" in the 2004 RTP which needed to be addressed in order to comply with SAFETEA-LU. The effort led to the Regional Council's adoption in March 1, 2007 of an Administrative Amendment to the 2004 RTP (hereinafter referred to as the "Administrative Amendment") addressing these gaps. The Administrative Amendment to the 2004 RTP also allowed SCAG to take advantage of the four-year update cycle under SAFETEA-LU such that SCAG can adopt the next RTP update by the spring of 2008;

WHEREAS, in accordance with SAFETEA-LU, SCAG also approved and adopted a Public Participation Plan on March 1, 2007, to serve as a guide for SCAG's public involvement process. This Public Participation Plan was further amended on October 4, 2007, to provide more explicit details as to SCAG's strategies, procedures and techniques for public participation on the RTP, RTIP and the Overall Work Program (OWP);

WHEREAS, the Metropolitan Transportation Planning Final Planning Rule ("Final Rule") was promulgated by the U.S. Department of Transportation Federal Highway Administration and Federal Transit Administration on February 14, 2007, and became effective on March 16, 2007. The Final Rule included, among other things, more specific requirements relating to the content of metropolitan transportation plans (also known as RTPs).

WHEREAS, updates to the RTP must be consistent with all other applicable provisions of federal and state law including:

(1) SAFETEA-LU (23 U.S.C. §134 et seq.);

(2) The metropolitan planning regulations at 23 C.F.R. Part 450, Subpart C (i.e. the provisions of 23 C.F.R. §450.300 et seq. as set forth in the Final Rule);

(3) California Government Code §65080 et seq.; Public Utilities Code §130058 and 130059; and Public Utilities Code §44243.5;

(4) §§174 and 176(c) and (d) of the Federal Clean Air Act [42 U.S.C. §§7504 and 7506(c) and (d)];

(5) Title VI of the 1964 Civil Rights Act and the Title VI assurance executed by the State pursuant to 23 U.S.C. §324;

(6) The Department of Transportation's Final Environmental Justice Strategy (60 Fed. Reg. 33896 (June 29, 1995)) enacted pursuant to Executive Order 12898, which seeks to avoid disproportionately high and adverse impacts on minority and low-income populations with respect to human health and the environment; and

(7) Title II of the 1990 Americans with Disabilities Act (42 U.S.C. §§12101 et seq.) and accompanying regulations at 49 C.F.R. §27, 37, and 38;

WHEREAS, SCAG staff has been engaged in the preparation of the 2008 RTP update since the spring of 2007, with a focus on maintaining and improving the transportation system through a balanced approach that considers system preservation, system operation and management, improved coordination between land-use decisions and transportation investments, and strategic system expansion to accommodate future growth through the year 2035;

WHEREAS, the 2008 Draft RTP was released by SCAG's Transportation and Communications Committee (TCC) on December 6, 2007 for public review and comment, and a Notice of Availability was issued. The 2008 Draft RTP included a financially constrained plan and a strategic plan. The constrained plan includes transportation projects that have committed, available or reasonably available revenue sources, and thus are probable for implementation. The strategic plan is an illustrative list of additional transportation investments that the region would pursue if additional funding and regional commitment were secured; and such investments are potential candidates for inclusion in the constrained RTP through future amendments or updates. For purposes of the 2008 RTP update, the strategic plan is provided for information purposes only and is not part of the financially constrained and conforming RTP;

WHEREAS, the 2008 Draft RTP also included a financial plan identifying the revenues available to support the SCAG region's surface transportation investments. The financial plan was developed following basic principles including incorporation of county and local financial planning documents in the region where available, and utilization of published data sources to evaluate historical trends and augment local forecasts as needed;

WHEREAS, pursuant to 23 C.F.R. §450.316(b)(1)(iv), SCAG must provide adequate public notice of public involvement activities and time for public review and comment at key decision points, including approval of plans and transportation improvement programs. SCAG followed the provisions of its adopted Public Participation Plan and subsequent Amendment No. 1 regarding public involvement activities for the 2008 RTP. For example, three duly-noticed public hearings were conducted within the SCAG region to allow stakeholders, elected officials and the public to comment on the 2008 Draft RTP;

WHEREAS, the 2008 Draft RTP serves as the basis of the 2008 Final RTP, and addresses public comments and issues relating to projects and other relevant data which arose subsequent to the release of the 2008 Draft RTP. The public comment period for the 2008 Draft RTP closed on February 19, 2008. SCAG received approximately 150 written comments. Staff has fully considered these comments in preparing the 2008 Final RTP;

WHEREAS, there were several comments relating to the Growth Forecast/Land Use discussion in the 2008 Draft RTP. In part because of the public comments, the Regional Council on March 6, 2008, approved the Baseline Growth Forecast with a statement of advisory land use policies/ strategies for the 2008 Final RTP;

WHEREAS, there were also project-specific comments made as part of the public comment period. Additional information was also provided regarding certain transportation projects that were included in the 2008 Draft RTP, contingent upon adequate documentation that these projects meet the fiscal constraint requirements. Based upon staff's analysis as well as input from the TCC and Regional Council, the projects in the 2008 Final RTP represent projects which meet the fiscal constraint requirements of SAFETEA-LU and the Final Rule;

WHEREAS, in non-attainment and maintenance areas for transportation-related criteria pollutants, the MPO, as well as the FHWA and FTA, must make a conformity determination on any updated or amended RTP in accordance with the Federal Clean Air Act to ensure that federally supported highway and transit project activities conform to the purpose of the State Implementation Plan (SIP);

WHEREAS, transportation conformity is based upon a positive conformity finding with respect to the following tests: (1) regional emissions analysis, (2) timely implementation of Transportation Control Measures, (3) financial constraint, and (4) interagency consultation and public involvement;

WHEREAS, the 2008 Draft RTP included the Draft Conformity Report which concluded with a positive transportation conformity determination for all applicable non-attainment areas in the SCAG region. After the release of the Draft Conformity Report, SCAG was informed that the U.S. Environmental Protection Agency (EPA)'s review of the ozone and PM2.5 motor vehicle emission budgets for the South Coast Air Basin submitted by the California Air Resources Board (ARB) raised concerns such that the ARB was required to revise and resubmit the emission budgets to EPA. This requirement led to SCAG making appropriate revisions to the draft conformity analysis to reflect the new emissions budgets and release a subsequent Draft Conformity Report for an additional 30-day public review period ending April 28, 2008;

WHEREAS, the Conformity Report contained in the 2008 Final RTP makes a positive transportation conformity determination. Using the final motor vehicle emission budgets released by ARB and found to be adequate by EPA, this conformity determination is based upon staff's analysis of the applicable transportation conformity tests;

WHEREAS, in accordance with the interagency consultation requirements, 40 C.F.R. 93.105, SCAG consulted with the respective transportation and air quality planning agencies, including but not limited to, extensive discussion of the Draft Conformity Report before the Transportation Conformity Working Group (a forum for implementing the interagency consultation requirements) throughout the update process;

WHEREAS, SCAG is required to comply with the California Environmental Quality Act ("CEQA") [Cal. Pub. Res. Code § 21000 et seq.] in updating the Regional Transportation Plan;

WHEREAS, SCAG released for public review and comment a Draft 2008 Regional Transportation Plan Program Environmental Impact Report ("Draft PEIR") on January 3, 2008;

WHEREAS, the public comment period for the Draft PEIR closed on February 19, 2008. SCAG has fully considered these comments, and written responses to comments received are included in the Final PEIR Addendum;

WHEREAS, prior to the adoption of this resolution, the Regional Council certified the Final PEIR prepared for the 2008 Final RTP to be in compliance with CEQA;

WHEREAS, the Final Rule stipulates that each project or project phase included in the RTIP shall be consistent with the approved RTP (23 C.F.R. Section 450.324(g));

WHEREAS, this RTIP consistency requirement would be applicable with the Regional Council's adoption of the 2008 Final RTP. SCAG staff, therefore, amended the 2006 RTIP so as to be consistent with the 2008 Draft RTP. Such amendment to the 2006 RTIP was referred to as "Amendment #06-13" to the 2006 RTIP, and was released for public review by a Notice of Availability along with the 2008 Draft RTP and the Draft Conformity Report. The majority of changes to the 2006 RTIP included as part of RTIP Amendment #06-13 are modeling network changes (due to changes in project completion dates) and there are a few changes due to project description changes;

WHEREAS, the Regional Council has had the opportunity to review the 2008 Final RTP and its related appendices, and consideration of the 2008 Final RTP was made by the Regional Council as part of a public meeting held on May 8, 2008.

NOW, THEREFORE BE IT RESOLVED, by the Regional Council of the Southern California Association of Governments as follows:

1. The Regional Council approves and adopts the 2008 Final RTP for the purpose of complying with the requirements of SAFETEA-LU and all other applicable laws and regulations as referenced in the above recitals. In adopting this 2008 Final RTP, the Regional Council finds as follows:

a. The 2008 Final RTP complies with all applicable federal and state requirements, including the SAFETEA-LU planning provisions. Specifically, the 2008 Final RTP fully addresses the requirements relating to the development and content of metropolitan transportation plans as set forth in 23 C.F.R.§450.322 et seq., including issues relating to: transportation demand, operational and management strategies, safety and security, environmental mitigation, the need for a financially constrained plan, consultation and public participation, and transportation conformity.

b. The 2008 Final RTP represents the SCAG region's collective vision for addressing our transportation needs through 2035 within the constraints of committed, available, and reasonably available revenue resources.

2. The Regional Council hereby makes a positive transportation conformity determination of the 2008 Final RTP. In making this determination, the Regional Council finds as follows:

a. The 2008 Final RTP passes the four tests and analyses required for conformity, namely: regional emissions analysis; timely implementation of Transportation Control Measures; financial constraint analysis; and interagency consultation and public involvement.

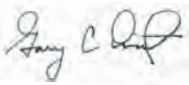
b. The effective date of the transportation conformity determination is deferred to the effective date of the adequacy findings made by the U.S. EPA regarding applicable emission budgets for the SCAG region.

3. In approving the 2008 Final RTP, the Regional Council also approves and adopts Amendment #06-13 to the 2006 RTIP, in order to address the consistency requirement of the federal law.

4. In approving the 2008 Final RTP, the Regional Council approves the staff findings as set forth in its reports and incorporates all of the foregoing recitals in this resolution.

5. SCAG's Executive Director or his designee is authorized to transmit the 2008 Final RTP and its conformity findings to the Federal Transit Administration and the Federal Highway Administration to make the final conformity determination in accordance with the Federal Clean Air Act and EPA Transportation Conformity Rule at 40 C.F.R. Parts 51 and 93.

APPROVED AND ADOPTED by the Regional Council of the Southern California Association of Governments at a regular meeting this 8th day of May 2008.

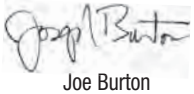


Gary Ovitt
President
Fourth District Supervisor,
San Bernardino County

Attested by:

Hasan Ikhrata
Executive Director

Approved as to Form:



Joe Burton
Chief Counsel

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EXECUTIVE SUMMARY

Success in transportation and transportation planning is about making the connections, whether it's connecting from bike to bus or truck to rail; relating the travel choices we make with environmental consequences; ensuring that land-use and transportation planning go hand in hand, or more equitably linking our transportation financing mechanisms to those who benefit directly from use of the system. The 2008 Regional Transportation Plan (RTP) connects the six-county region of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties to a future vision in which innovative solutions address the daunting challenges we face today.

The 2008 RTP presents the transportation vision for this region through the year 2035 and provides a long-term investment framework for addressing the region's transportation and related challenges. The Plan is the culmination of a multi-year effort focusing on maintaining and improving the transportation system through a balanced approach that considers system preservation, system operation and management, improved coordination between land-use decisions and transportation investments, and strategic expansion of the system to accommodate future growth.

Leadership, vision, and progress are three main components of the Southern California Association of Government's (SCAG) Mission Statement that apply to the RTP development process. In demonstrating a commitment to leadership, SCAG identified regional goals that reflect a balanced approach to transportation planning and decision-making. In providing a vision, the SCAG Regional Council adopted policies to guide the development of the RTP and identified transportation priorities for the region. Lastly and most importantly, in its commitment to demonstrate progress, SCAG continues to rely extensively on performance measurement as a means to identify the most beneficial investments for the region (see Table 1). Together, these elements contribute to a strong and focused RTP.

TABLE 1 RTP GOALS AND RELATED PERFORMANCE OUTCOMES

RTP Goals	Mobility	Accessibility	Reliability	Productivity	Safety	Sustainability	Preservation	Cost-Effectiveness	Environmental	Environmental Justice
Maximize mobility and accessibility for all people and goods in the region	✓	✓						✓		✓
Ensure travel safety and reliability for all people and goods in the region	✓		✓		✓					
Preserve and ensure a sustainable regional transportation system						✓	✓		✓	✓
Maximize the productivity of our transportation system	✓			✓						
Protect the environment, improve air quality and promote energy efficiency						✓			✓	✓
Encourage land use and growth patterns that complement our transportation investments and improve the cost-effectiveness of expenditures	✓	✓							✓	
Maximize the security of our transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies*										

* SCAG does not yet have an agreed-upon security performance measure; therefore, it is not included in this table.

This forward-looking Plan consists of two sections: a financially constrained plan and a strategic plan. While the constrained plan includes strategies that have committed, available, or reasonably available revenue sources, the stra-

tegic plan identifies further needs that require further study and consensus building before difficult decisions can be made as to whether the region is willing to commit funds to include them in a future RTP's constrained plan.

Transportation Planning Challenges

The SCAG Region is one of the largest and most complex metropolitan areas in the nation, and its transportation challenges are equally large and complex. Growth trends and travel patterns in the SCAG Region pose difficult challenges for our multimodal transportation system.

THE SHAPE AND PATTERN OF FUTURE GROWTH

Southern California is running out of land to support low-density future growth. The ocean and mountains pose natural barriers to development. Environmentally sensitive areas, such as coastal wetlands and natural habitat areas, hem in the region and dot the urbanized area. A significant amount of land is also owned by the state and federal governments for the public benefit and is off limits to development. The centrifugal force of growth continues to push the development footprint of the urbanized area outward. At the same time, pushing back on dispersed development are natural barriers, financial constraints to pay for outward expansion, and public resistance to unsustainable "leap frog" growth into green fields and sensitive habitat areas. Nearly all natural locations for urban development have been consumed, leaving us with hard choices about how we are to grow and change to meet the demands of the future.

The SCAG Region is the second-most populated metropolitan area in the United States. Nearly one-half of all Californians live in the SCAG Region, and 1 in 17 people living in the entire United States resides here. By July 1, 2007, the region's population had reached 18.6 million residents, having grown by 2 million residents (12 percent) from just seven years ago. Furthermore, the region saw greater population growth between 2000 and 2007 (2 million residents) than that which occurred throughout the 1990s (1.9 million residents). By the year 2035, the region is projected to be home to 24 million residents.

As the region grows, the average person will be older due to aging "baby boomers," and Hispanics will become the majority ethnic group. These shifting demographic patterns will influence future travel behavior as the elderly tend to travel less and recent immigrants tend to use public transportation more than other population groups.

MOBILITY CHALLENGES

The projected growth is expected to place even greater demands on the transportation system. The SCAG Region is served by an extensive multimodal transportation system addressing all aspects of travel in the region, including commuters; shoppers; public transit patrons; truckers delivering goods both regionally and locally, such as groceries to the local supermarkets; as well as fire, police, and other emergency personnel. The roadway and freight rail networks serve the largest maritime ports system in the United States (the Ports of Long Beach, Los Angeles, and Hueneme) and a number of large airports, including the fifth-largest airport in the world (Los Angeles International Air-

port—LAX). But as impressive as this system may seem, it has not kept pace with population growth and transportation demand.

Although the region's population has more than doubled since 1970, expenditures on the roadway system have actually decreased significantly since then. As a result, traffic delays have nearly tripled over the last twenty years, and 5.7 million person-hours are lost each day to traffic delays. Additionally, traffic bottlenecks (caused by merges, weaves, lane drops, stalls, accidents, and other factors) result in reduced roadway productivity. This "lost" capacity in the AM peak period, attributable to a large extent to non-recurring incidents such as accidents, weather conditions, stalled vehicles, etc., could have the effect of the loss of approximately 286 lane-miles of freeway capacity when it is needed the most. The cost of physically adding this lost capacity by widening existing facilities would exceed $4 billion.

Beginning in the 1980s, a major shift occurred away from building roadways and into transit projects and services. Between 2000 and 2005, regional transit use increased by more than 16 percent, and in 2005, our region reached the highest ridership per capita in about 20 years. However, as we are far from having a "complete" public transportation system with frequent service, extensive coverage, and good connectivity, less than 3 percent of all trips and person-miles traveled are taken on public transit.

AGING INFRASTRUCTURE

The need to preserve our transportation assets adequately was brought to the nation's attention after the Minnesota I-35W bridge collapse during the summer of 2007. We must recognize that our roadway network and transit systems developed over the past decades are aging. These regional assets represent hundreds of billions of dollars of investments that must be protected in order to serve us and future generations. Without these assets, or even a portion of these assets, the region's mobility would be significantly compromised.

Unfortunately, our region's roadways, especially the State Highway System, owned and operated by Caltrans, have not been maintained adequately due to constrained state and federal funding. Deferred maintenance leads to higher costs. Whereas pavement surface damage requires an investment of $64,000 per lane-mile to bring it to a state of good repair, the costs escalate significantly if these investments are not secured in a timely manner. The costs for minor damage repair escalate more than fivefold to $387,000, and the costs for major damage repair escalate to an astronomical $900,000 per lane-mile.

EXPLOSIVE GROWTH IN GOODS MOVEMENT

The SCAG region's goods movement system serves as the gateway for both international and domestic commerce. Supported in part by its geographical advantages such as deep-water marine ports, highly developed network of highways and railways, availability of transloading facilities, and its large internal market, goods movement is the fastest-growing segment of the region's transportation sector. Every state in the nation receives goods that pass through Southern California, and the region is a cornerstone of the nation's global competitiveness.

The San Pedro Bay Ports, which include the Los Angeles and Long Beach Ports, currently handle approximately 40 percent of the volume imported into the country and approximately 24 percent of the nation's exports, and one out of every seven jobs in Southern California depends on this trade. Container volume processed by the San Pedro Bay Ports grew by almost 60 percent in volume between the years 2000 and 2006, and is expected to nearly triple by 2030.

As the only deep-water port between Los Angeles and San Francisco, the Port of Hueneme in Ventura County is a major shipping point for automobiles, fresh fruit, and produce. Approximately $7 billion in cargo traverses through this Port annually, and trade-related activity generated by the Port contributes significantly to the local economy.

Cross-border trade activity also contributes to the region's international trade growth, with the growth in Mexico's manufacturing industry increasing truck trips through Calexico East in Imperial County by 77 percent between 1994 and 2005.

More than 75 percent of the containers processed by the ports in 2006 and 2007 involved a truck trip within the SCAG Region, either to a rail intermodal facility, a warehouse, or a transload facility. These trucks contribute to the existing congestion in the region and will contribute to future congestion even more, as the number of trucks is projected to more than double for several major freeways by 2030.

Recent projections included in SCAG's Inland Empire Railroad Main Line Study suggest that the number of freight trains on most Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) lines will more than double between 2000 and 2025 in response to a tripling of container volume at the San Pedro Bay Ports. Freight rail poses serious quality-of-life issues for many communities. Some towns and cities witness 100 trains per day that literally split their communities into two sections for extended periods of time.

AVIATION CAPACITY AND GROUND ACCESS CONSTRAINTS

The SCAG Region supports the nation's largest regional airport system in terms of number of airports and aircraft operations, operating in a very complex airspace environment. These airports support both growing passenger and freight movement, and there are significant challenges in meeting the future airport capacity needs of Southern California. Work on SCAG's 2004 RTP concluded that an Aviation Decentralization Strategy is needed to meet the forecast doubling of air passenger demand by 2030, from the current 90 million annual passengers (MAP) to 170 MAP (according to the 2004 RTP). This is because the four urban air carrier airports in Los Angeles and Orange Counties are all highly constrained. Their collective acreage amounts to 5,540 acres, which is less than 17 percent of the 34,000 acres of Denver International, and less than the 7,700 acres of Chicago O'Hare. At 3,500 acres, LAX is a very small international airport despite being the third-busiest airport in the country and fifth-busiest in the world in terms of passengers served. All of these urban airports have little room to expand because of severe encroachment by surrounding communities.

AIR QUALITY, CLIMATE CHANGE, AND ENERGY CHALLENGES

The SCAG Region continues to have the worst air quality in the nation despite improvements gained in the last two decades. The recently documented health impacts of air pollution on people living in the South Coast Air Basin are staggering. Of all the people nationwide who are exposed to PM2.5 levels that exceed the federal health-based standard, 52 percent live here. Of all the people statewide who are exposed to these levels, 82 percent live here. This is estimated to result in 5,400 premature deaths and 980,000 lost work days per year.[1]

Much of the region continues to exceed the National Ambient Air Quality Standards (NAAQS) identified in the Clean Air Act. Most of the SCAG Region is classified as non-attainment areas for some criteria pollutants. Further, as demonstrated by the recent Air Quality Management Plan (AQMP)/State Implementation Plan (SIP) efforts of local air districts and the Air Resources Board (ARB), the region's efforts to attain the NAAQS continue to be challenging, as the South Coast Air Basin, the Ventura County portion of the South Central Coast Air Basin, the Western Mojave Air Basin, and the Riverside County portion (Coachella) and the Imperial County portion of the Salton Sea Air Basin will all be "bumping up" to worse ozone non-attainment designations since they cannot achieve the NAAQS in the time previously assumed. Further, the attainment plan to meet the ozone standard in the South Coast Air Basin includes undefined long-term ("black box") measures of approximately 200 tons per day of nitrogen oxides (NOx), which is a daunting amount of as-yet-unidentified emission reductions. Of additional concern are the upcoming 24-hour PM2.5 standards, which will require even greater reductions as well as possibly more stringent ozone standards. Consequently, the ARB, South Coast Air Quality Management District (SCAQMD), and SCAG are committed to producing a white paper that identifies strategies to address the shortfall issues. Furthermore, there are strategies and programs in this Plan that will be incorporated into the white paper.

[1] Personal Communication, Richard Bode, California Air Resources Board, 2007.

In addition to the aforementioned challenges, efforts to reduce greenhouse gases (GHG) will present another tremendous challenge to the transportation sector. Transportation is the largest source of GHG emissions in California, representing 38 percent of emissions, and emissions from the transportation sector have grown more rapidly than from other sources over the past ten years.[2] California is the second-largest emitter of GHG emissions in the United States and the twelfth-largest emitter in the world, exceeding most nations.

At the same time, environmental and geopolitical factors are causing energy experts to question the long-term viability of a fossil fuel–based energy future. Travel demand forecasts generally assume that the future will include an abundant and relatively inexpensive supply of transportation fuels. If transportation fuel prices continue to increase, it would have a ripple effect on numerous areas including construction costs, gas tax revenue, travel and aviation demand, air emissions, mode choice and growth patterns. One area of uncertainty is how commuters may respond to higher gasoline prices. For example, a recent study suggests that with a ten percent increase in the gas price, there is a less than one percent change in gas consumption, while other data show that an increase in gas prices coincides with an increase in transit ridership. In addition, growth patterns may alter future demand for transportation fuels. Mixed land uses (i.e., residential developments near work places, restaurants, and shopping centers) with access to public transportation have been shown to save consumers over 500 gallons of gasoline per year.[3] Energy uncertainty requires serious consideration and further study.

TRANSPORTATION FINANCE CHALLENGES

While this region does not lack the creativity and resolve to develop innovative solutions to our problems, we continue to face shortfalls in transportation funding. As the critical factor that often determines whether beneficial projects can be implemented, transportation finance is perhaps the region's most imminent challenge. The following briefly describes current and projected challenges that are likely to impact transportation revenues within the 2008 RTP time frame.

Over the past four decades, transportation revenues (from gasoline taxes collected per gallon) in California have not kept pace with the state's ever-evolving demographic characteristics. Indicators such as vehicle miles traveled, population, and personal income growth have all outpaced the rate of transportation revenue growth. In addition, gas taxes are collected in cents per gallon. Without periodic adjustment or indexing, these funds will not keep pace with needs. Although the passage and recent renewal of local "self-help" transportation sales taxes have greatly improved funding for transportation, gasoline tax revenues continue to decline in value due to inflation.

The viability of the State Highway Account also remains a critical issue. The state's gasoline tax revenues are now exclusively dedicated to funding the

[2] United States Department of Transportation, Federal Highway Administration. Transportation and Global Climate Change: A Review and Analysis of the Literature. (June 1998.) DOT-T-97-03.

[3] Victoria Transport Policy Institute. Transportation Demand Management Encyclopedia.

needs of the State Highway Operation and Protection Program (SHOPP)—at a level, however, that is considerably less than actual needs. Continued underinvestment in the rehabilitation and maintenance needs of the state highway system has serious ramifications—rapidly increasing the number of distressed lane-miles on the state highway system and eroding the condition of the state's bridges. In recent years, transportation has relied heavily on the State General Fund to pay for capacity-enhancing projects. Reliance on the State General Fund means that transportation funding is subject to the state's annual budget process, which can be lengthy and unpredictable.

The need to establish a reliable and sustainable transportation funding source is even stronger, as the Federal Highway Trust Fund may not have enough resources to meet all of its obligations by the end of the decade. Expenditures authorized under SAFETEA-LU have outstripped revenues generated by the federal per-gallon gasoline tax. Accordingly, the viability of the Highway Trust Fund will be a critical issue in the discussions for the next round of the federal transportation reauthorization legislation, which will start in 2009.

Finally, over the last four years, construction costs in California and the nation have increased at an unprecedented rate and much faster than general inflation. The recent run-up in construction prices is due to a variety of factors, including a residential and commercial building boom as well as higher demand for construction materials in developing countries, most notably, China. Although these trends are likely to fluctuate, they have caused many transportation projects to exceed their budgets in the short term and made long-term project cost forecasting uncertain.

Transportation Strategy

SECURITY AND SAFETY FIRST

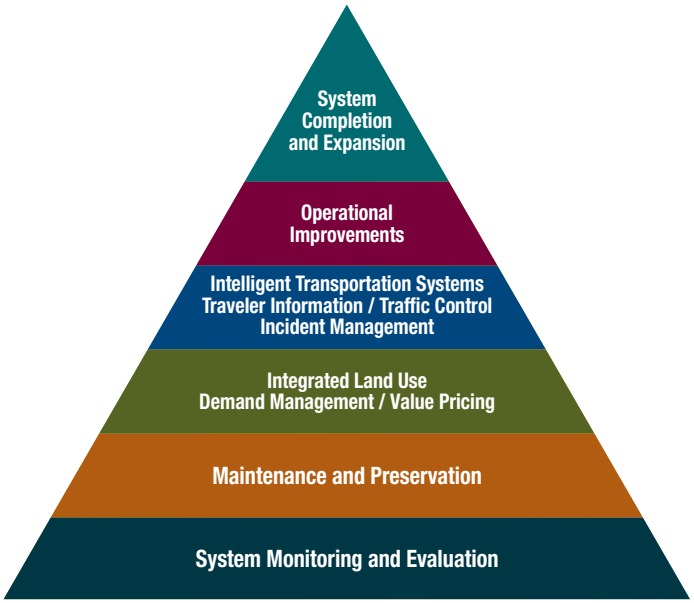
The SCAG Region is vulnerable to many types of catastrophic events including earthquakes, floods, fires, hazardous material incidents, dam failures, civil unrest, transportation accidents, tsunamis and terrorism. Through hard experience, California has in place an emergency and response structure designed to be innovative for the different locations and types of emergencies. There are many agencies that will participate in the response to a disastrous event and ensure that their jurisdictions are prepared to respond to these hazards. This Plan details nine measures that SCAG, as a planning agency, will undertake to enhance the region's ability to achieve and sustain at-risk target levels of capability to prevent, protect against, respond to, and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property, and the region.

The mantra, "Safety First," applies to our transportation system no less than to any other sector of our region. When examined historically, fatal and injury collisions (rate per million vehicle miles traveled) have steadily decreased in California since the 1930s. As SCAG and Caltrans both recognize the continuation of this positive trend as a priority, in 2007, the region fully funded highway collision reduction and emergency response needs, estimated at $317 million and $110 million, respectively. In addition, this Plan forecasts expenditures of $10 billion for safety-related projects and services. Furthermore, in 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) required that each state develop a Strategic Highway Safety Plan (SHSP), which this RTP must be and is consistent with. These actions emphasize the level of collaboration among SCAG, Caltrans, and its stakeholders to examine safety on a system basis so that the region can use all the tools available to decrease traffic injuries and fatalities.

MANAGING OUR TRANSPORTATION SYSTEM WISELY

Since our challenges are multifaceted, our approach to tackling them must be as well. The region recognizes that maintaining and improving mobility will no longer depend solely on expanding its transportation system. Instead, an integrated approach is needed to maximize mobility. State transportation stakeholders have developed a tiered approach based on the idea that transportation investments would have more impact if they were prioritized strategically. Represented by the pyramid below, this approach frames the following discussion.

FIGURE 1 MOBILITY PYRAMID



SYSTEM MONITORING AND EVALUATION

First, it is imperative that we understand the problem in order to fix it. We must have an in-depth understanding of how our system performs and why it performs that way so that we can identify the optimal mix of strategies and projects that yield the highest returns on the region's investments. The base of the mobility pyramid, entitled "System Monitoring and Evaluation," is the foundation of sound system management. SCAG has developed performance measures to improve data collection and to track and monitor the progress of the transportation system so that the region can make informed decisions regarding transportation investments. For example, the Freeway Performance Measurement System (PeMS), developed by UC Berkeley, Caltrans, and the California Partners for Advanced Transit and Highways (PATH), has the ability to measure freeway speeds, delay, and reliability for the regional freeway system. Additionally, transportation professionals and decision-makers have recently committed to improving the region's ability to properly fund the investments needed to comprehensively monitor and evaluate system performance. These investments include detection, closed-circuit television systems, bus global positioning systems, and automatic ridership counting systems. Although funding is modest for these activities, they lead to more informed decisions.

MAINTENANCE AND PRESERVATION

Over the decades, the region has invested hundreds of billions of dollars in our multimodal transportation system. Preserving these assets is a critical priority, especially as preservation needs have been historically underfunded in our region. On top of existing funding for preservation and maintenance, our highway system needs an additional $30 billion through 2035, and our arterial and transit system needs another $10 billion.

Recognizing that every dollar expended today toward maintenance and preservation will save much more in the future, this Plan commits $8 billion of new funding to preservation.

INTEGRATED LAND USE AND DEMAND MANAGEMENT

Integrated Growth Forecast

The Baseline Growth Forecast sets the stage for a future regional growth scenario, as it ties housing to transportation planning, considering both needs simultaneously in communities throughout the region. This approach ensures that the resulting assumptions are consistent with planned transportation infrastructure. Based on a combination of recent and past trends, reasonable key technical assumptions, and existing and new local policy options, the Baseline Growth Forecast provides the basis for developing the land use assumptions at the regional and small-area levels which build the 2008 RTP Plan Alternative.

Advisory Land Use Policies and Strategies

The 2008 RTP Plan Alternative incorporates the Baseline Growth Forecast and the approved transportation network. However, in the rapidly growing SCAG Region, these trends could be tempered, and in some cases bolstered, by policies and strategies designed to improve future travel patterns and vehicle emissions. In response, SCAG adopted a set of advisory land use policies and strategies for future regional planning efforts and for localities to consider as they accommodate future growth. These policies and strategies were founded upon the principles developed through the regional growth visioning efforts begun in 2001.

- Identify regional strategic areas for infill and investment
- Structure the plan on a three-tiered system of centers development
- Develop "complete communities"
- Develop nodes on a corridor
- Plan for additional housing and jobs near transit
- Plan for a changing demand in types of housing
- Continue to protect stable existing single-family areas
- Ensure adequate access to open space and preservation of habitat
- Incorporate local input and feedback on future growth

Travel Demand Management (TDM)

In an effort to address travel demand, TDM strategies are designed to influence an individual's travel behavior by making alternatives to the single-occupant automobile more attractive, especially during peak commute periods, or by enacting regulatory strategies. Some examples of TDM strategies are carpools and vanpools, public transit, non-motorized modes, congestion pricing, and providing the public with reliable and timely traveler information.

In total, this Plan dedicates over $1.3 billion to TDM investments.

Increasing Rideshare (Carpool and Vanpool)

The SCAG Region continues to invest heavily in High-Occupancy Vehicle (HOV) infrastructure that provides incentives for commuters to share rides with others. While HOV utilization is growing over time, the percent of total travelers using carpools and vanpools is not. SCAG and its partners will strengthen their efforts to encourage this efficient mode, which reduces travel time and improves air quality.

Increasing Work at Home

Increasing the number of workers who work at home (self-employed, home-based business owners) or who telework/telecommute (wage and salary employees conducting some or all of their work from home) decreases home-based work trips, vehicle-miles of travel, congestion, and vehicle emissions. National and regional surveys of those who telecommute indicate that it is a lack of support and trust from "management," rather than the provision of equipment or the desire of workers to telecommute, that hampers the growth of telecommuting. Therefore, this Plan recommends formalizing and

expanding partnerships among public- and private-sector stakeholders, and to promote telecommuting to increase opportunities for workers regionally to telecommute in lieu of daily commuting.

Non-Motorized Transportation

Bicycling and walking play an important role in our transportation system. According to the 2001 National Household Travel Survey, 50 percent of all trips made nationwide in urban areas were shorter than 3 miles, and 28 percent of all trips were under 1 mile. These trips are ideal for biking, walking, and transit or a combination of those modes of travel.

Regionwide, however, our average commute distance to work is 19.2 miles, too far for many bicyclists and all pedestrians. However, the integration between bicycle and transit nodes offers the opportunity to extend the commuting range of bicyclists. Bicycle transportation infrastructure has a role in regional mobility and air quality improvements. Every automobile driver that switches to an alternative transportation choice (walking, bicycling, using transit) reduces air pollution, congestion, the need for increasing roadway capacity, and improves public health.

Bicycle and pedestrian improvements are included as part of many larger street maintenance and construction projects, and should always be included in general plan updates, with which SCAG can assist in the development through the Compass Blueprint Program. These investments and the supporting policies all aim to maximize the benefits of this efficient mode of transportation. In addition, this Plan supports several policies that aim to work with local governments and increase the safety, convenience, and attractiveness of bicycling and walking as modes of travel.

The RTP allocates over $1.8 billion for non-motorized transportation.

MAXIMIZING TRANSPORTATION SYSTEM PRODUCTIVITY

Beyond managing our travel demand, this region needs to invest in maximizing the productivity of our existing system and increase its efficiency. The region has built a vast and expensive transportation system, which can be tweaked and modernized to carry more people and goods in a day or during peak commute conditions. Such investments include implementing advanced traffic control strategies such as signal coordination and ramp metering, improved incident management, and smaller physical infrastructure modifications such as auxiliary lanes.

Recognizing that funding productivity improvements provides a higher return on investments than most other transportation projects, this Plan allocates an additional $2 billion, representing 20 percent of the region's operations improvement shortfall. As these allocations are programmed and implemented, SCAG hopes that the benefits will become apparent to decision-makers and the public, and that additional funding can be secured to address the remaining shortfall.

Strategic Transit Service Policies

In an effort to maximize transit productivity, this Plan calls upon regional transit operators to address significant challenges to achieve better operational efficiency, maintain a discipline of cost recovery through a consistent fare policy, embrace the use of performance metrics to better serve their existing customer base, and attract new transit users. The Plan encourages the regional transit operators to work cooperatively to offer complementary services, with ease of transfer between modes and operators. It further encourages utilization of new intelligent transportation system (ITS) technologies that measure system performance and offer their customers reliable "on-time" performance and real-time information.

SYSTEM COMPLETION AND EXPANSION

Beyond the preceding strategies and improvements that have been evaluated thus far, the past and future growth in transportation demand calls for the expansion of our existing transportation system. As such, more than half of the available transportation revenues in the region are dedicated to the completion and expansion of our people and goods movement transportation systems.

Highway Improvements

Major categories of highway improvements included in this Plan are HOV lanes and connectors, mixed-flow (or general purpose) lanes, toll facilities and High-Occupancy Toll (HOT) lanes, and strategic arterial improvements. A significant number of system expansion projects have already been committed through SCAG's Regional Transportation Improvement Program (RTIP) for the highway network. These priority projects close critical gaps in the system, relieve significant bottlenecks, and address inter-county travel needs.

HOV Gap Closures and Connectors

Southern California has invested heavily in HOV lanes, producing one of the nation's most comprehensive HOV networks and highest rideshare rates. Several experiments involving HOV lanes are being conducted throughout the region in an effort to improve the functionality of this already-proven TDM strategy. In 2007, the first continuous-access HOV lanes opened on SR-22 in Orange County. Since the HOV lane system is a regional network, operations should be coordinated across jurisdictional boundaries to optimize performance and minimize confusion. SCAG supports further study and evaluation of these proposed operational changes to the HOV lane system to fully understand the mobility, safety, and air quality impacts, as well as any implications for a proposed regional HOT lane system.

This Plan includes many additional investments to extend the HOV network, strategically close gaps in the HOV network, and construct additional direct freeway-to-freeway connectors to maximize the overall system performance by minimizing weaving conflicts and maintaining travel speeds.

Mixed Flow

Since mixed-flow lanes carry more traffic than any other component of our transportation system, mixed-flow capacity enhancements are also necessary to address traffic bottlenecks and relieve congestion on heavily traveled corridors. This is especially true in areas outside of the urban core where transit service and the HOV network are not fully developed. This Plan includes a variety of mixed-flow lane additions, the majority of which are located outside of Los Angeles County.

Toll and High-Occupancy Toll (HOT) Lane Corridors and Facilities

This Plan also includes the expansion of the existing HOT lane and toll road system in Orange County to address the congested commuter corridor between housing-rich Riverside County and job-rich Orange County. Additionally, improvements to several major corridors in other parts of the region are proposed to be financed by tolls, including the SR-710 Gap Closure and the High Desert Corridor.

Transit

The RTP's Integrated Land Use and Transit policies and strategies work hand in hand to improve mobility and air quality. The investment in new rail and bus transit corridors has spawned investment throughout the region in new housing, retail, and business development at and near transit stations. Since 2003, the region has experienced substantial growth in daily regional transit

trips as transit has become an increasingly integral mode of transportation for the movement of people to and from home, work, school, shopping, and cultural and recreational activities.

This Plan recommends closing critical gaps in the transit system to improve service, and extending routes to serve a greater number of passengers. In addition, the coordination of development in and around transit stations and corridors, improved service reliability and performance, and a highly focused transit capital investment program appear to yield the best results within the budget limitations that the region faces.

Heavy and light rail projects are planned for Los Angeles County, while Orange County focuses on several new bus rapid transit (BRT) corridors. Riverside and San Bernardino Counties are planning a mix of new rail and BRT projects.

Aviation

SCAG's Regional Aviation Decentralization Strategy is very similar to the 2030 decentralized regional aviation system adopted for the 2004 RTP. It respects all legally enforceable policy and physical-capacity constraints at urban airports. It also assumes much more willingness on the part of the airlines to invest in new flights at new and emerging airports, and a package of market and ground access incentives to promote decentralization at underutilized suburban airports.

Airport Ground Access

The Regional Aviation Decentralization Strategy calls for making substantial airport ground access improvements throughout the region, in both the short term and long term.

The short-term program emphasizes relieving immediate bottlenecks around airports through arterial, intersection and interchange improvements, and increasing transit access to airports. To this end, SCAG is working with Los Angeles World Airports (LAWA) on planning and programming a regional system of FlyAways, based on the very successful Van Nuys FlyAway, where passengers park their cars and take a bus to LAX. The locations of the proposed new FlyAways can be optimized by taking advantage of the region's developing HOV and light and heavy rail networks that can provide direct linkages to Ontario and Palmdale as well as LAX. Making seamless HOV and rail connections with enhanced service to those and other suburban airports will also compose SCAG's short- and medium-range airport ground access strategy. The FlyAway, HOV and rail improvements to the suburban airports will help establish a pattern of decentralization, by attracting a critical mass of passengers and airline service at those emerging airports.

In the long run, however, the region will need a high-speed rail system, discussed below, to reach our adopted air passenger and air cargo forecasts. The high speed, reliability, and predictability of high-speed airport access will be needed to overcome the increasing unpredictable traffic congestion. For example, the Initial Operating Segment (IOS) of SCAG's proposed High-Speed Regional Transport (HSRT) system from West Los Angeles to Ontario will take only 33 minutes to travel from end to end. Therefore, the regional high-speed rail system is an integral component of the 2008 RTP Preferred 2035 regional aviation demand forecast.

High-Speed Regional Transport (HSRT)

SCAG has advanced a vision of regional transport based on high-performance, high-speed, and environmentally sensitive alternatives. An HSRT system has the potential for relieving both airport and freeway congestion in urbanized areas by providing an alternative to the automobile as well as making less-congested airports more accessible to air travelers, and providing alternative capacity for freight movement in the region.

The HSRT system is a long-term vision connecting the region's ports, airports, and urban activity centers. The system can be constructed in multiple stages that can each be financially viable. The financial performance will be enhanced as the system is extended throughout the region and the volume of users increases. The HSRT plan is constructed on three core components: a goods movement/logistics component to connect the San Pedro Bay Ports

with an inland port facility via the high-speed, high-capacity link; an aviation system component to create a direct and reliable link capable of connecting airports and urban centers; and a surface transport system component to link urban activity centers throughout the region.

Another high-speed regional transport project being studied is a magnetically levitated train between Las Vegas and Anaheim by the California-Nevada Super Speed Train Commission (CNSSTC) that would include a critical Anaheim-Ontario segment, which would further the airport decentralization strategy for the region. Also, the California High-Speed Rail Authority (CHSRA) is charged with planning, designing, constructing, and operating a high-speed steel wheels on steel rails train system that would connect Northern and Southern California. This system contains 210 miles planned in the SCAG Region, including a 30-mile segment between Orange County and LA Union Station.

Goods Movement Strategies

To enable the region to handle the dramatic growth in the goods movement sector, the Plan calls for approximately $13 billion in freight rail investments, nearly $18 billion in a freight HSRT system, and over $5 billion in highway investments. These investments integrate air quality mitigation into the goods movement system improvements, yielding substantial air quality benefits and reducing its current and long-term impacts on public health and the environment.

Dedicated Lanes for Clean-Technology Trucks

Over the past several RTP updates, the region has been exploring dedicated truck-lane facilities and continues to refine the concept of such user-supported corridors to improve the flow of goods. More recent effort has focused on adding dedicated truck lanes for clean-technology vehicles along truck-intensive corridors in Southern California. Operationally, such a corridor would be aligned to connect freight-intensive locations such as the Ports, warehousing/distribution center locations, and manufacturing locations. These dedicated facilities would have fewer entrance/egress locations than typical urban interstates to smooth the flow of goods.

This proposal has the potential to relieve many of the negative truck impacts in Southern California such as recurrent delay, pavement deterioration, safety, emissions, and design deficiencies. Dedicated truck lanes would also increase reliability in the freeway system. Despite these benefits, substantial financial constraints as well as environmental impact considerations could hinder project implementation. Recognizing these challenges, the 2008 RTP funds the I-710 segment as the first phase of a comprehensive system that addresses truck-related issues in the region. This segment includes roughly 78 lane-miles (two lanes in each direction) of dedicated lanes for clean-technology trucks along alignments extending from Ocean Blvd. in Long Beach to the intermodal railroad yards in Commerce/Vernon. This represents an investment of over $5 billion.

The region's longer-term strategic vision would include an east-west corridor and the I-15 freeway, serving strategic distribution centers in Barstow. Major corridor studies have already been completed for I-710, SR-60, and I-15. An Environmental Impact Report/Environmental Impact Statement (EIR/EIS) and preliminary engineering are currently underway for the I-710. The techni-

cal analysis for the 2008 RTP assumes the implementation of dedicated lanes accommodating clean-technology vehicles along the I-710 corridor until a preferred alternative is identified by the EIR/EIS.

Regional Freight Rail Investment and Emission-Reduction Package

Freight rail investments consist of additional mainline capacity, grade separations, and locomotive engine upgrades. About half of the rail-related investments are for grade crossing separations, which reduce traffic congestion, improve safety, and reduce pollution. Substantial air quality benefits can be realized by accelerating fleet modernization with cleaner technologies.

The UP and BNSF mainlines east of downtown Los Angeles will reach capacity before the end of the decade and will need to be triple-tracked or even quadruple-tracked in some segments. Investments in this Plan include $3.2 billion in mainline rail capacity improvements, $6.0 billion to build an estimated 131 highway-rail grade separations east of downtown Los Angeles, and a total of $3.8 billion for accelerating upgrades to cleaner diesel locomotive engines—namely, Tier 4 engines.

In March of 2007, the US Environmental Protection Agency (EPA) proposed new standards to reduce emissions from diesel locomotives: Tier 3 and Tier 4 exhaust emission standards for newly built engines with high-efficiency catalytic after-treatment technology. Tier 3 engines will be available in 2009 and the associated estimated reduction in emissions is to less than 50 percent of current conditions. The reduction in emissions from Tier 4 engines is estimated at 90 percent of current conditions. This Plan assumes nearly $2 billion in federal EPA funding to subsidize the deployment of Tier 4 engines in the region.

Alternative Technology–Based Goods Movement/Logistics

The region is also exploring new alternative technology–based systems that can provide greater throughput and reliability with near zero emissions (the emissions would be only those associated with electricity generation). A recent analysis carried out by the IBI Group considered the application of an HSRT system for the movement of containers (logistics and systems technology) to

and from the San Pedro Bay Ports. This container movement system would provide a high-capacity, fast, and efficient method of moving containerized cargo from the Ports to an inland port facility in San Bernardino. The system capitalizes on the inherent savings of multiple uses on a single infrastructure by operating on shared alignments with the HSRT passenger system. The technology permits operation of HSRT freight vehicles on a shared guideway with passenger vehicles even during peak hour service. Freight vehicle trips can be interspersed with passenger trips while still meeting required passenger vehicle headways. Additionally, full utilization of the freight line can be achieved during the passenger system's off-peak hours. The deployment of the HSRT system would create value in associated components which could in turn contribute to the HSRT's total financial performance.

The connection for the HSRT system would begin at the Ports and join up with the IOS[4] at a point just east of the Los Angeles Union Passenger Terminal (LAUPT). This alignment runs north-south and is assumed to follow a route parallel to the I-710/Alameda Corridor. After connecting to the IOS and other segments, the freight-only service would be interspersed with passenger service.

[4] The Initial Operating Segment (IOS) is discussed in further detail in the supplemental HSRT Report and Appendices.

TABLE 2 SUMMARY OF SYSTEM COMPLETION AND EXPANSION PROJECT TYPES

Project Type	Cost
Highway Improvements	**$77.2 billion**
Mixed Flow Lanes and Interchanges/Ramps	$26.2 billion
HOV	$8.3 billion
Toll Lanes	$25.6 billion
Arterial	$17.1 billion
Transit Improvements	**$44.0 billion**
Commuter Rail	$6.2 billion
Heavy Rail	$5.7 billion
Light Rail	$1.7 billion
Bus Rapid Transit	$0.9 billion
Bus	$21.3 billion
Other Transit	$8.2 billion
High-Speed Regional Transport	**$29.1 billion**
Goods Movement Strategies	**$36.4 billion**
Mainline Rail Capacity Improvements	$3.2 billion
Highway-Rail Grade Separations	$6.0 billion
Upgrade to Tier 4 Engines	$3.8 billion
Alternative Technology–Based Goods Movement System	$17.9 billion
Dedicated Lanes for Clean-Technology Trucks	$5.1 billion
Truck Climbing Lanes	$0.4 billion
Total	**$186.7 billion**

Figures reflect investments above current commitments in the Regional Transportation Improvement Program (RTIP).

MITIGATING ENVIRONMENTAL IMPACTS

California law requires SCAG to prepare and certify a Program Environmental Impact Report (PEIR) prior to adopting the RTP. The PEIR evaluates the environmental impacts of the RTP and proposes specific measures to mitigate impacts to the maximum extent feasible. Although this RTP, in and of itself, is a plan to mitigate the transportation-related effects of population growth, such as traffic congestion and poor air quality, because the transportation improvements can result in additional growth, the PEIR goes further by recommending additional environmental mitigation at the program level for those resource areas that would be affected by the Plan (and associated growth) such as land use, open space, biological resources, water and energy. The section below summarizes the mitigation program. A list of all the mitigation measures included in the 2008 RTP PEIR will be included in the Environmental Mitigation Report of the Final 2008 RTP.

The general purpose of the mitigation measures included in the PEIR and summarized below is to identify how to protect the environment, improve air quality, and promote energy efficiency in concert with the proposed transportation improvements and related planning. They provide a framework through which implementing agencies and subregions can address the environmental impacts of RTP projects, while implementing RTP goals and policies. The PEIR provides three different types of mitigation measures. The first type can be implemented by SCAG at the regional level. These measures are generally aimed at gathering additional information that can assist in measuring impacts and determining appropriate mitigation and promoting policies that reduce impacts. The second type of measures are to be implemented at the local level by implementing agencies, and individual cities and counties. These measures can strengthen planning documents to ensure for provision of mitigation in the planning process. The third type of measures are project specific and seek to reduce impacts for the myriad different types of projects anticipated in the region. As a programmatic document, many of the measures in the PEIR refer to performance standards because site-specific conditions are not reasonably evaluated at the programmatic level.

SUMMARY OF THE ENVIRONMENTAL MITIGATION PROGRAM

This Plan discusses mitigation for the following areas:

- Open Space
- Energy
- Air Quality and Climate Change
- Transportation
- Population and Housing
- Land Use
- Aesthetics
- Public Services
- Biological Resources
- Geology, Soils, and Seismicity
- Cultural Resources
- Water Resources
- Hazardous Materials
- Safety and Security
- Noise

Financial Plan

The 2008 RTP financial plan identifies how much money is available to support the region's surface transportation investments including transit, highways, local road improvements, system preservation and demand management goals. It also addresses the need for investment in goods movement infrastructure. Improving ground access in and around major goods movement facilities, and enhancing major highways and railways are critical to maintaining the health of Southern California's economy. The 2008 RTP calls for traditional and non-traditional revenue sources for implementing a program of infrastructure and environmental improvements to keep both freight and people moving.

The 2008 RTP financial plan identifies a number of new revenue sources to provide additional funding beyond existing transportation dollars. The SCAG Region's financially constrained plan includes a core revenue forecast of existing local, state, and federal sources along with new funding sources that are reasonably available over the time horizon of the RTP. The plan also includes action steps to obtain the revenues necessary for implementing the region's transportation vision.

In developing the financial plan, SCAG followed a few basic principles to guide its regional financial forecast:

- Incorporate financial planning documents developed by local county transportation commissions and transit operators in the region where available;
- Ensure consistency with both local and state planning documents;
- Utilize published data sources to evaluate historical trends and augment local forecasts as needed; and
- Recommend new funding sources that target beneficiaries of transportation investments.

REASONABLY AVAILABLE REVENUES

There are several new funding sources that are reasonably expected to be available. These sources will increase the revenues available for the 2008 RTP. The region also expects to leverage innovative financing strategies.

Table 3 presents twelve categories of funding sources and financing techniques that were evaluated for the RTP. They were selected as a result of their use in other areas of the state, the burgeoning potential, historical precedence and likelihood of implementation within the time frame of the 2008 RTP. These funding sources are considered to be reasonably available and are included in the financially constrained plan. For each funding source, SCAG has examined the policy and legal context of implementation and has prepared an estimate of the revenue potential.

TABLE 3 NEW REVENUE SOURCES AND INNOVATIVE FINANCING STRATEGIES (IN NOMINAL DOLLARS, BILLIONS)

Revenue Source	Description	Amount	Actions to Ensure Availability	Responsible Party
Value Capture Strategies	Various techniques assumed: formation of special districts, including Benefit Assessment Districts, Mello-Roos Community Facility Districts, as well as tax increment financing and joint development to provide gap financing for specific transit investments (Gold Line extension, Purple Line extension, and the HSRT system). SCAG also assumes one-time proceeds from the sale of Caltrans-owned property within the SR-710 tunnel vicinity.	$3.7	Pursue necessary approvals for special districts by 2012 (Benefit Assessment Districts require majority approval by property owners; Mello-Roos tax requires two-thirds approval); work with private entities for joint development opportunities; also, work with Caltrans to utilize proceeds from real estate sales to partially fill funding gap for the SR-710 tunnel; pursue legislation to enable sales and to establish escrow account for the proceeds	MPO, transit operators, local jurisdictions, property owners along project corridors, developers, Caltrans
Local Option Sales Tax Extension	Half-cent sales tax measure extension for Imperial County—existing Measure D expires in 2010	$0.8	Local sales tax measure to be placed on ballot by 2010	Imperial County
Highway Tolls (includes toll revenue bond proceeds)	Toll revenues generated from SR-710 tunnel, I-710 dedicated truck lanes, High Desert Corridor, and CETAP Corridor	$22.0	Region was granted authority under AB 1467 (2006) to impose tolls and work with private entities for the financing of goods movement-related facilities including the I-710 dedicated truck lanes; additional state legislative approval needed for SR-710 tunnel	MPO, local county transportation commissions (LACMTA, SANBAG, RCTC), State Legislature
State and Federal Gas Excise Tax Adjustment to Maintain Historical Purchasing Power	Estimate equivalent to additional ten cent per gallon gasoline tax imposed by the state and federal government starting in 2012—extrapolation of historical trend	$17.0	Congressional and state legislative approval	MPO, State Legislature, Congress
Container Fees (includes container fee bond proceeds)	Charge imposed on containerized cargo moving through the Ports of LA/LB (includes railroad user fees for rail capacity improvement program); fees are directly linked to specific goods movement projects	$41.5	Negotiated by Ports, shipping community, regional stakeholders or state legislative approval (upon passage of SB 974 or other legislative effort)	Ports, shippers, goods movement stakeholders (MPO, railroads, local county transportation commissions), State Legislature
Private Equity Participation	Public-Private Partnership arrangement whereby a private entity designs, finances, builds, operates, and maintains a facility under a lease arrangement for a fixed period of time	$4.4	Region was granted authority under AB 1467 (2006) to work with private entities for the financing of freight-related projects; additional state legislative approval needed for SR-710 tunnel	MPO, local county transportation commissions, private consortium, State Legislature

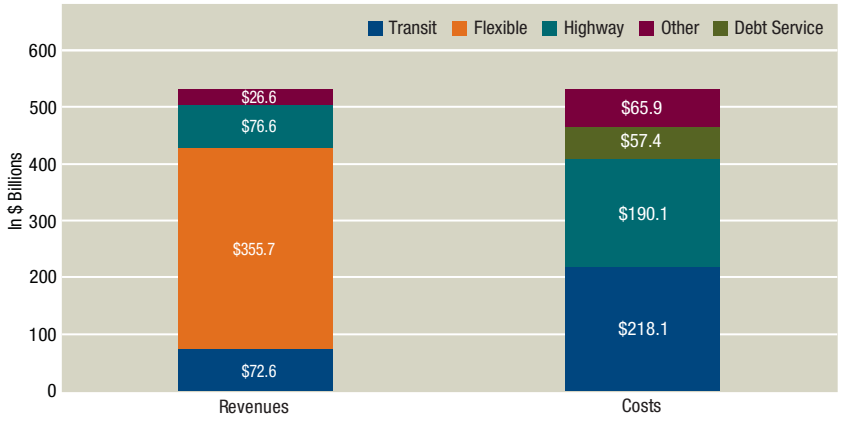
Revenue Source	Description	Amount	Actions to Ensure Availability	Responsible Party
Private Activity Bonds (PAB)	Interest savings from the issuance of tax-exempt private activity bonds	$0.4 (included in container fees)	Work with railroads and other regional stakeholders to receive federal PAB allocation	MPO, freight railroads, local county transportation commissions, US DOT
U.S. Environmental Protection Agency (EPA) funding for clean freight rail technology	EPA subsidies to help mitigate locomotive emissions per the 2007 State Implementation Plan (SIP)	$1.9	Work with railroads, AQMD, ARB and US EPA for federal clean technology funding allocation	MPO, freight railroads, AQMD, ARB, US EPA
Interest Earnings	Interest earnings from toll bond proceeds (High Desert Corridor, CETAP, SR-710 tunnel, and I-710 truck lanes)	$0.4	See Highway Tolls	See Highway Tolls
Riverside County Measure A (Bond Anticipation Notes)	Short-term debt to help fund the CETAP Corridor in anticipation of the sale of Measure A revenue bonds	$1.5	Issuance of debt subject to RCTC Board policy	RCTC
Transportation Infrastructure Finance and Innovation Act (TIFIA) Loan	The TIFIA Loan program provides credit assistance for transportation investments of national/regional significance; TIFIA loan assumed for the CETAP Corridor	$0.9	Work with USDOT and RCTC to evaluate applicability of the TIFIA loan program for the CETAP Corridor; further feasibility work necessary to assess traffic and revenue potential on CETAP Corridor	MPO, RCTC, USDOT TIFIA Office
HSRT Passenger System (Private Contribution & User Fee)	User-fee supported initiative for HSRT system. Assumes private-sector development: design, finance, build, operate and maintain. See HSRT Report for further details	$26.2	For the IOS: form JPA, finalize development of a comprehensive business plan; work with private entity to ensure commitment	MPO, Private Consortium, local/regional stakeholders

SUMMARY OF REVENUE SOURCES AND EXPENDITURES

The SCAG Region's financially constrained RTP includes revenues from both the core and reasonably available revenue sources. A summary of these forecasted revenues and expenditures is presented in Figures 3 and 4. As shown in these figures, the SCAG Region's budget over the next 30 years totals an estimated $531.5 billion.

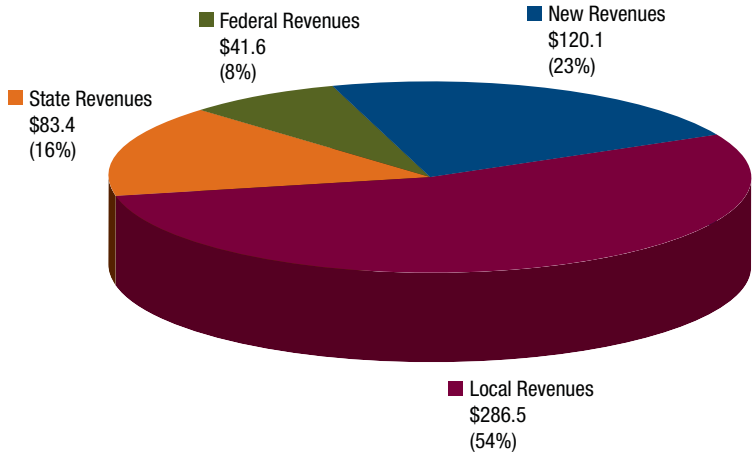
As shown in Figure 2, transit and highway expenditures are roughly comparable at 41 and 36 percent, respectively, of the RTP costs for each category. About 12 percent of costs are attributable to an "other" category, reflecting proposed investments in HSRT systems as well as freight rail capacity and grade separation improvements. Consistent with historical practice, agencies in the region are expected to bond against future revenues to provide additional funding in the early years of the plan. As a result, debt service equal to historical payments and future bonding needs has been included as part of the RTP. Anticipated debt service payments make up 11 percent of total costs.

FIGURE 2 REVENUES COMPARED TO COSTS BY MODE



Note: Numbers may not add due to rounding

FIGURE 3 2008 RTP REVENUE SOURCES $531.5 BILLION (IN NOMINAL DOLLARS) FY2007–FY2036



Note: Numbers may not add due to rounding

FIGURE 4 2008 RTP EXPENDITURE SUMMARY $531.5 BILLION (IN NOMINAL DOLLARS) FY2007–2036

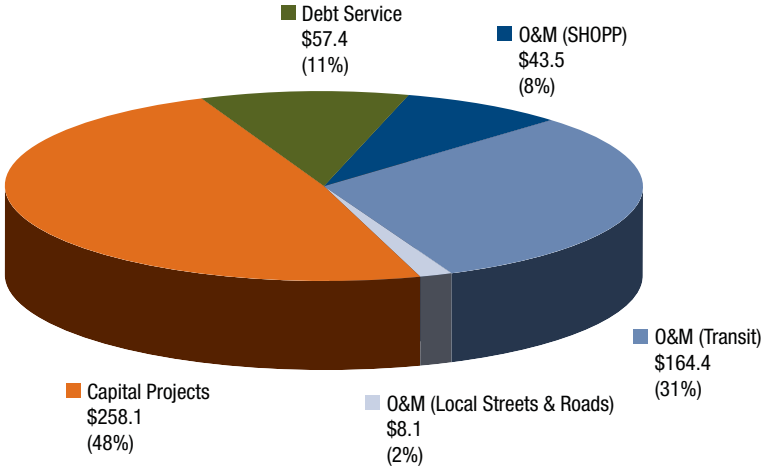


TABLE 4 PERFORMANCE MEASURES

Performance Measure	Measure(s)	Definition	Performance Target	Performance Outcome Summary
Mobility	Speed Delay	Speed – experienced by travelers regardless of mode Delay – excess travel time resulting from the difference between a reference speed and actual speed Delay per capita can be used as a supplemental measure to account for population growth impacts on delay.	Improvement over Base Year	Between the Baseline and Plan scenarios: • Speed increases by 8 percent • Total daily person delay decreases by 16 percent • Daily delay per capita decreases by 16 percent
Accessibility	Percent PM peak period work trips within 45 minutes of home Distribution of work trip travel times		Improvement over Base Year	Between the Base Year and Plan scenarios: • Accessibility increases by 2 percent
Reliability	Percent variation in travel time	Day-to-day change in travel times experienced by travelers. Variability results from accidents, weather, road closures, system problems and other non-recurrent conditions.	Improvement over Base Year	Between the Base Year and Plan scenarios: • Percent variation decreases in both the AM and PM peak periods by approximately 10 percent
Productivity	Percent capacity utilized during peak conditions	Transportation infrastructure capacity and services provided. Roadway Capacity – vehicles per hour per lane by type of facility Transit Capacity – seating capacity by mode	Improvement over Base Year	Between the Base Year and Plan scenarios: • Lost lane-miles decreases in both the AM and PM peak periods by 20 percent
Safety	Accident rates	Measured in accidents per million vehicle-miles by mode for: • Fatalities • Injuries • Property	"0" for all accident types and modes	Between the Base Year and Plan scenarios: • Fatalities, injuries, and property damage per million persons decrease by at least 4 percent
Sustainability	Total cost per capita to sustain system performance at Base Year levels	Focus is on overall performance, including infrastructure condition. Preservation measure is a subset of sustainability.	Improvement over Base Year	Between the Base Year and Plan scenarios: • Reliability, productivity, safety, and preservation improve
Preservation	Maintenance cost per capita to preserve system at Base Year conditions	Focus is on infrastructure condition. Subset of sustainability.	Improvement over Base Year	Between the Base Year and Plan scenarios: • Percent of lane-miles requiring rehabilitation decreases by 14 percent • Percent of bridges requiring rehabilitation decreases by 45 percent
Cost-Effectiveness	Benefit-to-Cost (B/C) Ratio	Ratio of benefits of travel alternatives to the costs of travel including infrastructure, maintenance, travel time, environmental, accident, and vehicle operating costs. This can be used to evaluate impacts of mode split changes resulting from RTP investments.	Improvement over Base Year	The Plan provides $2.21 return for every $1.00 invested.
Environmental	Emissions generated by travel	Measured/forecast emissions include CO, NOX, PM2.5, PM10, SOX, and VOC. CO2 as secondary measure to reflect greenhouse gas emissions.	Meet SIP Emission Budgets & Transportation Conformity requirements	The conformity analysis indicates a positive conformity finding for the Draft Plan based on the draft emission budgets received by the Air Resources Board and the other required tests. The formal conformity finding will be based on the finalized emission budgets analyzed in comparison to the RTP as prepared for adoption.
Environmental Justice	Distribution of benefits and costs Accessibility Environmental Emissions Noise	Share of net benefits and costs by mode, household income, race/ethnicity: • RTP expenditures • Taxes paid (e.g., income, sales & use, gas) • Access to jobs (see "Accessibility") • Travel time savings by mode • Environmental impacts from PEIR	Equitable distribution of benefits and costs	The Plan results in no disproportionate negative impacts on the grounds of income, race, color, or national origin.

Plan Performance

This Plan follows the success of recent RTPs in the use of the following system performance measures to demonstrate the effectiveness of this Plan:

- Mobility
- Accessibility
- Reliability
- Productivity
- Safety
- Sustainability
- Preservation
- Cost-Effectiveness
- Environment
- Environmental Justice

Using quantifiable performance measures, three scenarios are compared to determine the performance of the Plan:

- Base Year 2003 scenario—Existing conditions based on the transportation network as of 2003
- Baseline 2035 scenario—Future conditions in 2035 based on the existing transportation system and near-term constrained projects
- Plan 2035 scenario—Future conditions in 2035 based on the existing transportation system, near-term constrained projects, and long-term constrained projects

In every category, the Plan 2035 scenario shows improvement over the Baseline 2035 scenario (Table 4).

TRANSPORTATION CONFORMITY ANALYSIS

Transportation conformity is required under the federal Clean Air Act (CAA) to ensure that federally supported highway and transit project activities are consistent with ("conform to") the purpose of the SIP.[5] Conformity to the purpose of the SIP means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the relevant NAAQS. Conformity applies to areas that are designated non-attainment, and those redesignated to attainment after 1990 ("maintenance areas") for the following transportation-related criteria pollutants: ozone, particulate matter (PM2.5 and PM10), carbon monoxide (CO), and nitrogen dioxide (NO2).

This Plan must pass the following tests and analyses to meet the requirements for a positive conformity finding:

- Regional Emission Analysis
- Timely Implementation of Transportation Control Measures (TCMs) Analysis
- Financial Constraint Analysis
- Interagency Consultation and Public Involvement Analysis

Due to recent litigation relative to U.S EPA's Eight-Hour Ozone Phase 2 Rule, EPA has instructed ARB to revise the established method of demonstrating Reasonable Further Progress (RFP) in ozone non-attainment areas that utilize reductions from other areas to demonstrate attainment (e.g., upwind areas). In the SCAG Region, such areas include the Ventura County portion of the South Central Coast Air Basin (SCCAB), the Western Mojave Desert Air Basin (MDAB) (Antelope Valley and a portion of San Bernardino County), and the Coachella Valley portion of the Salton Sea Air Basin (SSAB). Therefore, at this time, there are no AQMPs or SIPs and, thus, no 8-hour ozone transportation

[5] To comply with the CAA in achieving the NAAQS, the ARB develops SIPs for federal non-attainment and maintenance areas. In California, SIP development is a joint effort of the local air agencies and ARB working with federal, state, and local agencies (including the MPOs). Local Air Quality Management Plans (AQMPs) are prepared in response to federal and state requirements.

emission budgets for these areas. SCAG has worked closely with the ARB and EPA to resolve this issue. As agreed upon by ARB and EPA, ARB has adopted Early Progress Plans (i.e., emissions inventories and transportation emission budgets) for areas that need upwind reductions to show RFP. The Early Progress Plans establish the transportation emission budgets while EPA decides how to respond to the RFP issue raised by the litigation. EPA found these emission budgets adequate in April 2008.

In addition, EPA's review of the South Coast ozone and PM2.5 emission budgets raised concerns such that the ARB was required to revise and resubmit the emission budgets to EPA. This requirement dictated that SCAG make appropriate revisions to the conformity analysis to reflect the new emission budgets and re-release the Draft Conformity Report. SCAG staff worked closely with the federal reviewing agencies regarding the emission budget adequacy and conformity approval review process timeline. From these efforts, all agencies confirmed they will expedite their respective reviews to allow for approval of SCAG's conformity finding before the current (2004) RTP conformity finding expires on June 7, 2008.

The conformity analysis indicates a positive conformity finding for the 2008 RTP. The detailed transportation conformity analyses for the 2008 RTP are included in the 2008 RTP Conformity Report.

ENVIRONMENTAL JUSTICE

As a government agency that receives federal funding, SCAG is responsible for implementing Title VI of the Civil Rights Act of 1964 and for conforming to federal Environmental Justice (EJ) principles, policies, and regulations. As part of meeting these requirements, SCAG has performed an EJ analysis to demonstrate responsiveness to potential imbalances caused by the development of the plans, programs, and policies in the 2008 RTP.

SCAG's EJ analysis examined performance measures to determine any disproportionate negative impacts. Performance measures provide a way to quantitatively assess the impact of the Plan. In the development of the Plan, SCAG utilized a number of performance measures designed to assess the overall equity. An overview of the findings is listed below:

- Accessibility to Employment: The results indicate that low-income and minority communities in the region will have higher levels of access to employment via local bus and rail with the 2008 RTP. The results indicate that on a regional scale, no disproportionate impacts are anticipated between income groups as a result of the Plan.
- Accessibility to Parks: All income groups for the whole region will have greater park accessibility due to the infrastructure investments proposed in the 2008 RTP. However, a multi-agency effort must be undertaken in order to further address and remedy the issue of inequity of park access.
- Distribution of Plan Expenditures (Investments): SCAG analyzed the distribution of Plan expenditures based on mode usage information by income quintile. Under the Plan, approximately 28 percent of investments will go to modes predominantly used by the lowest quintile group, while 16 percent will be invested in modes most likely to be used by the highest income category (Quintile V). The current analysis also reveals that under the 2008 RTP, Plan investments will be distributed more equitably on the basis of system usage by ethnic/racial groups. In other words, transportation investments would go to modes likeliest to be used by low-income and minority households.
- Taxes Paid: Overall, tax burdens are anticipated to fall heavily on higher income groups. The lower-income groups (Quintile I and Quintile II), which use bus and light rail as their primary modes of travel, are anticipated to pay 22 percent of taxes.
- Distribution of Transit Travel Time Savings: The results in the 2008 analysis also reveal that the two lowest-income quintiles will pay just over 20 percent of total taxes collected in the region, but will enjoy 65 percent of the local transit time savings. The two highest-income quintiles' share of taxes (60 percent) will exceed the benefits they receive in local transit time savings (16 percent), accounting for only 9 percent of total bus and light rail usage. The findings indicate that transit travel times for

lower-income groups for both work and non-work trips are expected to decrease due to the number of new bus and rail improvements proposed in the 2008 RTP.

- Distribution of Auto Travel Time Savings: The amount of taxes paid by those in Quintile V (36 percent) will exceed their share of benefits (27 percent). The lowest-quintile group will benefit the least, accounting for 12 percent of auto usage and 11 percent of auto travel time savings. Higher-income groups are anticipated to have the most benefit in auto travel time savings, but will also incur the highest taxes.
- Auto Travel Distance Reductions: The lowest quintile group is expected to have the least amount of benefits, accounting for 12 percent of auto usage and travel distance savings. They will also pay the least amount of taxes at 9 percent. The taxes paid by the highest-income group (35 percent) are anticipated to exceed their share of benefits (27 percent). Similar to the findings for Auto Travel Time Savings, higher-income groups are anticipated to have the most benefits because their primary mode of travel will be the automobile.
- Air Pollutant Emissions: Overall, the region as a whole will generally experience an improvement in air quality via reductions in transportation-related emissions due to ongoing mobile source emission controls and investments in the Plan. On a regional scale, the analysis did not reveal any disproportionate impact between ethnic/racial categories.
- Noise: The results in the 2008 RTP analysis indicate that low-income and minority groups will be disproportionately impacted by aviation and highway noise.

Future Connections: The Strategic Plan

The strategies in the Constrained Plan represent the region's collective vision for addressing our transportation needs within the constraints of committed, available, or reasonably available revenue sources. The Strategic Plan goes beyond the Constrained Plan, and includes projects that merit further consideration for inclusion in the Constrained Plan in the future as consensus evolves and funding becomes available.

Supplemental Reports (Appendices)

Additional detail on the various topics discussed in this Plan is contained in 18 standalone reports that also act as the appendices for the 2008 RTP. The reports include all backup data that support assumptions made in the development of the Plan, as well as additional information on areas of interest in regards to our regional transportation system.

I. OVERVIEW

Success in transportation and transportation planning is about making the connections, whether it's connecting from bike to bus or truck to rail relating the travel choices we make with environmental consequences, ensuring that land-use and transportation planning go hand in hand, or more equitably linking our transportation financing mechanisms to those who benefit directly from use of the system. The 2008 RTP connects the SCAG Region to a future vision where innovative solutions address the daunting challenges we face today.

The 2008 RTP presents the transportation vision for this region through the year 2035 and provides a long-term investment framework for addressing the region's transportation and related challenges. The Plan is the culmination of a multi-year effort focusing on maintaining and improving the transportation system through a balanced approach that considers system preservation, system operation and management, improved coordination between land-use decisions and transportation investments, and strategic expansion of the system to accommodate future growth.

The SCAG Region is economically, culturally, and ethnically one of the most diverse metropolitan regions in the world. It has a complex transportation system that includes extensive roadway, transit (bus and rail), and freight rail networks, along with major intermodal, seaport, and airport facilities. Exhibit 1.1 shows the major transportation infrastructure in the SCAG Region. Highlights of our vision for our region and the regional transportation system in 2035, embodied in this document, may be summarized as follows:

- A well-maintained and managed roadway network free of potholes and other roadway hazards
- A transportation system where most of the gaps have been addressed
- A safe, secure, reliable, and equitable public transportation system
- A seamless public transportation system that provides efficient access to jobs, shopping, recreation, education, health care and other activities

- More travel choices in addition to solo driving and public transportation, such as improved access to non-motorized transportation
- More people living closer to job centers and transit corridors and hubs
- Improved air quality for all, and
- A vibrant economy supported by an efficient goods-movement system

The 2008 RTP, built on regional consensus, is flexible and recognizes the unique and complex nature of the region. The 2008 RTP is an update to the 2004 RTP, and it replaces the 2004 RTP in its entirety.

Leadership, Vision, Progress

Leadership, vision and progress are three main components of SCAG's Mission Statement that apply to the Regional Transportation Plan (RTP) development process. In demonstrating a commitment to leadership, the region identified seven goals that reflect a balanced approach to transportation planning and decision-making. In providing a vision, the SCAG Regional Council adopted

policies to guide the development of the RTP and identified transportation priorities for the region. Lastly and most importantly, in its commitment to demonstrate progress, SCAG continues to rely extensively on performance measurement as a means to identify the most beneficial investments for the region. Together, these elements contribute to a strong and focused RTP.

REGIONAL GOALS

The goals of the 2008 RTP have expanded from 2004 to encompass transportation security. These seven goals are in no particular order and demonstrate the need to balance many priorities in the most cost-effective manner.

TABLE 1.1 RTP GOALS

RTP Goals
• Maximize mobility and accessibility for all people and goods in the region
• Ensure travel safety and reliability for all people and goods in the region
• Preserve and ensure a sustainable regional transportation system
• Maximize the productivity of our transportation system
• Protect the environment, improve air quality and promote energy efficiency
• Encourage land use and growth patterns that complement our transportation investments
• Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies

These priorities are identified in the following:

- The region's vast investments in multimodal transportation infrastructure must be protected. This infrastructure is maturing and requires attention and maintenance. The region cannot afford to replace the existing infrastructure and must protect it for future generations.
- A maturing system dictates an increased operational focus that leverages technology to maximize the system's productivity. This same investment will also increase reliability by minimizing the variations of travel time due to incidents, weather, and other factors. The region cannot expand the transportation system significantly, so the existing system must be utilized to its fullest. The vitality of the region's economy is inextricably linked to efficient and reliable transportation. The region must be able to respond to and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property, the transportation network and the regional economy.
- Air quality for the region's residents must be improved and meet federal regulations. Not doing so would undermine the health of our population and risk losing billions of federal funding to the region.
- The investments in the RTP must address travel safety and modal balance; recognize the importance of providing safe travel choices; meet the needs of the transit dependent and the goods movement community; and provide connections among the highway system, ports, and airports.
- The RTP must also integrate land-use policies as a means to influence transportation performance and the economy. Without such integration, transportation needs in the future will significantly outpace the ability to pay for them.
- The RTP must address all these priorities in the most cost-effective manner so that outcomes/benefits can be maximized and so that users get the most for their expenditures.

RTP GUIDING POLICIES

The SCAG Regional Council (RC) adopted five policies to guide the development of the RTP (Table 1.2). These RTP policies, unchanged since 2004, emphasize the importance of tracking the Plan's performance through specific indicators.

TABLE 1.2 RTP POLICIES

	RTP Policies
1	Transportation investments shall be based on SCAG's adopted Regional Performance Indicators.
2	Ensuring safety, adequate maintenance, and efficiency of operations on the existing multi-modal transportation system will be RTP priorities and will be balanced against the need for system expansion investments.
3	RTP land-use and growth strategies that differ from currently expected trends will require a collaborative implementation program that identifies required actions and policies by all affected agencies and subregions.
4	HOV gap closures that significantly increase transit and rideshare usage will be supported and encouraged, subject to Policy #1.
5	Progress monitoring on all aspects of the Plan, including timely implementation of projects, programs, and strategies, will be an important and integral component of the Plan.

PERFORMANCE-BASED PLAN

As with previous RTPs, this is an outcome-/performance-based plan. The first RTP policy requires that performance measures play a critical role in the plan development. Performance measures quantify the outcomes that are important to individuals, businesses, and the region. They quantify regional goals and provide a way to evaluate progress over time. This is SCAG's fourth performance-based RTP. Starting in 1998, SCAG was the first Metropolitan Planning Organization (MPO) to rely extensively on performance measurement as a means to identify the most effective investments for the region. The performance indicators for the 2008 RTP represent an evolution that builds on earlier successes and adds specificity and technical depth to the original indicators.

Assessing the degree to which the impacts of the 2008 RTP investments meet the regional goals requires complex technical analysis. Performance measurement is a critical part of this analysis, and is used for estimating the potential impacts of investments. The same measures will be used to monitor progress in meeting the performance expectations of the RTP. This monitoring will allow the region to correct its course over time as lessons are learned and new trends are established. Performance measures are closely tied to the broader goals to ensure that the implementation of this Plan moves us closer to achieving these goals. Table 1.3 depicts the relationship between the RTP goals and performance measures, while Table 1.4 describes the performance measures in greater detail.

TABLE 1.3 RTP GOALS AND RELATED PERFORMANCE MEASURES

RTP Goals	Mobility	Accessibility	Reliability	Productivity	Safety	Sustainability	Preservation	Cost-Effectiveness	Environmental	Environmental Justice
Maximize mobility and accessibility for all people and goods in the region	✓	✓						✓		✓
Ensure travel safety and reliability for all people and goods in the region	✓		✓		✓					
Preserve and ensure a sustainable regional transportation system						✓	✓		✓	✓
Maximize the productivity of our transportation system	✓			✓						
Protect the environment, improve air quality and promote energy efficiency						✓			✓	✓
Encourage land use and growth patterns that complement our transportation investments and improve the cost-effectiveness of expenditures	✓	✓							✓	
Maximize the security of our transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies*										

* SCAG does not yet have an agreed-upon security performance measure; therefore, it is not included in this table.

EXHIBIT 1.1 SCAG REGION

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

TABLE 1.4 PERFORMANCE MEASURES

Performance Measure	Measure(s)	Definition	Performance Target	Calculation Data Sources
Mobility	Speed Delay	Speed – experienced by travelers regardless of mode Delay – excess travel time resulting from the difference between a reference speed and actual speed Delay per capita can be used as a supplemental measure to account for population growth impacts on delay.	Improvement over Base Year	Travel demand model outputs AM peak, PM peak, Off-peak, Daily Link speeds, travel times, trips
Accessibility	Percent PM peak period work trips within 45 minutes of home Distribution of work trip travel times		Improvement over Base Year	Travel demand model outputs • PM peak • OD travel times • OD person trips
Reliability	Percent variation in travel time	Day-to-day change in travel times experienced by travelers. Variability results from accidents, weather, road closures, system problems and other non-recurrent conditions.	Improvement over Base Year	Highways – PeMS Transit – National Transit Database or triennial audit reports
Productivity	Percent capacity utilized during peak conditions	Transportation infrastructure capacity and services provided. Roadway Capacity – vehicles per hour per lane by type of facility Transit Capacity – seating capacity by mode	Improvement over Base Year	Highways – PeMS Transit – National Transit Database or triennial audit reports
Safety	Accident rates	Measured in accidents per million vehicle-miles by mode for: • Fatalities • Injuries • Property	"0" for all accident types and modes	Highways – freeway accident rates from Caltrans Transit – National Transit Database or triennial audit reports
Sustainability	Total cost per capita to sustain system performance at Base Year levels	Focus is on overall performance, including infrastructure condition. Preservation measure is a subset of sustainability.	Improvement over Base Year	Subregional submittals Regional population forecast
Preservation	Maintenance cost per capita to preserve system at Base Year conditions	Focus is on infrastructure condition. Subset of sustainability.	Improvement over Base Year	Subregional submittals Regional population forecast
Cost-Effectiveness	Benefit-to-Cost (B/C) Ratio	Ratio of benefits of travel alternatives to the costs of travel including infrastructure, maintenance, travel time, environmental, accident, and vehicle operating costs. This can be used to evaluate impacts of mode split changes resulting from RTP investments.	Improvement over Base Year	Travel demand model outputs Revenue forecasts RTP project expenditures Other cost estimates
Environmental	Emissions generated by travel	Measured/forecast emissions include CO, NOX, PM2.5, PM10, SOX, and VOC. CO2 as secondary measure to reflect greenhouse gas emissions.	Meet SIP Emission Budgets & Transportation Conformity requirements	Travel demand model outputs EMFAC2007
Environmental Justice	Distribution of benefits and costs Accessibility Environmental Emissions Noise	Share of net benefits and costs by mode, household income, race/ethnicity: • RTP expenditures • Taxes paid (e.g., income, sales & use, gas) • Access to jobs (See "Accessibility") • Travel time savings by mode • Environmental impacts from PEIR	Equitable distribution of benefits and costs	Travel demand model outputs Revenue forecasts RTP project expenditures PEIR

WHY UPDATE THE RTP?

SCAG is the federally designated MPO for the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. As the MPO, SCAG develops the RTP and updates it every four years through a continuous, comprehensive and cooperative process. Transportation investments in the SCAG Region that receive state and federal funds or require federal approvals (such as environmental clearance) must be consistent with the RTP and must be included in SCAG's Regional Transportation Improvement Program (RTIP) when ready for funding. As the programming document for funds, the RTIP complements the corresponding years of the RTP. The RTIP is a six-year program and is coordinated with the State Transportation Improvement Program (STIP) every two years. Following are key reasons the RTP should be updated.

REFLECT CURRENT CONDITIONS

As the economy, demographics, finances, and other factors change, SCAG has a responsibility to modify the RTP to reflect the latest information and conditions. Factors that have changed since the 2004 RTP was adopted include:

- New information on population and employment growth
- New or reauthorized transportation funding sources
- 2007 South Coast Air Quality Management Plan (AQMP) and new motor vehicle emission budgets and emission factors
- Rapid increases in construction costs in the past four years, and
- Other shifts in regional priorities determined by SCAG and the county transportation commissions (CTCs)

COMPLY WITH FEDERAL REQUIREMENTS

The Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (SAFETEA-LU) was signed into law in August 2005, and expands upon previous planning requirements. The federal requirements for metropolitan transportation plans include the following key provisions:

- An open, inclusive process that ensures public input and considers the needs of those traditionally underserved by the existing system
- A plan horizon period of not less than 20 years into the future
- The most recent assumptions for population, travel and congestion, land use, vehicle fleet mix, employment and economic activity
- A financially constrained plan funded by revenues that are committed, available, or reasonably available over the time frame of the RTP
- Conformity to State Implementation Plans (SIPs) for air quality
- A discussion of potential environmental mitigation activities
- Consistency with state and local planned growth and economic development patterns, and
- Consideration of eight planning factors and strategies, in the local context, that address: economic vitality through global competitiveness, productivity and efficiency; safety; security; accessibility and mobility for people and freight; the environment, energy conservation, and the quality of life; integration and connectivity of the multimodal transportation system; efficient system management and operation; and preservation of the existing transportation system

COMPLY WITH STATE REQUIREMENTS

The state, whose requirements largely mirror the federal requirements, has adopted extensive RTP guidelines. Key state requirements include:

- Compliance with the California Environmental Quality Act (CEQA)
- Consistency with the five-year STIP as incorporated into SCAG's six-year RTIP
- Program-level performance measures that include objective criteria that reflect the goals and objectives of the RTP, and
- A policy element (Chapter 1), an action element (Chapter 3) and a financial element (Chapter 4)

Our Approach

The development of the 2008 RTP is based on a collaborative and bottom-up process involving numerous parties. Each of the six counties in the SCAG Region has a transportation commission or authority, with the exception of Imperial County, where the Imperial Valley Association of Governments (IVAG) serves as the countywide transportation agency. These agencies are charged with implementing countywide transportation planning activities, allocating locally generated transportation revenues and, in some cases, operating transit services.

Additionally, there are 14 subregions within the SCAG Region. These subregional councils of governments (COGs) are groups of neighboring cities and communities (sometimes an entire county) that work together to identify, prioritize and seek transportation funding for needed investments in their respective areas.

The SCAG Region also includes all or part of thirteen air quality non-attainment or maintenance areas in five air basins. Federal law requires that transportation and air quality planning are coordinated in these non-attainment and maintenance areas. The SCAG Region further includes all of Caltrans Districts 7, 8 and 12, and the Imperial County portion of District 11. SCAG develops the RTP primarily in coordination and consultation with the county transportation commissions (CTCs), COGs, transit operators, Caltrans, air districts and other transportation stakeholders. Key stakeholders involved in the development and update of the RTP are identified in Table 1.5.

TABLE 1.5 STAKEHOLDERS IN THE DEVELOPMENT OF THE 2008 RTP

County Transportation Commissions/Agencies
Imperial
Los Angeles
Orange
Riverside
San Bernardino
Ventura
Subregional Councils of Governments (COGs)
Arroyo Verdugo Cities
Coachella Valley Association of Governments
Gateway Cities COG
Imperial Valley Association of Governments
Las Virgenes-Malibu-Conejo COG
City of Los Angeles
North Los Angeles County
Orange County COG
San Bernardino Associated Governments
San Gabriel Valley COG
South Bay Cities COG
Ventura County COG
Western Riverside County COG
Westside Cities COG
Local and County Governments
Other Operators and Implementing Agencies
California Department of Transportation (Caltrans)
Airport Authorities
Port Authorities
Transit/Rail Operators
Transportation Corridor Agencies
Resource/Regulating Agencies
US Department of Transportation - FHWA, FTA, FAA, FRA
US Environmental Protection Agency (EPA)
CA Air Resources Board
CA Environmental Protection Agency (Cal/EPA)
Air Districts
Tribal Governments (See Exhibit 1.2)

EXHIBIT 1.2 FEDERALLY RECOGNIZED TRIBAL GOVERNMENTS IN THE SCAG REGION

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

TECHNICAL APPROACH

The technical approach to the RTP update is depicted in Figure 1.1. The first step in the process, which was initiated over three years ago, starts with the review and update of the basic assumptions in the existing RTP, including the goals and objectives. It is important to validate the basic planning assumptions and to ensure that the goals and objectives still speak to the region's needs, challenges, and aspirations.

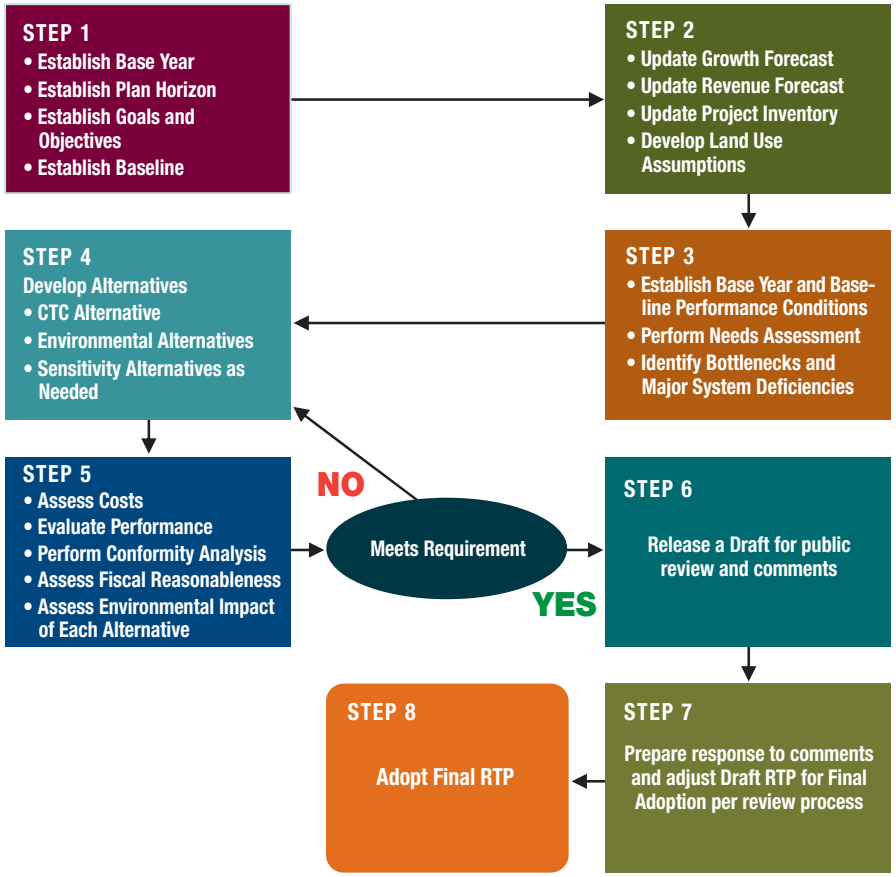
The second step is to ensure that all the data, including growth forecast, revenue forecast, cost information, project scope changes, etc., are updated. It is critical to involve key project sponsors, such as the CTCs, local jurisdictions, Caltrans, and transit operators during this step. Updating and validating the technical data and building the necessary consensus to move forward is a lengthy process.

The third step in the RTP development process involves taking the updated data and reassessing system deficiencies, bottlenecks, and chokepoints in the system to identify system improvement needs.

The fourth step targets improvements and strategies, including growth strategies, in developing alternative scenarios to be considered and tested against performance standards for potential inclusion in the updated Plan. Evaluation of the alternatives is based on a set of performance measures established through a consensus process. Additionally, fiscal reasonableness, transportation conformity and programmatic environmental impacts of the alternatives are also assessed. The best-performing alternative is forwarded as the preferred alternative recommendation to SCAG's policy board if it meets all of the requirements. If it fails to meet any of the requirements, the alternatives are adjusted and reevaluated until a preferred alternative meets all the requirements.

A Draft RTP that documents the preferred alternative as the Plan is then released for public review and comments for a minimum of 45 days. Finally, all comments received and appropriate staff responses are documented prior to finalizing the Plan. The Draft Plan is adjusted if and as needed to address the comments and issues raised during this period before recommending its final adoption as the new RTP for the region.

FIGURE 1.1 RTP UPDATE/DEVELOPMENT PROCESS



PUBLIC PARTICIPATION

A key component of the RTP development process is seeking public participation. Public input helps SCAG prioritize and address transportation needs in

the region. SCAG seeks participation and comment on the RTP from an array of stakeholders, listed in Table 1.6. The RTP is developed in consultation with all interested parties, and SCAG ensures that they have a reasonable opportunity to comment on the contents of the RTP.

TABLE 1.6 NON-GOVERNMENTAL GROUPS FROM WHICH SCAG SEEKS PARTICIPATION AND INPUT

Participatory Non-Governmental Groups
• Citizens
• Public transit users
• Pedestrians
• Users of bicycle transportation facilities
• Transportation agency employees
• Freight shippers
• Providers of freight transportation services
• Private providers of transportation
• Representatives of the disabled
• Nonprofit organizations
• Ethnic and minority groups
• Older and retired persons
• Special-interest nonprofit agencies
• Environmental groups
• Educational institutions
• Women's organizations
• Private sector

To ensure compliance with federal and state requirements, SCAG implements a public involvement process to provide complete information, timely public notice and full public access to key decisions, and to support early and continuing public involvement in developing its regional plans. Since its inception, SCAG has engaged in a public involvement process in developing its regional transportation plans and programs. As a result of changes in SAFETEA-LU in 2005, SCAG has broadened its current participation activities to engage a more extensive group of stakeholders in its planning and programming processes, as reflected in SCAG's Public Participation Plan adopted by the Regional Council in March 2007 and subsequently amended in October 2007. SCAG consulted with a range of interested parties as required by SAFETEA-LU in developing the public participation strategies, procedures and techniques noted herein. SCAG solicited comments and feedback from a diverse number of stakeholders through mailings, email correspondences, workshops, presentations, meetings, telephone communications and website postings.

By using the feedback and comments received on SCAG's Public Participation Plan, SCAG has implemented the following techniques and strategies for RTP outreach:

- Development of an Integrated Inter-Departmental Outreach Team that encourages innovative outreach efforts and is comprised of staff from various divisions, including Communications, Member Relations, and Transportation Planning
- Development of presentation materials for the public in a variety of formats to reach broader audiences: translated materials into languages other than English; developed interactive PowerPoint presentations, fact sheets, surveys, brochures, and maps
- Enhancement of website capabilities that allows SCAG to post all RTP-related information on its website to ensure that it is accessible and transparent to the public. The website is compliant with the 1990 Americans with Disabilities Act.
- Coordination of outreach efforts with other stakeholder organizations to maximize outreach opportunities

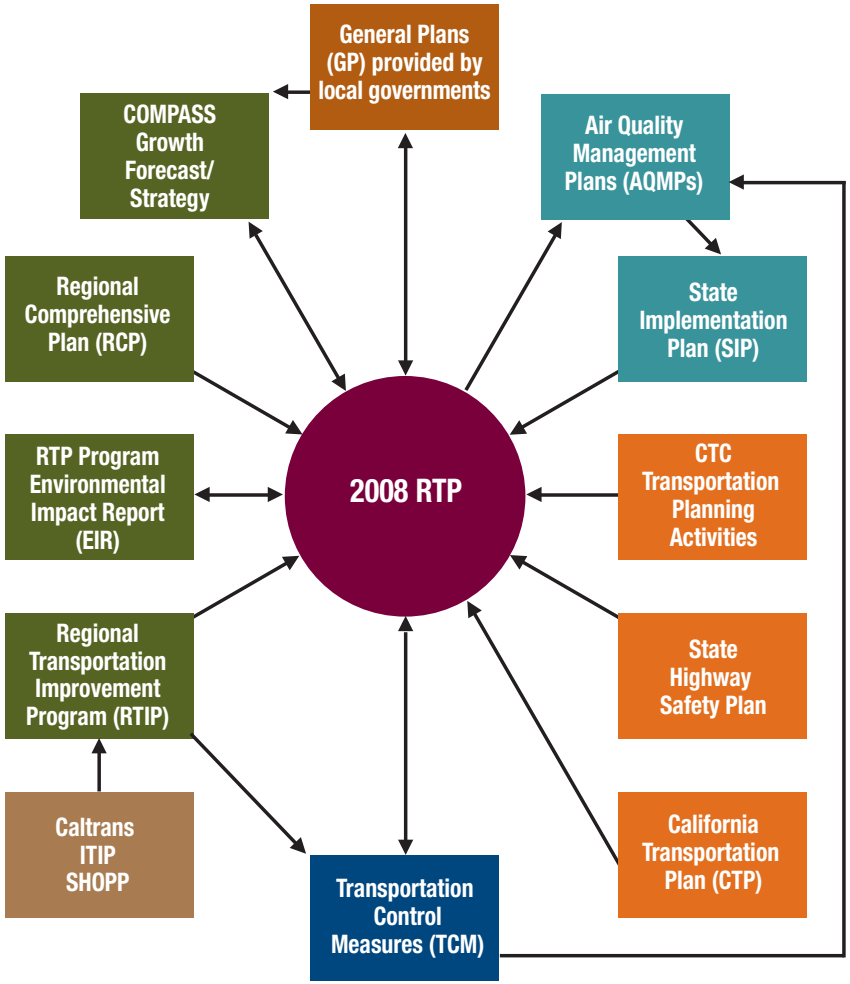
- Development of an outreach schedule that notifies all individuals and groups of activities where SCAG will be presenting the RTP and encourages attendance
- Supporting multiple committees and task forces involving our partners, stakeholders, and interested groups that developed the key components of the Plan
- Holding multiple public workshops before the release of the RTP to allow direct participation by interested parties
- Reaching out to traditionally underrepresented and/or underserved audiences
- Considering comments received in the deliberations regarding proposed plans and programs
- Evaluation of public participation activities to continually improve the outreach process

RTP outreach consists of three phases: Pre-Draft (February 2007 to November 2007), Post-Draft (December 2007 to February/March 2008), and Post-RTP adoption (March/April 2008 to July 2008). SCAG has developed an RTP hotline and email address exclusively for RTP inquiries at 213-236-1960 and RTPinfo@scag.ca.gov.

In addition to these targeted outreach efforts, all regular and special meetings of the RTP task forces, the Transportation and Communications Committee (TCC) and the SCAG RC are publicly noticed and opportunities for public comment are provided. There are currently seven RTP task forces and key transportation subcommittees: Goods Movement, Transportation Finance, High-Speed Regional Transport, Aviation, Plans & Programs Technical Advisory Committee (TAC), Regional Transit Technical Advisory Committee, and the Compass Blueprint Partnership. Also, federally required interagency consultation is done through the monthly meetings of the Transportation Conformity Working Group (TCWG). Specific public comments on the RTP are being recorded and considered by SCAG in the development of the 2008 RTP.

RELATING OTHER PLANS AND PLANNING ACTIVITIES TO THE RTP

FIGURE 1.2 RELATIONSHIP OF PLANNING ACTIVITIES TO THE RTP



A number of SCAG planning activities directly impact the RTP development and update, as depicted in Figure 1.2. The Regional Comprehensive Plan (RCP) is a vision of how the region can balance resource conservation, economic vitality, and quality of life. The RTP Program Environmental Impact Report (PEIR) fulfills legal requirements by identifying potential environmen-

Caltrans photo © Thomas Ritter

tal effects of the RTP Alternatives and identifying ways to mitigate the effects. Lastly, the Regional Transportation Improvement Program (RTIP) is the critical implementation document that provides funding for all major transportation projects in the region for the next six years.

There are several other related planning activities initiated and managed outside of SCAG by partner agencies. Caltrans is responsible for developing and administering the Interregional Transportation Improvement Program (ITIP) and the State Highway Operations and Protection Program (SHOPP). These programs feed directly into SCAG's RTIP and form the basis of the baseline for the RTP. Furthermore, the RTIP is an integral part of the RTP and represents the first six years of the long-range plan. Caltrans is also responsible for developing and updating a statewide Long-Range Transportation Plan, which is a policy document called the California Transportation Plan (CTP). SCAG must consider and incorporate the CTP in the update of the RTP.

The CTCs are responsible for the development and administration of their respective countywide TIPs. Some also choose to develop county-specific long-range transportation plans even though they are not legally required to do so. SCAG must consider and coordinate such activities of the CTCs in developing and updating the RTP.

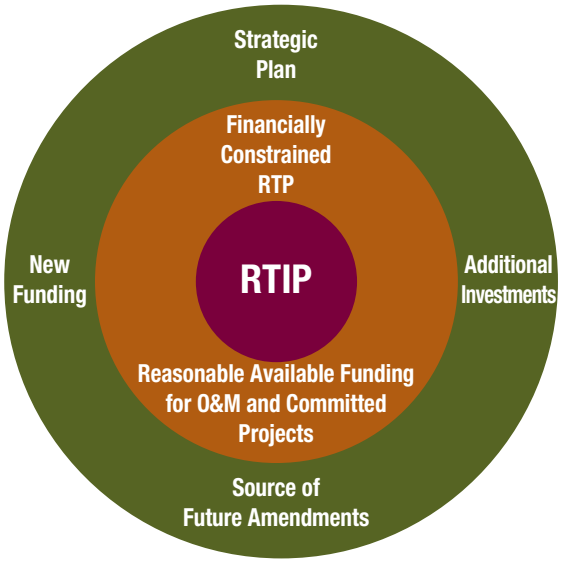
Local governments, including city and county governments, are responsible for preparing, updating and administering their local General Plans. Existing General Plans serve as input to the growth forecast work, and the adopted RTP, in turn, should influence future updates of the General Plans.

Finally, local air districts are responsible for developing Air Quality Management Plans (AQMP) for their respective air districts, which feed into the State Implementation Plan (SIP) and establish allowable emission budgets for criteria pollutants. The RTP serves as the input to the development of the AQMPs, and the emission budgets identified by the SIP through this process, in turn, establish the thresholds with which subsequent conformity analyses must comply.

RTP Framework

Federal planning and conformity rules require that a conforming RTP be financially constrained. It must demonstrate that all projects identified in the constrained plan have adequate funding. A conforming RTP cannot simply be a wish list of projects. If we were to rely on existing funding sources, the fiscal reality is that our region would not have enough money to fund all of our transportation needs. Figure 1.3 depicts the funding framework for this RTP.

FIGURE 1.3 RTP FRAMEWORK



At the core of the Plan is the RTIP, which not only represents the first six years of the Plan, but also represents ongoing operations and maintenance commitments. Every project that seeks federal, state or local funding for implementation must be included in the RTIP. The first ring outside of the core, together with the core, represents the fiscally constrained plan that is used to demonstrate transportation conformity. These projects can be reasonably funded within the planning horizon of the RTP.

The outer ring, called the Strategic Plan, represents projects of merit that currently do not have sufficient funding or regional commitment. They should be considered for funding in the future as it becomes available. Projects typically flow from the outer ring to the core, as funding and commitments for these projects materialize and as they continue to meet the performance criteria established for the Plan.

Another way to look at the outer ring is to view projects in this domain as potential candidates for inclusion in the financially constrained RTP through future amendments. This helps streamline the RTP amendment process. However, given the time horizon of the RTP and the dynamic environment in which transportation projects get funded and implemented, it is foreseeable that there are current projects outside our vision that may warrant inclusion in future RTP amendments. This framework is flexible enough to allow for amending projects into the RTP that are not in the Strategic Plan.

Overview of the Plan

First and foremost, this Plan puts forth a collective vision for the future of our regional transportation system. Our vision is based on a careful analysis of our transportation system, the future growth of our region, our mobility needs, air quality improvement needs, and our need to preserve the environment and mitigate harmful environmental impacts of the proposed transportation improvements.

The Plan carefully and deliberately articulates major challenges associated with our transportation system as well as achieving our vision. Key challenges addressed in the Plan include dramatic growth as well as changes in the characteristics of our demographics, the aging infrastructure, and the unprecedented demand on our goods movement system and our airports. The Plan also articulates our air quality and environmental challenges, and the constraints that they will place on our ability to make necessary improvements to our transportation system, particularly our goods movement infrastructure. On top of all of this, the region will continue to face serious funding shortfalls that will challenge our ability to simply keep our system afloat if we were to do nothing to improve our transportation funding situation.

Given our vision and the challenges, this Plan recognizes that our approach must be balanced, systematic, multimodal, and at the same time targeted to yield the best performance outcomes based on the established set of performance measures. Our integrated system investment approach is depicted by the Mobility Pyramid shown in Figure 3.3. According to this approach, our first priority is to invest in system monitoring and evaluation strategies so that decision-makers can better understand how the system performs and make

well-informed decisions on how to fix our problems. Next, we must preserve our multimodal transportation system, which has cost the region hundreds of billions of dollars to build. The next strategy recognized in this hierarchy is the tremendous potential of coordinating and integrating land use choices with transportation-investment decisions. Effective implementation would not only result in more efficient and effective utilization of available system capacity, but also in the preservation of our environment. We must also make sure that we are getting the most out of our available system by managing our system and our demand better. Such strategies are cost-effective, easy to implement, and environmentally superior to the more capital-intensive system expansion-options. Having monitored and maintained our existing system, and having maximized system efficiency and system productivity through system management, land use coordination, and demand management, the Plan recognizes that targeted system expansion will still be needed to accommodate future growth. Therefore, the Plan proposes a balanced investment approach that would address all modes of transportation, including highways, the public transportation system, the goods movement system, non-motorized transportation, as well as airport ground access improvements.

Finally, while recognizing financial constraints, the Plan puts forth a suite of new and innovative funding strategies that are realistic, practical, and achievable within the time frame of the Plan. The Plan also recognizes that in spite of our best efforts, there simply will not be enough money to implement solutions to all of our transportation needs. The Plan includes a strategic component that identifies projects that cannot be funded at this point, but merit further consideration in future plan updates based on additional studies, funding support, and stakeholder consensus.

II. TRANSPORTATION PLANNING CHALLENGES

The SCAG Region is one of the largest and most complex metropolitan areas in the nation, and its transportation challenges are equally large and complex. This chapter describes growth trends and travel patterns in the SCAG Region and the challenges that these trends and other factors pose for our multimodal transportation system.

The Shape and Pattern of Future Growth

Southern California is running out of land to support low-density future growth. The ocean and mountains pose natural barriers to development. Environmentally sensitive areas, such as coastal wetlands and natural habitat areas, hem in the region and dot the urbanized area. A significant amount of land is also owned by the state and federal governments for the public benefit and is off limits to development.

Freeways provide access to farmland and grazing areas that could be used to accommodate future growth along the east-west axis of the region. There is little access to the north except through mountain passes that are choked with car and truck traffic. The centrifugal force of growth continues to push the development footprint of the urbanized area outward. At the same time, pushing back on dispersed development are natural barriers, financial constraints to pay for outward expansion, and public resistance to unsustainable "leap frog" growth into green fields and sensitive habitat areas. Nearly all natural locations for urban development have been consumed, leaving us with hard choices about how we are to grow and change to meet the demands of the future.

Much of the urbanized area is fighting gridlock as 95 percent or more of the population drives back and forth to work to accomplish the tasks of daily living, and another 3 to 5 percent take transit or walk. Growth management strategies and ballot initiatives are aimed at preserving and protecting prime farm and grazing land from residential development pressures, while preserving historic buildings, single-family neighborhoods and prime industrial land for economic development.

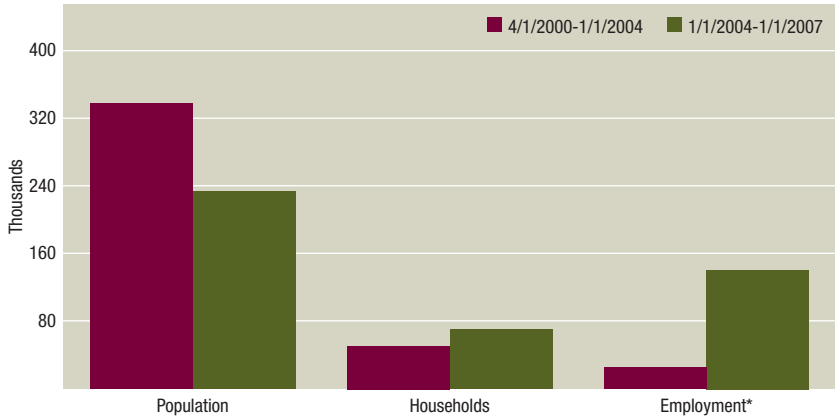
Many are starting to realize that, as large as the region is in total area, it is running out of developable land to support a significantly unbalanced auto-oriented development pattern. There is an increasing need for reinvestment and increased development near public transit, along corridors and in-town, mixed-use urban centers. Southern California has the nation's largest bus ridership and an emerging metro, commuter, and light rail transit network that provides a better balance of transportation choices that can reduce auto travel and support more pedestrian, mixed-use and transit-oriented development.

This section describes the population, employment, and demographic changes that happened in the recent past and may be expected in the SCAG Region over the next 30 years without a change in regional policy. These demographic and economic changes are an integral part of planning the transportation system to ensure that the users' needs are addressed.

POPULATION GROWTH

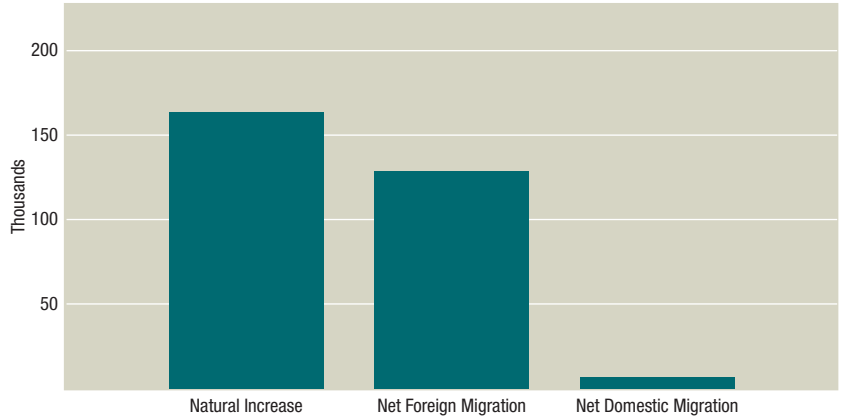
The SCAG Region is the second most populated metropolitan area in the United States. Nearly one-half of all Californians live in the SCAG Region, and 1 in 17 people living in the entire United States resides here. By July 1, 2007, the region's population had reached 18.6 million residents, having grown by 2 million residents (12 percent) from 16.6 million people just seven years ago. The population growth (2 million residents) of the SCAG Region between 2000 and 2007 was higher than the population growth (1.9 million residents) that occurred throughout the 1990s. Figure 2.1 shows the growth pattern of population, households, and employment between 2000 and 2007. Population growth slows down in the middle 2000s (2004-2007), while both household and employment growth are much faster in the middle 2000s than in the early 2000s.

FIGURE 2.1 ANNUAL AVERAGE GROWTH IN POPULATION, EMPLOYMENT, AND HOUSEHOLDS, 2000-2004 AND 2004-2007



Source: California Department of Finance, California Employment Development Department, SCAG Employment Estimates

FIGURE 2.2 COMPONENTS OF ANNUAL POPULATION GROWTH, 2000-2006



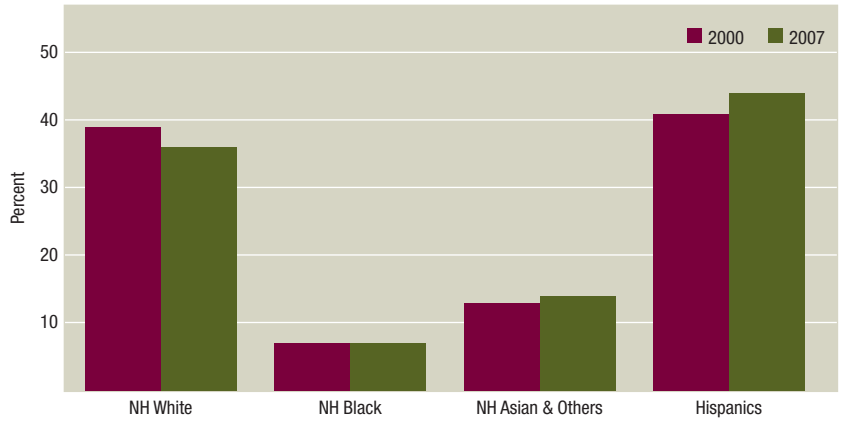
Source: California Department of Finance

Two major sources of population growth since the 2000 Census are natural increase (births minus deaths) and net foreign immigration (people who move here from foreign countries minus those who move away to foreign countries). Natural increase accounted for 55 percent of the population gain in the region. Although the total fertility rate of women of child-bearing ages remains stable in recent years, Hispanic women still maintain a relatively higher total fertility rate. The life expectancy of Southern California residents increased while the death rate decreased.

Net foreign immigration, mostly from Mexico, Central America, and Asia, accounted for 43 percent of the population gain in the region. Foreign immigration, including unauthorized immigrants, was not affected by the region's economic cycle. Southern California is still an attractive destination and a gateway for new immigrants, although international migration to the region has leveled off in recent years.

As of July 1, 2007, there is no racial or ethnic majority in the region. Hispanics constitute 44 percent of the region's population, followed by Non-Hispanic (NH) Whites at 36 percent, NH Asians and Others at 13 percent, and NH Blacks at 7 percent. Since 2000, Hispanics have increased their share of the population by 3 percent, while NH Whites have decreased their share by the same percentage. There has been little change in the share of other racial/ethnic groups between 2000 and 2007. The region is moving toward a Hispanic majority.

FIGURE 2.3 ETHNIC COMPOSITION OF POPULATION, 2000 AND 2007



Source: California Department of Finance

The region shows an aging pattern of population growth between 2000 and 2007. According to California Department of Finance (DOF) estimates, nearly 80 percent of population growth occurred in the age group of 36 years old or older. Age groups of 4-10 years old and 27-35 years old declined by 6 percent and 8 percent, respectively, over the same period. The absolute decline of school-age children and younger adults raises a concern about future school construction needs and labor force in younger workers.

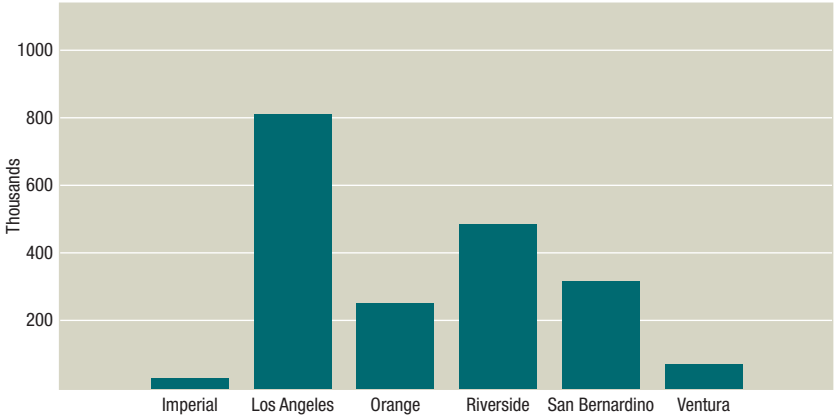
TABLE 2.1 AGE COMPOSITION OF POPULATION, 2000 AND 2007

Age	7/1/2000	7/1/2007	Change	% Change
0-3	1,017,000	1,078,000	62,000	6%
4-10	1,977,000	1,868,000	(109,000)	-6%
11-26	3,885,000	4,528,000	642,000	14%
27-35	2,413,000	2,227,000	(187,000)	-8%
36+	7,333,000	8,860,000	1,526,000	17%
Total	16,626,000	18,560,000	1,934,000	12%

Source: SCAG Baseline Growth Forecast

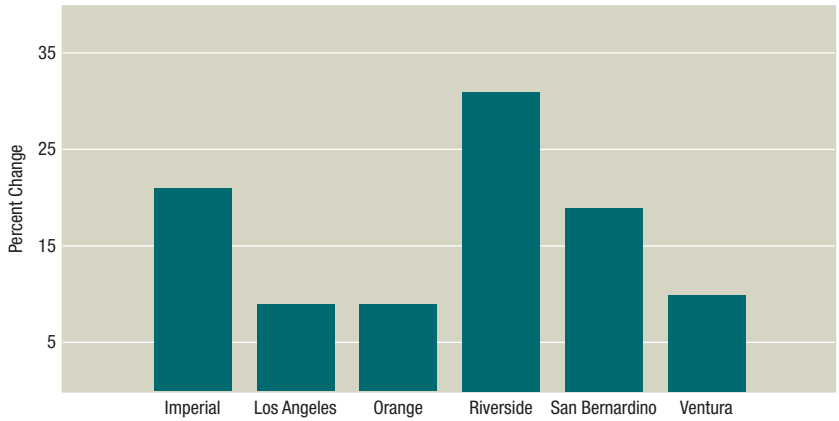
Los Angeles County accounted for 41 percent of the region's growth over the last seven years, adding 813,000 residents, while Riverside and San Bernardino Counties together added 804,000 residents. In terms of relative growth, the Inland Empire and Imperial Valley are the fastest-growing areas in the region. Riverside County grew by 40 percent, San Bernardino County by 19 percent and Imperial County by 22 percent. Nearly 46 percent of the region's growth occurred in areas outside of Los Angeles and Orange Counties. Los Angeles and Orange Counties were the slowest-growing counties, adding only 9 percent each to its populations during the same period.

FIGURE 2.4 POPULATION GROWTH BY COUNTY, 2000-2007



Source: California Department of Finance

FIGURE 2.5 PERCENT GROWTH IN POPULATION BY COUNTY, 2000-2007



Source: California Department of Finance

HOUSEHOLD GROWTH

Since the 2000 US Census, there was a net addition of 410,000 households, bringing the regional total to nearly 5.8 million in 2007. However, population growth outpaced household growth with only one household for every five persons added. The rapidly growing population is reflected in larger households rather than in the formation of new households. The average persons-per-household ratio in the region has increased from 3.07 in 2000 to 3.19 in 2007. The increasing household size may be caused by the cultural propensity of some groups such as recent immigrants to form large inter-generational families or by the limited supply of affordable housing units. Workforce housing affordability and availability issues have affected the quality of life in the region. The insufficient supply of affordable housing in job-rich urban areas maintains existing trends in urban sprawl, longer commute patterns, congested freeways and worsening air quality.

EMPLOYMENT GROWTH

In 2006, the region's total employment, including self-employment, was estimated to be nearly 8 million, having grown by 500,000 jobs (7 percent) from 2000. The region's economy is robust in terms of the number and the types of jobs available to residents looking for jobs, with the unemployment rate of the region at a historic low of 4.6 percent in 2006. The previous record in the region was 5 percent in 2000. The region's employment has been steadily growing since the recession of the early 1990s. The region experienced a net loss of 500,000 jobs during the recession period between 1990 and 1993, then overcame the recession by adding a net 780,000 jobs between 1996 and 2000. After slow growth in jobs in 2002 and 2003, the region is regaining its economic strength by increasing new annual job growth beyond these early decade levels.

The overall pattern of employment change is driven by the decline in manufacturing sector jobs due to globalization. Between 2000 and 2005, the manufacturing sector jobs dropped from 1,023,000 jobs to 835,000 jobs, a loss of 188,000 jobs. The share of the manufacturing sector jobs declined by 3 percent. Other significant economic sectors experiencing the absolute loss of jobs include 1) information, 2) agriculture and mining, and 3) transportation and warehousing, and utility. In contrast, 1) construction, 2) financial activity, 3) leisure and hospitality, 4) retail trade, and 5) other service sectors added a significant number of additional jobs to the regional economy. The growth in the construction and financial activity sectors was caused by the strong residential housing development. The increases in some service-sector jobs are directly associated with the increase in total population and an increase in the aged population in the region. The growth of service-sector jobs, in particular, population-serving jobs, is likely to continue in the future.

The strong regional job growth directly influences domestic migration, because it induces more domestic in-migration than domestic out-migration, while weak job growth causes more domestic out-migration than domestic in-migration. More net in-migration influences the job growth in the "population-serving" retail and service sectors.

TABLE 2.2 EMPLOYMENT BY SECTOR, 2000 AND 2005

Sectors (NAICS)	2000		2005		Change		
	Number	%	Number	%	Number	% Change	Change in % points
Agriculture & Mining	84,000	1%	78,000	1%	(6,000)	-7%	0%
Construction	369,000	5%	465,000	6%	96,000	26%	1%
Manufacturing	1,023,000	14%	835,000	11%	(188,000)	-18%	-3%
Wholesale Trade	374,000	5%	386,000	5%	12,000	3%	0%
Retail Trade	770,000	10%	841,000	11%	71,000	9%	1%
Transportation and Warehousing, and Utility	354,000	5%	349,000	4%	(5,000)	-1%	0%
Information	324,000	4%	278,000	4%	(46,000)	-14%	-1%
Financial Activities	415,000	6%	504,000	6%	89,000	21%	1%
Professional and Business Services	1,167,000	16%	1,197,000	15%	30,000	3%	0%
Education and Health Services	1,429,000	19%	1,546,000	20%	117,000	8%	1%
Leisure and Hospitality	664,000	9%	746,000	10%	82,000	12%	1%
Other Services	293,000	4%	313,000	4%	20,000	7%	0%
Public Administration	217,000	3%	234,000	3%	17,000	8%	0%
Total	**7,482,000**	**100%**	**7,771,000**	**100%**	**289,000**	**4%**	**0%**

Source: California Employment Development Department, SCAG Employment Estimates

INCOME

Income is one of most important indicators of economic well-being of residents in the region. In 1999, per capita income of the region, as a measure of the wealth of the residents, was approximately $21,000. By 2006, this amount grew to $25,000, an increase of 20 percent. After adjusting for inflation, per capita income of the region has declined from 1999 to 2006 (-5.7%). Per capita income of the region remains at the same level as the nation, but is lower than that of California by 6 percent. The relative income level of the region to the nation has declined from 1.27 in 1959 to 0.98 in 1999. Over the last three decades, the SCAG Region's per capita income ranking dropped from the 4th highest in 1969 to 7th in 1989, and 16th in 1999. The SCAG region continued to rank last in terms of per capita income among the 17 largest metropolitan regions in the nation in 2005.

Median household income increased by 22 percent from 1999 to 2006. However, this increase was only about 80 percent of what was required to keep up with inflation. Thus, real median household income was down by 4%. In 2006, median household income of the region was 15 percent above the national average, but was lower than that of California by 1.5 percent. The relative income level of the region to the nation has remained 9 percent to 23 percent above the national average for the periods of 1969, 1979, 1989, and 1999. The relative median household income level of the region has increased from 1.09 in 1999 to 1.15 in 2006.

Average income statistics, however, mask how much poverty is present in the region. In 2006, nearly 14 percent of the region's residents lived in poverty compared to around 13 percent for California and the nation as a whole. Around 18 percent of Imperial County residents live in poverty, followed by Los Angeles County at 15 percent. The poverty rates of Ventura, Orange, and Riverside County residents are lower than those of California or the nation.

Partly because of the higher than national average poverty levels and partly because of the high cost of home ownership in California, the region lags the nation in homeownership rates. During the last decade, median home values in California and the most populous areas of the region have risen due to construction activity lagging population growth, low inventory and historically low interest rates. Median home values in California now reach the $462,000 mark, which is more than double the national median. In 2006, 56.5 percent of regional residents owned their own home compared to 67.3 percent for the nation as a whole.

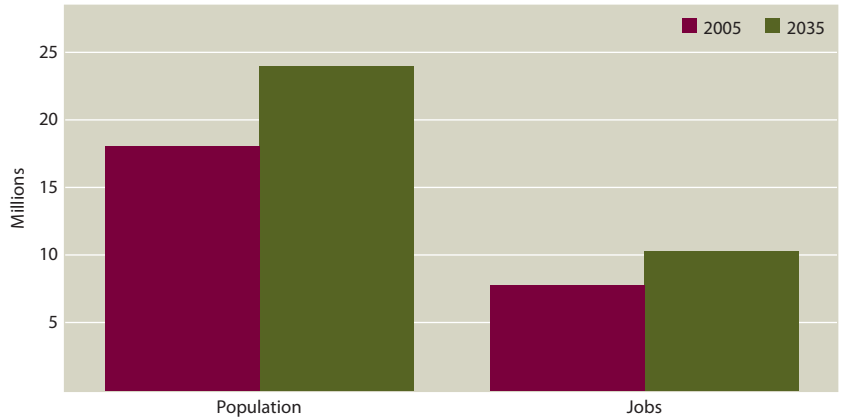
PATTERNS OF FUTURE GROWTH

A baseline growth forecast is a future snapshot of the most likely population and employment distribution without regional policy input. It reflects historical trends, based on reasonable key technical assumptions and existing and

newly approved local or regional projects. Specifically, the baseline growth forecast is a result of updating the 2004 RTP no-project growth forecast with the current demographic and economic trends, the latest land use changes, newly approved regionally significant projects, general plan or specific plan update, and/or zoning revisions. Also included are demand forecasts for cargo and passengers at the regional ports and airports. The port and airport demand forecasts include projects that improve operations and increase capacity. Intermodal expansion was assumed in terms of additional capacity at the ports for goods movement growth, and the trips associated therewith were assumed to be located in the Inland Empire. The VMT and related emissions regarding such trips are incorporated into the modeling analysis.

According to the baseline growth forecast summarized in Figure 2.6, the region will add 5.9 million people to reach 24 million people by 2035. Supporting this population in 2035 will be a total of 10.3 million jobs in 2035 with 2.5 million new jobs. This level of population and job growth is expected to yield 2 million additional households in the region at an average of three persons per household. The substantial amount of projected growth will pose serious transportation and air quality challenges for the region.

FIGURE 2.6 POPULATION AND EMPLOYMENT, 2005 AND 2035



Source: California Department of Finance, California Employment Development Department, SCAG Employment Estimates, SCAG Baseline Growth Forecast

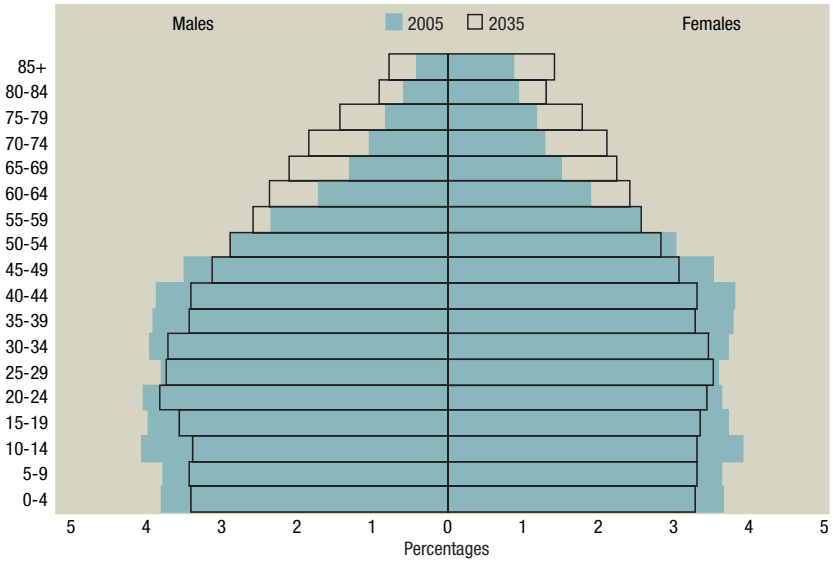
TABLE 2.3 SOCIOECONOMIC INDICATORS, 2005 AND 2035

	2005**	2035	Change	% Change
Total population ('000), % Change (2005-2035)	18,147	24,057	5,910	33%
Persons under 16 years old (%)	24.4	21.4	-2.9	
Persons 16-64 years old (%)	65.7	62.7	-3.0	
Persons 65 years old and over (%)	9.9	15.9	6.0	
Median age	32.9	35.9	3.1	
Total dependency ratio*	52.1	59.5	7.4	
Child dependency ratio	37.1	34.2	-2.9	
Old-age dependency ratio	15.1	25.3	10.3	
Births per 1,000 population	15.9	14.4	-1.4	
Total fertility rate (per woman)	2.05	2.02	-0.03	
Deaths per 1,000 population	6.3	6.9	0.7	
Natural increase (%) (2000-2005, 2005-2035)	55.0	84.0		
Net migration (%) (2000-2005, 2005-2035)	45.0	16.0		
Non-Hispanic White persons (%)	36.0	21.9	-14.1	
Non-Hispanic Black persons (%)	7.1	5.8	-1.2	
Non-Hispanic Asian & Other persons (%)	13.8	17.0	3.3	
Hispanic persons (%)	43.1	55.2	12.0	
Households ('000), % Change (2005-2035)	5,687	7,711	2,024	36%
Total population per household (PPH)	3.19	3.12	-0.07	
Householders 65 years old and over (%)	17.3	26.5	9.2	
Total employment ('000), % Change (2005-2035)	7,771	10,287	2,516	32%
Agriculture & Mining (%)	1.0	0.8	-0.2	
Manufacturing (%)	10.7	7.7	-3.0	
Service (%)	**88.3**	**91.5**	**3.2**	

*Notes: * A measure showing the number of dependents (aged 0-15 & over 65) per 100 working age population (aged 16-64). Dependents per 100 working-age population.*
*** Model estimate*
Source: SCAG Baseline Growth Forecast

Where will all these people come from? Approximately 85 percent of the region's population growth in the future is due to natural increase. The region is expected to experience a net loss in domestic migration, but this will be more than offset by international immigration. As the region grows, the average person will be older, and Hispanics will become the majority ethnic group. The population in the region will become older because of aging "baby boomers" born between 1946 and 1964. The median age will rise from 32.9 years in 2005 to 35.9 in 2035. The population aged 65 and older will grow four-and-a-half times faster than the working-age population (16-64 years old) between 2005 and 2035. As a result, workers in the region will support a larger share of the older "baby boomer" population in 2035.

FIGURE 2.7 POPULATION AGE PYRAMID, 2005 AND 2035



Source: SCAG Baseline Growth Forecast

Due to the retirement of "baby boomers," the region may experience severe shortages of skilled labor. The aging baby boomers may postpone the retirement or the female labor force may increase the labor force participation. If domestic migration does not make up the shortage of skilled labor, then more foreign immigration will be needed. The skills of the new labor force, particularly recent immigrants, will probably not match the requirements of the skilled jobs. This could depress the overall income level of the workers and households. Long-term strategies to achieve growth and equitable distribution of income should be considered, including appropriate and enhanced educational opportunities and a phased retirement system.

Shifting demographic patterns will also influence travel behavior. The elderly people travel less than the younger population and the elderly workers tend to work at home. If necessary, they commute to work for a shorter distance. Recent immigrants tend to use public transportation much more than other population groups. Urban density levels may also increase since foreign-born residents urbanize less land. Many SCAG Region foreign-born, Hispanic, and Asian residents have modest incomes, larger household sizes, and tend to double up in existing urban areas, thereby increasing population density. The socioeconomic characteristics and lifestyle choices associated with immigration are consistent with a more compact urban form.

The overall number of persons per household will be smaller in the region in 2035 as downward pressures are exerted by aging "baby boomers" and lower birth rates, while there are upward pressures from increasing Hispanic populations with relatively large households (especially recent immigrants). The number of persons per household may increase in some built-out areas over the projection horizon due to the limited availability of developable land. The racial and ethnic composition of households will reflect the population diversity and create demand for a wider variety of housing types than are most prevalent today. Specifically, there will be more need for close-in and infill housing, condominiums and multi-family housing.

Jobs will be created across all employment sectors, except the manufacturing sector. The largest gains will be in service-sector jobs as the shift in the region from manufacturing jobs to service-sector jobs continues. Between 2005 and 2035, service-sector jobs will lead in total growth and comprise the largest share of total jobs. The makeup of service sector jobs will also change, with different employment opportunities. Three top leading sectors include 1) education and health services, 2) professional and business services, and 3) construction. These fast-growing sectors are supported by the continued growth of population and demographic changes (e.g., aging of baby boomers). With continued globalization, the share of the manufacturing sector will continue to decline from 11 percent in 2005 to 8 percent in 2035. The manufacturing sector still remains important and there are growth opportunities in the high-tech manufacturing sector. The decline of the manufacturing sector might result in the lower income level of workers and households. The policy strategies might focus on creating more high-wage and salary service sectors, which include 1) information, 2) public administration, 3) financial activities, 4) wholesale trade, and 5) transportation and warehousing, and utilities. The

logistics sector, comprising wholesale trade, transportation, and warehousing, might become more important in the region's economic growth as the region's foreign trade activities continue to grow. The significant growth of the construction sector might influence the future traffic congestion in the region. The workers in the construction sector tend to commute to work for longer distances, but they use carpooling much more than other workers.

TABLE 2.4 EMPLOYMENT BY SECTOR, 2005 AND 2035

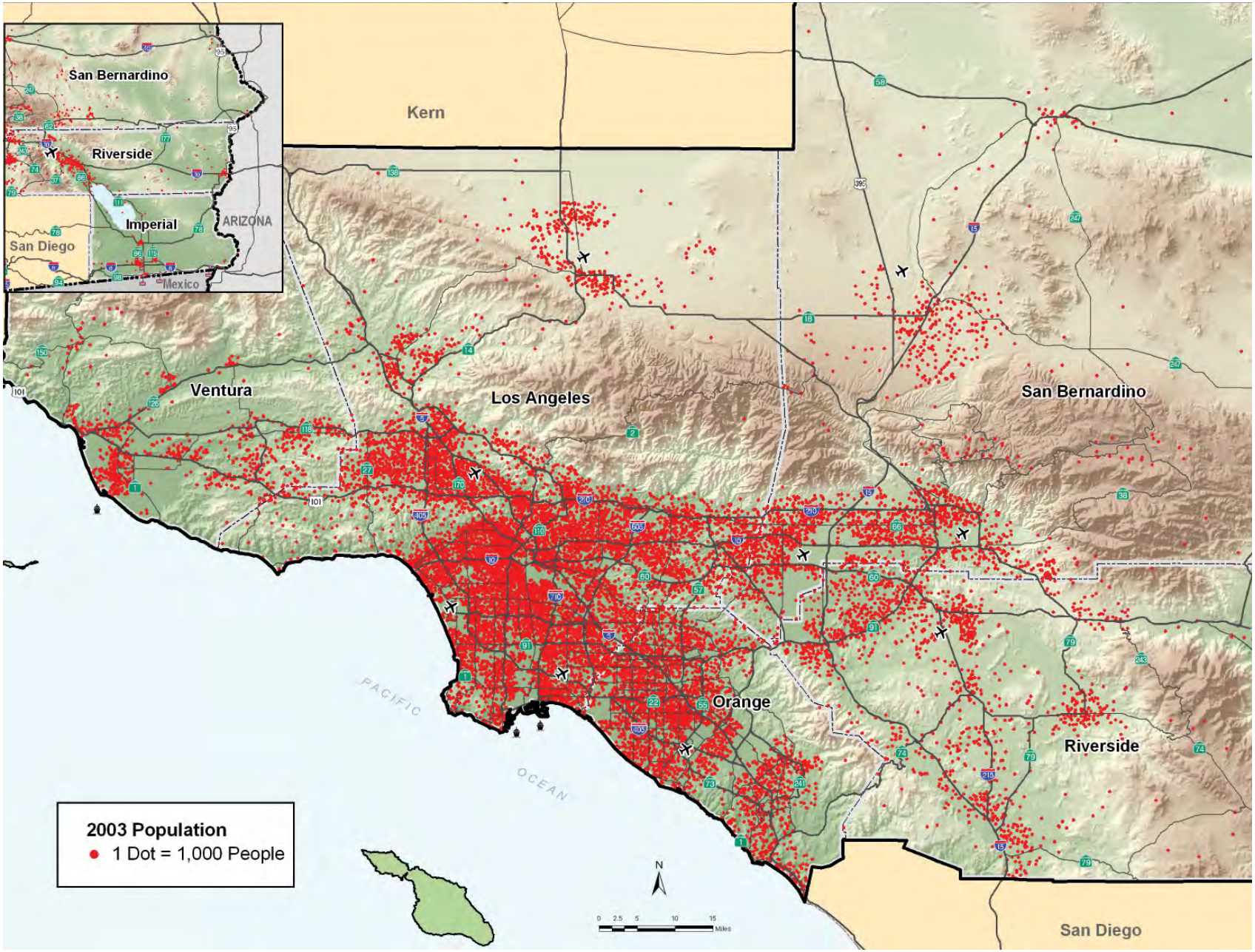
Sectors (NAICS)	2005		2035		Change		
	Number	%	Number	%	Number	% Change	Change in %
Agriculture & Mining	78,000	1%	86,000	1%	8,000	10%	0%
Construction	465,000	6%	687,000	7%	222,000	48%	1%
Manufacturing	835,000	11%	792,000	8%	(43,000)	-5%	-3%
Wholesale Trade	386,000	5%	458,000	4%	72,000	19%	-1%
Retail Trade	841,000	11%	1,122,000	11%	281,000	33%	0%
Transportation and Warehousing, and Utility	349,000	4%	418,000	4%	69,000	20%	0%
Information	278,000	4%	362,000	4%	84,000	30%	0%
Financial Activities	504,000	6%	601,000	6%	97,000	19%	-1%
Professional and Business Services	1,197,000	15%	1,770,000	17%	573,000	48%	2%
Education and Health Services	1,546,000	20%	2,299,000	22%	753,000	49%	2%
Leisure and Hospitality	746,000	10%	1,027,000	10%	281,000	38%	0%
Other Services	313,000	4%	366,000	4%	53,000	17%	0%
Public Administration	234,000	3%	301,000	3%	67,000	29%	0%
Total	**7,771,000**	**100%**	**10,287,000**	**100%**	**2,516,000**	**32%**	**0%**

Source: SCAG Baseline Growth Forecast

The overall economic well-being of residents in the region improves during the planning period. The median household income of the region is expected to increase by one-half percent per year from $46,000 (in 1999 dollars) in 2005 to $53,000 (in 1999 dollars) in 2035. The higher-income households with more than $100,000 (in 1999 dollars) increase two or three times faster than low- and middle-income households. The projected income level and

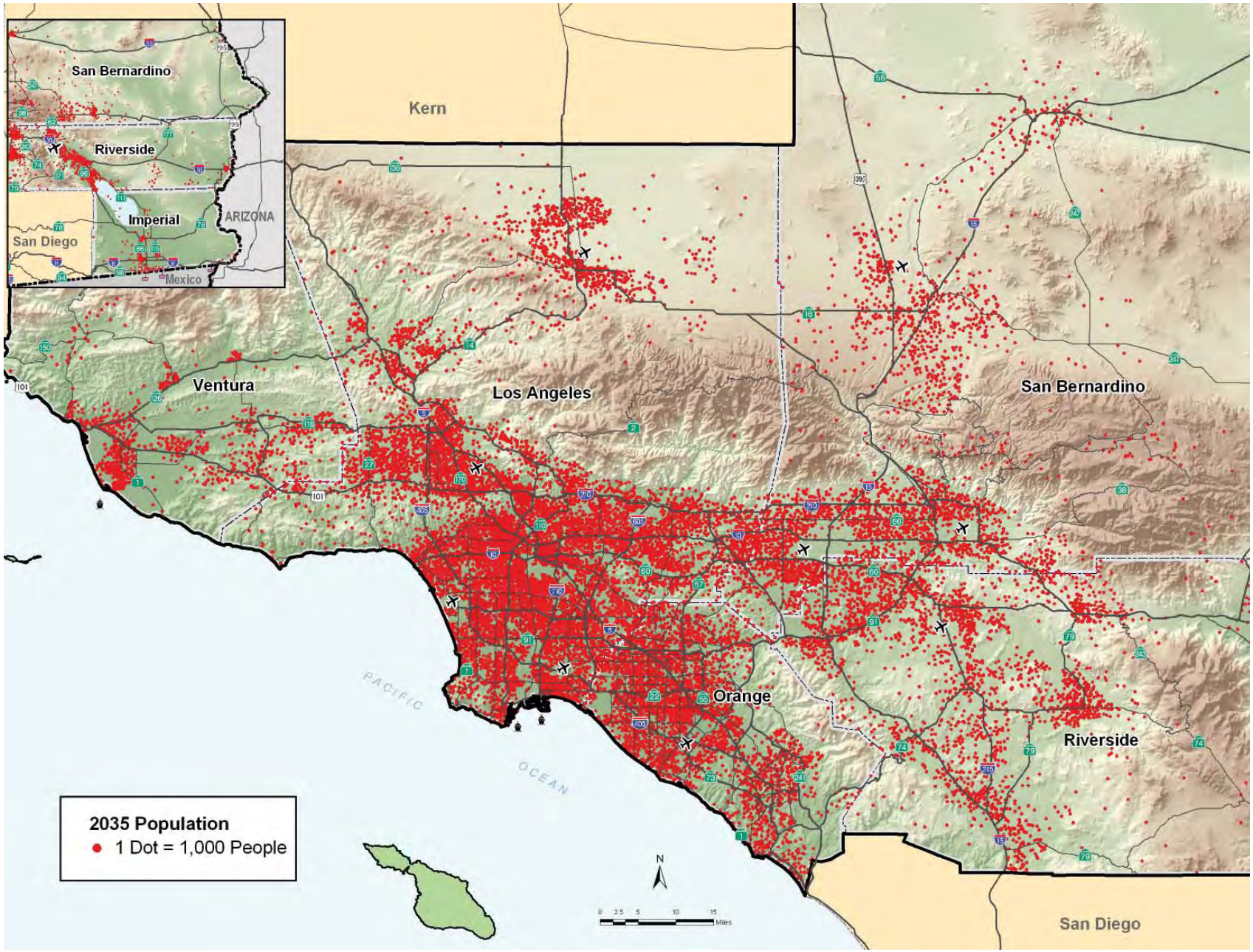
distribution affects auto ownership, trip generation, and mode choice. For example, higher household income implies more cars available for travel, more trip generation, and more driving than transit use.

EXHIBIT 2.1 2003 POPULATION



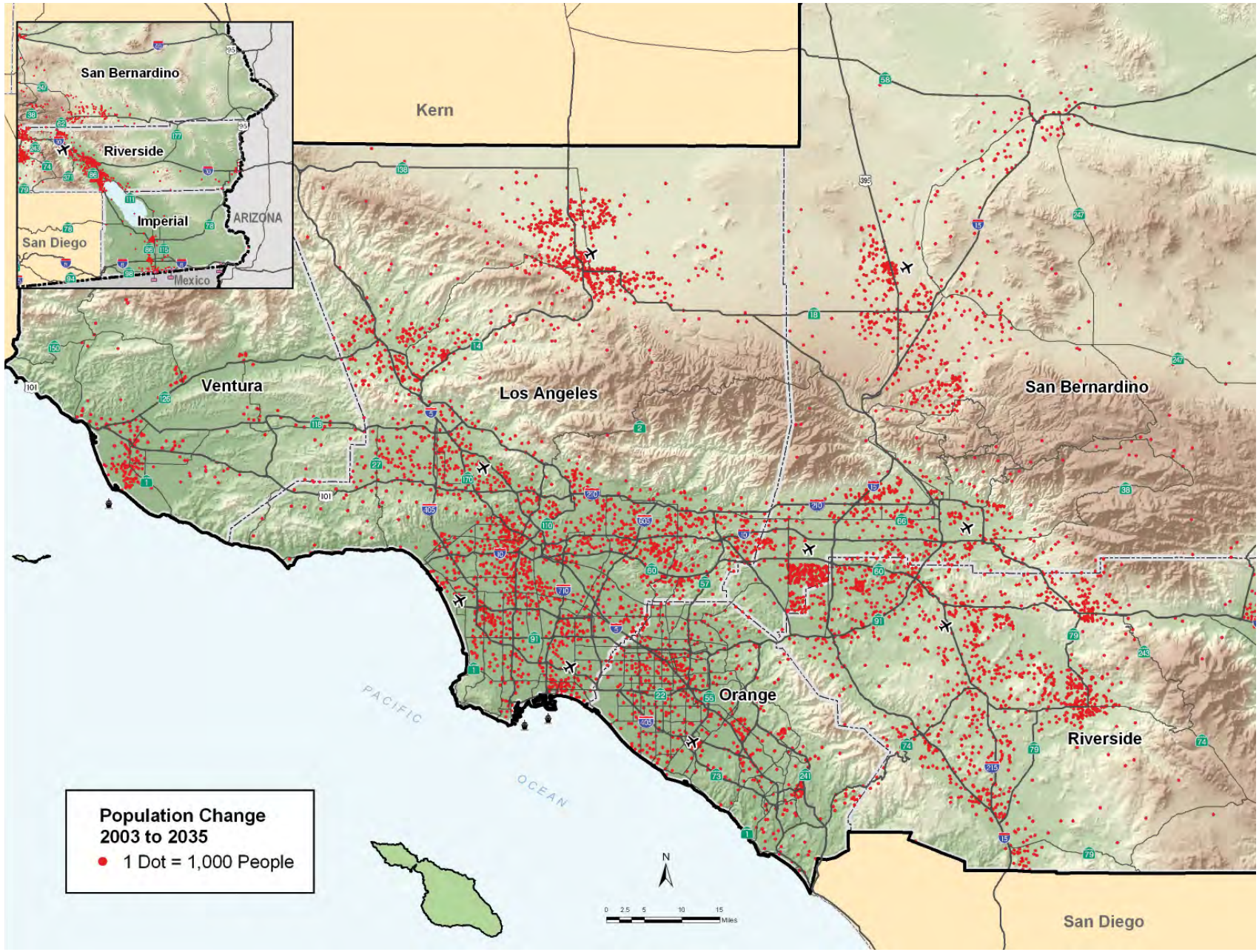
Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 2.2 2035 POPULATION



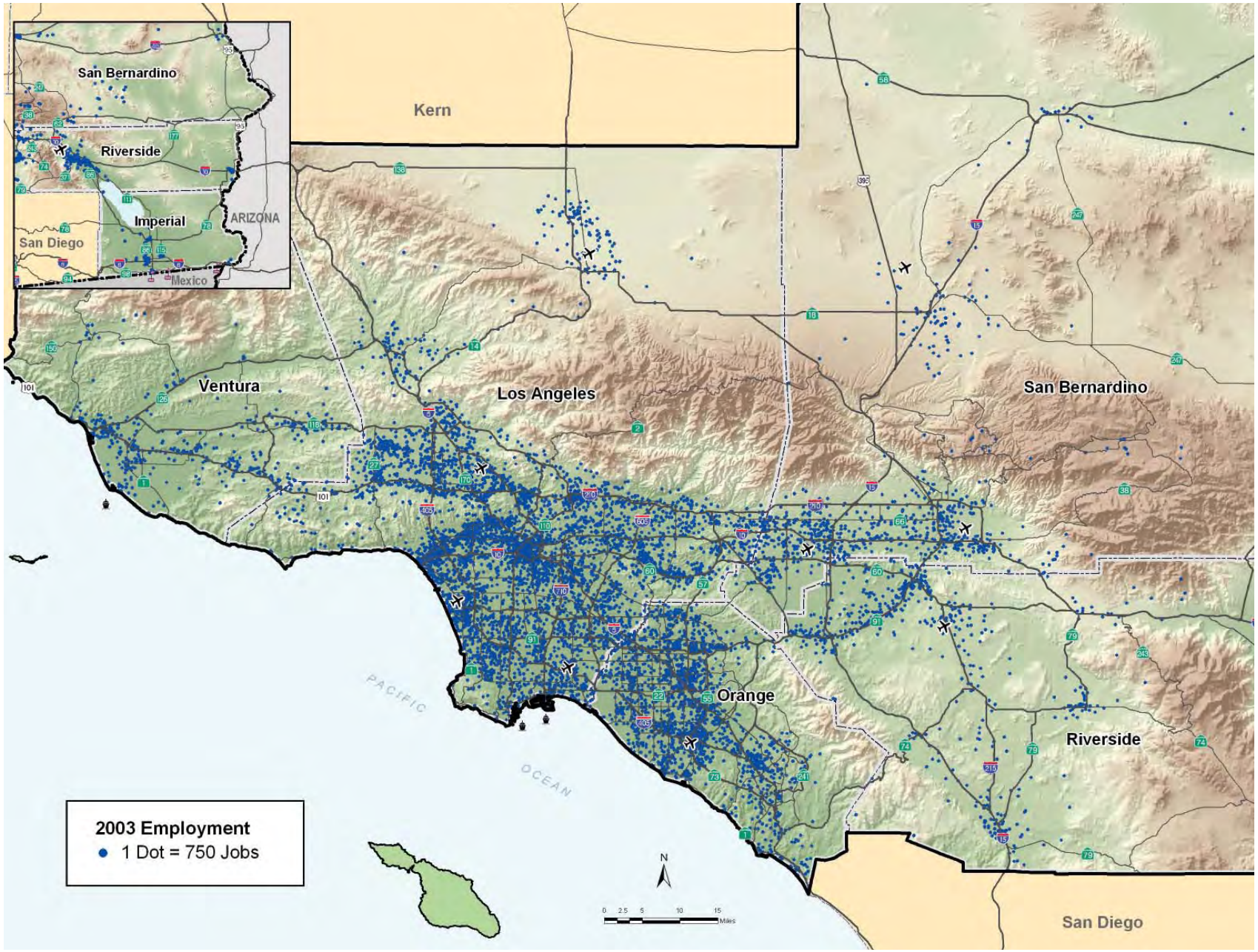
Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 2.3 POPULATION INCREASE, 2003-2035



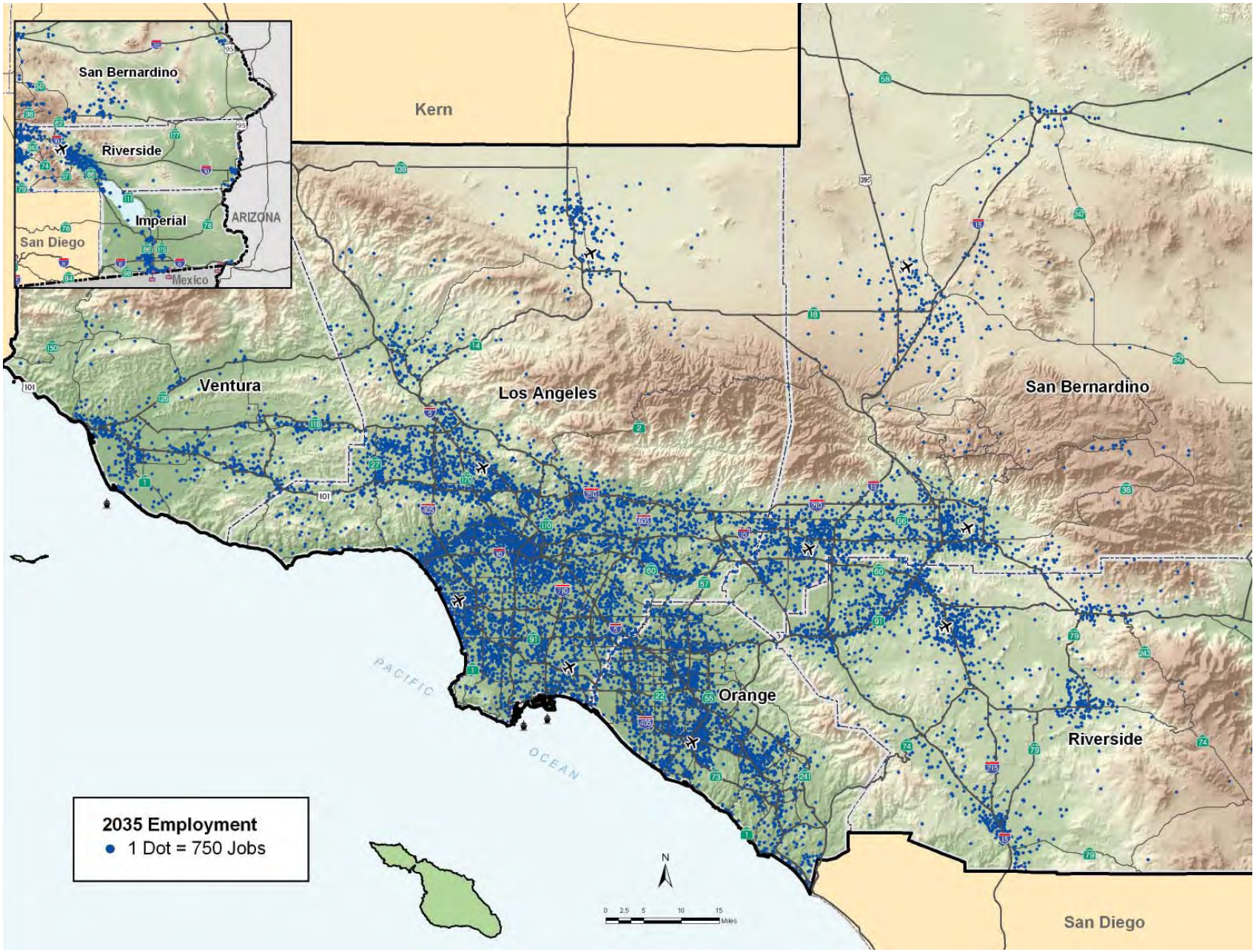
Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 2.4 2003 EMPLOYMENT



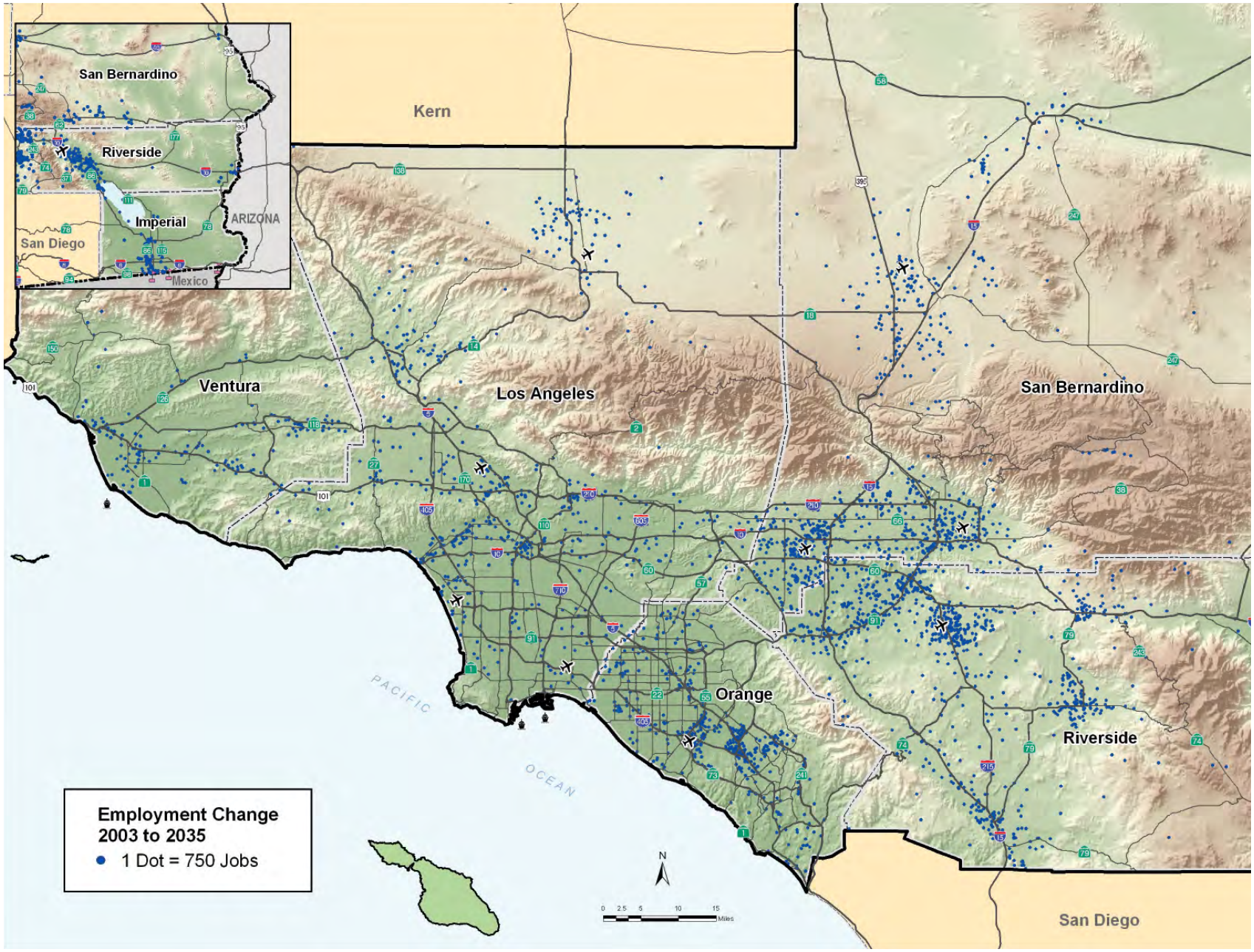
Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 2.5 2035 EMPLOYMENT



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 2.6 EMPLOYMENT INCREASE, 2003-2035



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

Table 2.5 summarizes the baseline growth forecast by county for 2035 population, households, and employment. The baseline growth represents a forecast based on current and expected demographic and economic trends, as well as previously adopted local land use policies within the SCAG Region.

TABLE 2.5 2035 POPULATION, HOUSEHOLDS, AND EMPLOYMENT (THOUSANDS)

	Baseline		
County	Population	Households	Employment
Imperial	320	103	133
Los Angeles	12,339	4,004	5,041
Orange	3,654	1,118	1,982
Riverside	3,597	1,183	1,414
San Bernardino	3,134	973	1,255
Ventura	1,014	330	463
SCAG Region	**24,057**	**7,711**	**10,287**

Source: SCAG Baseline Growth Forecast

Where do we live and work now, and where will we live and work in the future? The regional baseline forecasts are distributed to counties, subregions, and smaller geographies through an interactive collaborative process in which cities, subregions, regional agencies, experts, and stakeholders participated. Input from local jurisdictions plays an important role in determining the baseline growth distribution within their boundaries. Exhibit 2.1 shows where we lived in 2003 and Exhibit 2.2 shows where we are forecast to live in 2035. Exhibit 2.3 shows the difference between the two time periods. In terms of where we work, Exhibit 2.4 shows 2003 employment clusters, while Exhibit 2.5 shows anticipated 2035 employment clusters. Exhibit 2.6 shows the difference between the two time periods.

Mobility Challenges

The projected growth in the region is expected to place even greater demands on the transportation system. The SCAG Region is served by an extensive multimodal transportation system addressing all aspects of travel in the region, including commuters; shoppers; public transit patrons; truckers delivering goods both regionally and locally, such as groceries to the local supermarkets; as well as fire, police, and other emergency personnel. The roadway and freight rail networks serve the largest maritime ports system in the United States (the Ports of Long Beach, Los Angeles, and Hueneme) and a number of large airports, including the fifth-largest airport in the world (Los Angeles International Airport–LAX).

The region has over 20,750 centerline miles and over 65,000 lane-miles of roadways, including one of the most extensive High-Occupancy Vehicle (HOV) lane systems in the country. Additionally, the region has a growing network of tolled lanes and High-Occupancy Toll (HOT) lanes. Regionally significant arterials provide access to the freeway system and often serve as parallel alternate routes; in some cases, they are the only major system of transportation available to travelers.

The public transit network in the SCAG Region has been growing significantly over the last two decades, and this growth accelerated since the 2004 RTP. The region has approximately 640 bus routes and about 50 local bus operators, four commuter express bus services, two subway lines and three light rail lines operating in Los Angeles County, and the Metrolink commuter rail network spanning five of the six counties and northern San Diego County.

Despite this vast multimodal network, transportation in the SCAG Region is facing serious, unprecedented challenges. Although the first thought about Southern California transportation is congestion, other major related challenges are equally (or more) serious.

To truly understand these challenges, it is important to understand how we got to this point. How did we become the most congested metropolitan region in the country? Only by developing an in-depth understanding of the current situation and the factors that led to this situation can we try to develop consensus on the tough choices that are before us.

ROADWAY CONGESTION

The second-largest metropolitan area in the United States with over half of California's residents, the Southern California region is the most congested metropolitan area in the country. Over the past twenty years, traffic delays have nearly tripled in the region, and SCAG's Regional Transportation Model estimates the following alarming traffic delay statistics (defined as the difference in travel time between free-flow conditions and actual conditions):

- 3.9 million vehicle-hours of daily delay
- 5.7 million person-hours of daily delay
- 15 minutes of delay per capita during peak commute periods

Almost as frustrating as daily recurrent delay is the variability of travel time. For example, trips that on average take 30 minutes often last much longer due to incidents, collisions, weather, special events, construction activities, or other difficult-to-predict conditions. The frequency of such unpredictable delays over and beyond the "normal" congestion has been increasing steadily on our roadways. The combination of increasing congestion and decreasing predictability of travel times has led to our region's status as the capital of congestion in the country.

ROADWAY PRODUCTIVITY LOSSES

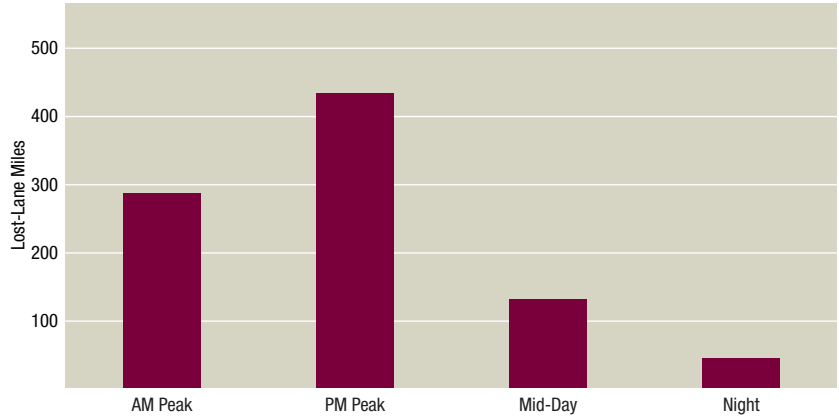
Roadways are built to provide traffic capacity to vehicles. For instance, freeways are generally built to provide a capacity of between 1,600 and 2,000 vehicles per hour per lane. When a segment of the freeway provides this "design" capacity, it is considered productive. However, the roadway system loses its productivity when it is unable to provide the capacity that it was designed to serve. This occurs at locations commonly referred to by transportation planners and engineers as bottlenecks and the queues building up behind

these bottlenecks (e.g., at freeway-to-freeway interchanges). The resulting productivity losses of the system occur generally during peak demand periods and are caused by merges, weaves, lane drops, stalls, accidents, and other factors. So, in effect, when demand is highest, system productivity actually decreases. Many freeway segments in the SCAG Region experience productivity losses and end up serving between 1,000 and 1,500 vehicles per hour per lane instead of the almost 2,000 vehicles per hour per lane for which they were designed.

When these productivity losses are aggregated, they can be presented in terms of "Lost Lane-Miles," which reflect the equivalent capacity subtracted from the roadway system. Figure 2.8 presents the results of an analysis to estimate the lost productivity in the SCAG Region based on actual traffic data from the region's freeway system during the four major time periods of the day: AM Peak, PM Peak, Mid-Day, and Night.

This "lost" capacity in the AM peak period, attributable to a large extent to non-recurring incidents such as accidents, weather conditions, stalled vehicles, etc., could have the effect of the loss of approximately 286 lane-miles of freeway capacity when it is needed the most. The cost of physically adding this lost capacity by widening existing facilities would exceed $4 billion.

FIGURE 2.8 PRODUCTIVITY RESULTS BY TIME PERIOD

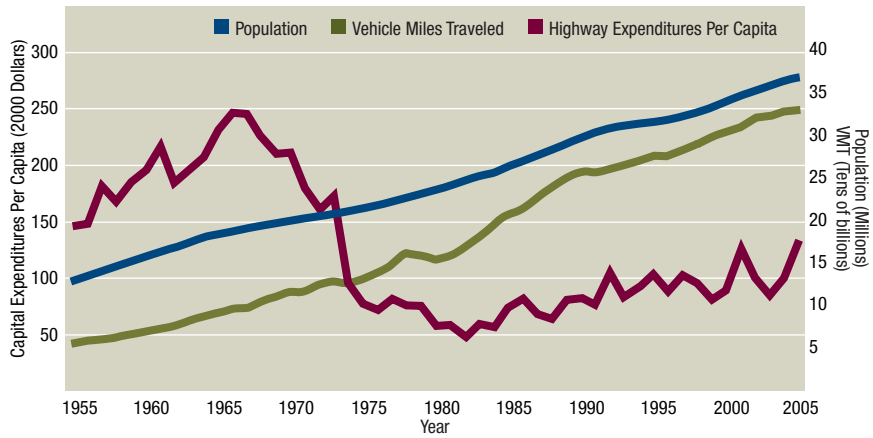


Source: Freeway Performance Measurement System (PeMS)

SUPPLY NOT KEEPING UP WITH DEMAND

As mentioned previously, people are moving further away from established urban areas, at least partly because of housing costs. This creates incremental demand for travel. The size of the roadway system, however, has not kept pace with population and transportation demand. Figure 2.9 illustrates this problem. The figure shows that while California's population and total vehicle miles traveled have more than doubled since 1970, expenditures on this vital system have decreased significantly beginning in the early 1970s and still have not reached the level of investments made during the 1960s. Once the preservation and operations costs are subtracted from these expenditures and the high construction inflation is accounted for, it is easy to understand why the supply of roadways did not keep up with the demand growth for over three decades.

FIGURE 2.9 CALIFORNIA POPULATION, TRAVEL, AND HIGHWAY EXPENDITURE TRENDS*



** Includes expenditures for local assistance and state highway capital outlay. Office of Transportation Economics/DOTP 9/2006*

Source: California Department of Transportation

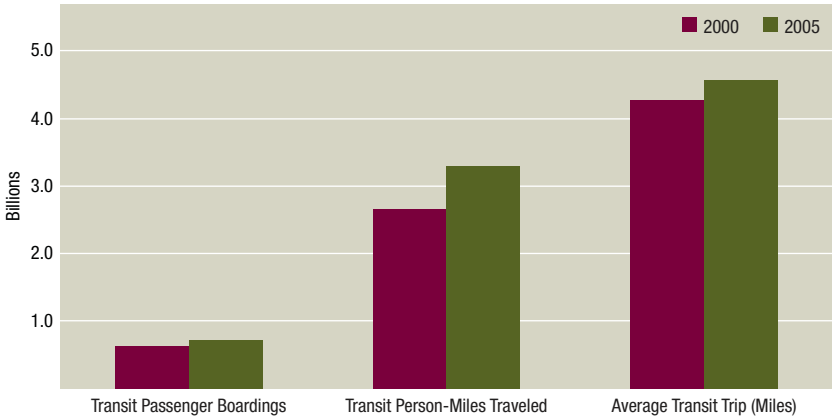
Note that these trends were not altogether unintentional. In fact, starting in 1980, a major shift occurred away from building roadways and into transit projects and services. This trend was planned and executed deliberately and understandably.

GROWING, BUT STILL MODEST PUBLIC TRANSIT USAGE

The investments in public transit since the 1980s have started to pay off. This success of transit is easily measured. Between 2000 and 2005, regional transit use increased by more than 16 percent, from 622 million annual unlinked passenger trips to more than 722 million, as shown in Figure 2.10. Transit person-miles traveled (PMT) increased by more than 24 percent to nearly 3.3 billion person-miles in 2005.

Continuing a trend of more per capita transit use that began in the mid-1990s, transit ridership per capita has reached nearly 40 boardings per person in the region by 2005. This rate had not been seen since the mid-1980s. Our regional investments in new transit modes and innovative services are a significant factor in achieving this growth. Additionally, more people are traveling longer distances, as shown in Figure 2.10. The length of an average transit trip increased from under 4.3 miles in 2000 to more than 4.5 miles in 2005. This represents a seven percent increase.

FIGURE 2.10 TRANSIT BOARDINGS AND PERSON-MILES TRAVELED, 2000-2005



Source: Federal Transit Administration (FTA) National Transit Database

However, regional transit operators still struggle to attract a significantly higher share of the traveling public. Despite the increase in boardings and per capita transit use, SCAG's Regional Travel Demand Model estimates that in 2003, less than 3 percent of all trips and person-miles traveled in the region were taken on public transit. A bright note is that since the rate of growth in transit use has outpaced growth in highway and arterial VMT by more than threefold since the year 2000, there are indications that regional investments may attract a greater share of the public in the future, especially with rising gasoline prices.

The development of new rail and bus transit corridors has spawned investment in new housing, retail, and business development at and near transit

stations. These changes in land use, as outlined in the Compass Blueprint program, primarily through transit-oriented development, may result in fewer auto trips and reduced VMT by creating urban environments that provide better access to jobs and services, which in turn encourages more walking, bicycling and transit use.

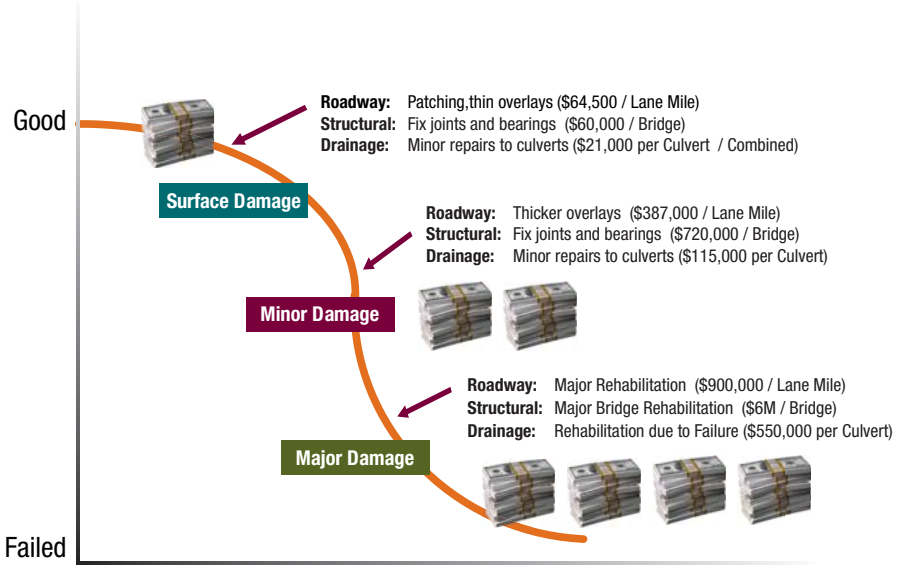
AGING INFRASTRUCTURE

The need to preserve our transportation assets adequately was brought to the nation's attention after the Minnesota I-35W bridge collapse during the summer of 2007. We must recognize that our roadway network and transit systems developed over the past decades are aging. These regional assets represent hundreds of billions of dollars of investments that must be protected in order to serve us and future generations. Without these assets, or even a portion of these assets, the region's mobility would be significantly compromised.

Unfortunately, our region's roadways, especially the State Highway System that is owned and operated by Caltrans, have not been maintained adequately. Caltrans reports that 28 percent of its pavement requires rehabilitation (based on 2005 statistics). Regional arterial studies have concluded similar needs.

Deferred maintenance leads to higher costs, as shown in Figure 2.11. Whereas pavement surface damage requires an investment of $64,000 per lane-mile to bring it to a state of good repair, the costs escalate significantly if these investments are not secured in a timely manner. In fact, the costs for minor damage repair escalate more than fivefold to $387,000, and the costs for major damage repair escalate to an astronomical $900,000 per lane-mile.

FIGURE 2.11 PRESERVATION COST-EFFECTIVENESS



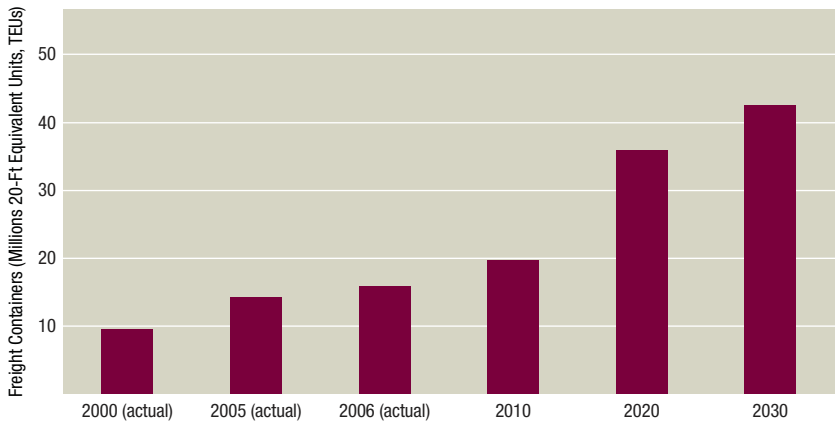
EXPLOSIVE GROWTH IN GOODS MOVEMENT

The SCAG Region's goods movement system serves as the gateway for both international and domestic commerce. Supported in part by its geographical advantages such as deep-water marine ports, and highly developed network of highways and railways, availability of transloading facilities and its large internal market, goods movement is the fastest-growing segment of the region's transportation sector. Every state in the nation receives goods that pass through Southern California, and the region is a cornerstone of the nation's global competitiveness.

The San Pedro Bay Ports, which include the Los Angeles and Long Beach Ports, currently handle approximately 40 percent of the volume imported into the country and approximately 24 percent of the nation's exports, and one out of every seven jobs in Southern California depends on this trade. Figure 2.12 reflects the explosive growth in container volume processed by the San Pedro

Bay Ports. It shows an almost 60 percent increase in volume between the years 2000 and 2006. Moreover, it also shows that this type of growth will continue, leading to an almost tripling of container volume by 2030.

FIGURE 2.12 SAN PEDRO BAY PORTS CONTAINER VOLUME TREND AND PROJECTIONS



Source: Port of Long Beach and Port of Los Angeles

As the only deep-water port between Los Angeles and San Francisco, the Port of Hueneme in Ventura County is a major shipping point for automobiles, fresh fruit and produce. Approximately $7 billion in cargo traverses through this Port annually, and trade-related activity generated by the Port contributes significantly to the local economy.

Cross-border trade activity also contributes to the region's international trade growth, with the growth in Mexico's manufacturing industry increasing truck trips through Calexico East in Imperial County by 77 percent between 1994 and 2005.

More than 75 percent of the containers processed by the ports in 2006 and 2007 involved at least one truck trip within the SCAG Region, either to a rail intermodal facility, a warehouse, or a transload facility. These trucks contribute to the existing congestion in the region and will contribute to future congestion even more, as the number of trucks is projected to increase significantly for several major freeways, as shown in Table 2.6.

TABLE 2.6 DAILY TRUCK VOLUMES BY CORRIDOR (THOUSANDS)

Freeway	2003*	2035*
I-110	21.1	27.8
I-405	33.2	39.4
I-10	26.3	47.0
US-101	32.3	40.2
I-105	20.8	30.8
I-5	35.7	62.1
I-710	38.6	63.3
SR-60	30.6	43.2
SR-111	1.8	6.2

** Daily Truck Volumes based on the maximum volume for a segment per freeway*

Source: SCAG Model

Recent projections included in SCAG's Inland Empire Railroad Main Line Study suggest that the number of freight trains on most Burlington Northern Santa Fe (BNSF) and Union Pacific (UP) lines will more than double between 2000 and 2025 in response to a tripling of container volume at the San Pedro Bay Ports. Although freight rail does not add to freeway congestion, it does pose serious quality of life issues for many communities. Some towns and cities witness 100 trains per day that literally split their communities into two sections for extended periods of time. Exhibit 2.8 shows the Colton crossing and suggests how rail traffic can seriously affect the quality-of-life and safety of a community.

EXHIBIT 2.7 SCAG REGION REGIONAL AIR CARRIER SYSTEM

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 2.8 COLTON AT-GRADE RAIL CROSSING

Source: Google Maps

As the expanding goods movement sector continues to have a positive impact on our economy, it will also have critical and far-reaching impacts on our region's transportation system and public health. An essential element to improving the region's goods movement system will be to reduce its current and long-term impacts on public health and the environment.

AVIATION CAPACITY AND GROUND ACCESS CONSTRAINTS

The SCAG Region supports the nation's largest regional airport system in terms of number of airports and aircraft operations, operating in a very complex airspace environment. Exhibit 2.7 shows the SCAG regional air carrier airport system. The system has six established air carrier airports, including Los Angeles International (LAX), Bob Hope (formerly Burbank), John Wayne, Long Beach, Ontario and Palm Springs. There are also four new and emerging air carrier airports in the Inland Empire and North Los Angeles County. These include San Bernardino International Airport (formerly Norton Air Force Base [AFB]), March Inland Port (joint use with March Air Reserve Base), Southern California Logistics Airport (formerly George AFB) and Palmdale Airport (joint use with Air Force Plant 42). The regional system also includes 45 general aviation airports and two commuter airports (Oxnard and Imperial), for a total of 57 public use airports.

There are significant challenges in meeting the future airport capacity needs of Southern California. Work on SCAG's 2004 RTP concluded that an Aviation Decentralization Strategy is needed to meet the forecast doubling of air passenger demand by 2030, from the current 90 million annual passengers (MAP) to 170 MAP (according to the 2004 RTP). This is because the four urban air carrier airports in Los Angeles and Orange Counties—LAX, Bob Hope, Long Beach and John Wayne—are all highly constrained. Their collective acreage amounts to 5,540 acres, which is less than 17% of the 34,000 acres of Denver International, and less than the 7,700 acres of Chicago O'Hare. At 3,500 acres, LAX is a very small international airport despite being the third-busiest airport in the country and fifth-busiest in the world in terms of passengers served. All of these urban airports have little room to expand because of severe encroachment by surrounding communities. In addition, two of these airports—Long Beach and John Wayne—have strict limits on allowable flights that are legally enforceable (one is a city ordinance and the other is a court settlement agreement) since they predate the Federal Airport Noise and Capacity Act of 1990 (ANCA).

The challenge of meeting future aviation demand in the SCAG Region is inextricably tied to airport ground access, since in order to meet that demand the region will need to get future air passengers from the urban areas of Los Angeles and Orange Counties to available airport capacity in the Inland Empire and North Los Angeles County. The challenge is complicated by the fact that the regional roadway system will become increasingly unreliable, with daily delay on the system expected to more than double. This will place a great

burden on the air traveler, who will have to allow for more time to get to the airport to catch his or her flight. It will make it difficult to expand the new airports with available capacity, since until they fully mature they will have few alternative flights to offer air travelers who miss their flights because of unreliable ground access. Unless the regional airport ground access system is substantially improved, many potential air travelers will choose not to fly at all, which will translate to substantial economic loss to the region.

Southern California airports play a crucial role in international trade, particularly with Pacific Rim countries, and to the regional economy. The value of airborne commodity exports out of the Los Angeles Customs District are about equal to waterborne exports, and airborne export values would be significantly greater if service exports, including impacts from tourism, were added to total export values. Therefore, the airport constraints our region faces pose a threat to our regional economy and well-being. A regional strategy is needed to help address this inter-regional mobility challenge.

Air Quality Challenges

The SCAG Region continues to have the worst air quality in the nation, even despite improvements gained in the last two decades. The recently documented health impacts of air pollution on people living in the South Coast Air Basin are staggering. Of all the people nationwide who are exposed to PM2.5 levels that exceed the federal health-based standard, 52% live here. Of all the people statewide who are exposed to these levels, 82% live here. This is estimated to result in 5,400 premature deaths and 980,000 lost work days per year.[1] These impacts, and the fact that a substantial portion of emissions are outside of local and state control, led SCAG to urge via Resolution the declaration of a state and federal emergency to address the air quality health crisis. Subsequently, the South Coast Air Quality Management District (SCAQMD), the California Air Resources Board (ARB), and SCAG collaboratively completed the difficult task of developing a plan to achieve the federal health-based PM2.5 and ozone standards in the South Coast Air Basin. Implementation of this plan will require vigorous effort and significant resources from both public and private stakeholders.

[1] Personal communication, Richard Bode, California Air Resources Board, 2007.

ATTAINMENT OF AIR QUALITY STANDARDS

Much of the region continues to exceed the National Ambient Air Quality Standards (NAAQS) identified in the Clean Air Act. The table below summarizes the non-attainment and maintenance areas within the SCAG Region.

TABLE 2.7 SCAG REGION NON-ATTAINMENT AND MAINTENANCE AREAS

Ozone	PM10	PM2.5	CO	NO_2
South Coast Air Basin (SCAB), Coachella Valley portion of Salton Sea Air Basin (SSAB), Ventura County portion of South Central Coast Air Basin (SCCAB), Western portion of Mojave Desert Air Basin (MDAB), Imperial County portion of SSAB	SCAB Coachella Valley portion of SSAB San Bernardino portion of MDAB Imperial County portion of SSAB	SCAB	SCAB	SCAB

Further, as demonstrated by the recent AQMP/SIP efforts of local air districts and the ARB, the region's efforts to attain the NAAQS continue to be challenging, as the South Coast Air Basin, the Ventura County portion of the South Central Coast Air Basin, the Western Mojave Air Basin, and the Riverside County portion (Coachella) and the Imperial County portion of the Salton Sea Air Basin will all be "bumping up" to worse ozone non-attainment designations since they cannot achieve the NAAQS in the time previously assumed. Further, the attainment plan to meet the ozone standard in the South Coast Air Basin includes undefined long-term ("black box") measures of approximately 200 tons per day of nitrogen oxides (NOx), which is a daunting amount of as-yet-unidentified emission reductions. Of additional concern are the upcoming 24-hour PM2.5 standards, which will require even greater reductions as well as possibly more stringent ozone standards. Consequently, the ARB, SCAQMD, and SCAG are committed to producing a white paper that identifies strategies to address the shortfall issues. Furthermore, there are strategies and programs in this Plan that will be incorporated into the white paper.

AIR QUALITY IMPACTS AND PROJECT IMPLEMENTATION

Another important consideration for air quality and transportation planning is the general inability of project sponsors to move proposed projects through the environmental review process. Community opposition is demanding mitigation of emissions from existing as well as future transportation facilities. Of equal concern, the failure to implement adequate SIPs for the region could result in federal sanctions, such as a ban on approval of new highway projects, loss of highway funding, and restrict our ability to spend local and private dollars, as well as more stringent emissions offsets for stationary sources.

Given the challenges that lie ahead, increased public awareness and a reinvigorated collaborative effort from all agencies and stakeholders are critical to bring this region into attainment of the federal air quality standards and to begin to address greenhouse gas (GHG) reduction targets. SCAG's contribution to this collaborative effort is essential, as emissions reductions from

goods movement, marine ports, aviation and land use have come to be front and center of the air quality challenge.

Climate Change

In addition to the aforementioned challenges, efforts to reduce GHGs will present another tremendous challenge to the transportation sector. Transportation is the largest source of GHG emissions in California, representing 38 percent of emissions (Figure 2.13), and emissions from the transportation sector have grown more rapidly than other sources over the past ten years.[2] California is the second-largest emitter of GHG emissions in the United States and the twelfth-largest emitter in the world, exceeding most nations. The Intergovernmental Panel on Climate Change of the United Nations has found overwhelming evidence that global climate change is occurring and is caused by human activity.[3] Global climate change involves an increase in the average atmospheric temperature of the earth caused by an enhanced greenhouse effect. Changes to the atmospheric temperatures would likely cause an increase in sea levels and alter weather patterns, thereby increasing the frequency and severity of extreme weather worldwide. Climate change also poses serious risks to our economy, water supply, biodiversity, and public health.[4]

These potentially catastrophic impacts have led to new efforts to reduce the amount of GHG emissions released into the atmosphere. In 2006, California passed the Global Warming Solutions Act, or AB 32, which requires a reduction of the state's GHG emissions to 1990 levels by 2020. This emissions target is equal to a 25% reduction from current levels. Longer-term targets have also been set through Executive Order S-3-05, which calls for a reduction of GHG emissions to 80% below 1990 levels by 2050. These reduction targets will have implications on the transportation sector and alter the way we fuel our future. For example, California's Low Carbon Fuel Standard (Executive Order S-01-07) requires a reduction in the carbon intensity of California's passenger vehicle fuels by at least 10 percent by 2020. The California Air Resources Board identified the Low Carbon Fuel Standards as a discrete early action item under AB 32, with a regulation to be adopted and implemented by 2010. Other transportation-related discrete early action items include green ports, Smart Way truck efficiency, and a tire inflation program.[5] In addition, AB 1007 requires the development and adoption of a state plan to increase the use of alternative transportation fuels by establishing a roadmap to help reduce our dependence on foreign oil. The State Alternative Fuels Plan was adopted by the California Energy Commission on December 5, 2007.

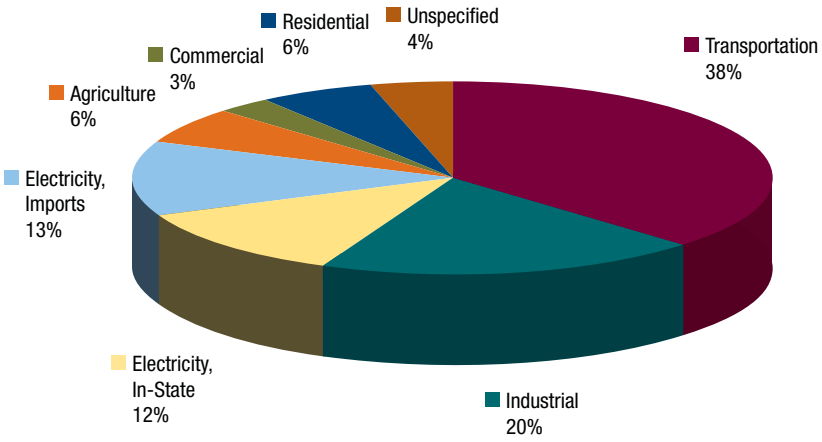
[2] California Air Resources Board, Greenhouse Gas Emissions Inventory (November 2007); United States Department of Transportation, Federal Highway Administration. Transportation and Global Climate Change: A Review and Analysis of the Literature. (June 1998.) DOT-T-97-03.

[3] Intergovernmental Panel on Climate Change. (February 2007.) Fourth Assessment Report of the IPCC, Climate Change 2007: The Physical Science Basis, Summary for Policy Makers.

[4] California Energy Commission. Our Changing Climate: Assessing the Risks to California (July 2006) CEC-500-2006-077. Retrieved March 26, 2007, from http://www.energy.ca.gov/2006publications/CEC-500-2006-077/CEC-500-2006-077.PDF

[5] California Air Resources Board. Expanded List of Early Action Measures to Reduce GHG Emissions in California Recommended for Board Consideration. October 2007.

FIGURE 2.13 2004 CALIFORNIA CLIMATE GREENHOUSE GAS EMISSIONS BY SECTOR



Source: California Air Resources Board, Greenhouse Gas Emissions Inventory (November 2007)

Energy

Environmental and geopolitical factors are causing energy experts to question the long-term viability of a fossil fuel-based energy future. The 2008 RTP begins to recognize the uncertainty of petroleum-based future, and seeks to better understand the implications of potential energy constraints. Travel demand forecasts generally assume that the future will include an abundant and relatively inexpensive supply of transportation fuels. If transportation fuel prices continue to increase, it would have a ripple effect on numerous areas including construction costs, gas tax revenue, travel and aviation demand, air emissions, mode choice and growth patterns. One area of uncertainty is how commuters may respond to higher gasoline prices. For example, a recent study suggests that with a ten percent increase in the gas price, there is a less than one percent change in gas consumption,[6] while other data show that an increase in gas prices coincides with an increase in transit ridership.[7] In addition, growth patterns may alter future demand for transportation fuels. Mixed land uses (i.e., residential developments near work places, restaurants, and shopping centers) with access to public transportation have been shown to save consumers over 500 gallons of gasoline per year.[8] Energy uncertainty requires serious consideration and further study. SCAG, with input from stakeholders, will continue to research the relationship between transportation, land use and energy uncertainty. The following issues have been recommended for additional study and deliberation prior to development of the next Regional Transportation Plan:

- How the price and availability of transportation fuels affects revenues and demand
- How increases in fuel efficiency could affect revenues and emissions

[6] Jonathan Hughes, Christopher R. Knittel, and Dan Sperling, "Evidence of a Shift in the Short-Run Price Elasticity of Gasoline Demand," February 14, 2007.

[7] California Energy Commission. Weekly Fuel Prices 1996-2007 and SCAG Transit Ridership data.

[8] Victoria Transport Policy Institute. Transportation Demand Management Encyclopedia.

- How the cost of commuting and personal travel affects mode choice and growth patterns
- How the cost of goods movement affects international trade and employment, and
- How the escalation of fuel prices affects the cost of infrastructure construction, maintenance and operation

Transportation Finance Challenges

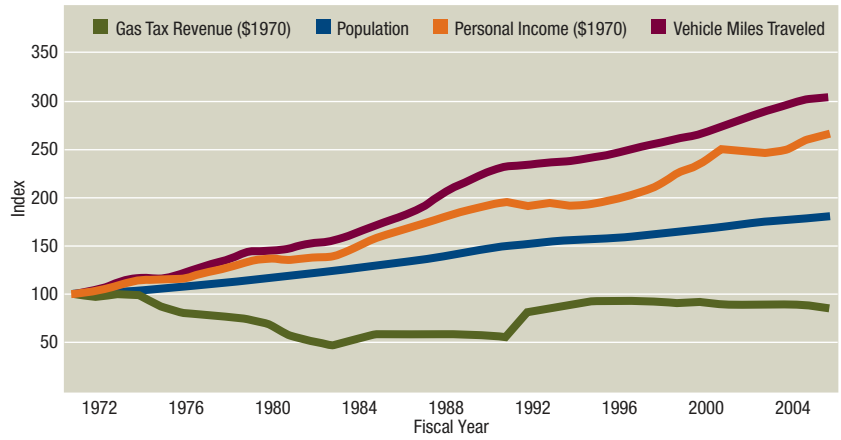
ONGOING FISCAL CHALLENGES

The SCAG Region continues to face shortfalls in transportation funding. The following briefly describes current and projected challenges that are likely to impact transportation revenues flowing to the region.

EROSION OF GASOLINE TAX REVENUES DUE TO INFLATION

Over the past four decades, transportation revenues (from gasoline taxes collected per gallon) in California have not kept pace with the state's ever-evolving demographic characteristics. Figure 2.14 shows how these tax revenues have fluctuated in real-dollar terms (adjusted for inflation) in relation to the steady growth in the demographic indicators. Indicators such as vehicle miles traveled, population, and personal income growth have all outpaced the rate of transportation revenue growth. The largest contributing factor is that the gasoline taxes are collected in cents per gallon. Without periodic adjustment or indexing, these funds will not keep pace with needs. Although the passage and recent renewal of local "self-help" transportation sales taxes have greatly improved funding for transportation, gasoline tax revenues continue to decline in value due to inflation.

FIGURE 2.14 REVENUE AND DEMAND TRENDS IN THE SCAG REGION



Sources: California Department of Transportation, California Department of Finance, U.S. Department of Labor

STATUS OF THE STATE HIGHWAY ACCOUNT

The viability of the State Highway Account remains a critical issue. The state's gasoline tax revenues are now exclusively dedicated to funding the needs of the State Highway Operation and Protection Program (SHOPP)—at a level, however, that is considerably less than actual needs. Continued underinvestment in the rehabilitation and maintenance needs of the State Highway System has serious ramifications—rapidly increasing the number of distressed lane-miles on the State Highway System and eroding the condition of the state's bridges. In recent years, transportation has relied heavily on the State General Fund to pay for capacity-enhancing projects. For example, funding for the State Transportation Improvement Program (STIP) has been dependent on Proposition 42 transfers (sales tax on gasoline). Reliance on the State General Fund means that transportation funding is subject to the state's annual budget process, which can be lengthy and unpredictable. Although the

recently passed transportation bond measure (Proposition 1B) serves as an important down payment, reliable and sustainable funding sources for transportation are necessary to meet the needs of a growing population.

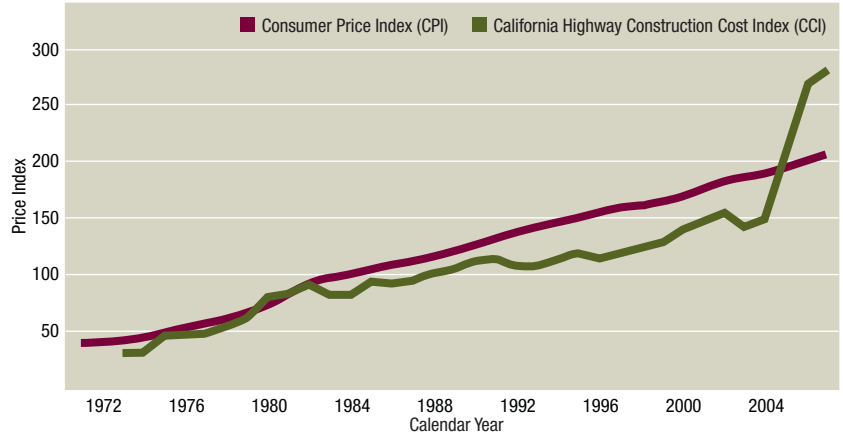
STATUS OF THE FEDERAL HIGHWAY TRUST FUND

The need to establish a reliable and sustainable transportation funding source is even stronger, as the Federal Highway Trust Fund may not have enough resources to meet all of its obligations by the end of the decade. Expenditures authorized under SAFETEA-LU have outstripped revenues generated by the federal per-gallon gasoline tax. As a result, the viability of the Highway Trust Fund will be a critical issue in discussions for the next round of the federal transportation reauthorization legislation, which will start in 2009.

CONSTRUCTION COST INCREASES

Over the last four years, construction costs in California and the nation have increased at an unprecedented rate and much faster than general inflation. Figure 2.15 shows increases in the California Highway Construction Cost Index since the 1970s compared to the Consumer Price Index. The recent run-up in construction prices is due to a variety of factors, including a residential and commercial building boom as well as higher demand for construction materials in developing countries, most notably, China. Although these trends are likely to fluctuate, they have caused many transportation projects to exceed their budgets in the short term and made long-term project cost forecasting uncertain.

FIGURE 2.15 CALIFORNIA HIGHWAY CONSTRUCTION COST & CONSUMER PRICE INDEX TRENDS



Source: California Department of Transportation and U.S. Bureau of Labor Statistics

III. TRANSPORTATION STRATEGY

The mobility challenges presented in Chapter II are linked to the continued growth of the SCAG Region. The demographic, economic, and geographic constraints unique to our region exacerbate the condition of an already burdened transportation system. To address these challenges, this chapter identifies the policies, strategies, and investments necessary to maintain, manage, and improve the region's transportation system through the year 2035. This vision reflects a regional consensus achieved over the last four years.

This chapter is organized into three main sections. The first section discusses SCAG's efforts to enhance transportation security and safety measures in the region, and specifically lists SCAG's responsibilities in emergency preparedness. The second section describes the various transportation strategies the SCAG Region has agreed to fund and implement through 2035. Particular focus is given towards the regional goods movement system because of the critical impact it has on the region's mobility, economy, and public health. The complete listing of RTP investments is contained in the separate RTP Project List available at www.scag.ca.gov. The third and last section identifies the environmental impacts posed by the transportation strategies listed in this chapter, and describes feasible approaches to mitigate those impacts.

Security and Safety First

TRANSPORTATION SECURITY

The SCAG Region is vulnerable to many types of catastrophic events including earthquakes, floods, fires, hazardous material incidents, dam failures, civil unrest, transportation accidents, tsunamis and terrorism.

California, through hard experience, has in place an emergency and response structure designed to be innovative for the different locations and types of emergencies. There are many agencies that will participate in the response to a disastrous event and ensure that their jurisdictions are prepared to respond to these hazards. To assist in this effort, this chapter identifies SCAG's potential role and responsibility in regards to the relationship between transportation and emergency preparedness.

SECURITY AND EMERGENCY PREPAREDNESS

SCAG's Regional Preparedness Goal is stated as, "to achieve and sustain at-risk target levels of capability to prevent, protect against, respond to, and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property, and the region."

SCAG'S ROLE

SCAG does not intend to undertake a first response or emergency management role. As a metropolitan planning organization (MPO), SCAG is limited to essentially three roles:

1. Provide a policy forum to help develop regional consensus and education on security policies and emergency response
2. Assist in the planning and programming of transportation infrastructure repairs, and
3. Leverage projects and planning functions (including Intelligent Transportation Systems, also known as ITS) that can enhance or provide benefit to transportation security efforts and those responsible for planning and responding to emergencies:
   - Integrate security into the regional ITS architecture, and
   - Become a central repository/mirror for regional Geodata that can be used for planning, training, response and relief efforts of law enforcement personnel and emergency responders

POLICIES

Within the goal of transportation security, SCAG aims to help prevent, protect from, respond to, and recover from major human-caused or natural events in order to minimize the threat and impact to lives, property, the transportation network and the regional economy.

Through stakeholder input, the Southern California Association of Governments (SCAG) developed an action plan and constrained policies detailing nine measures that the agency will undertake in the region's transportation security planning.

1. SCAG should help ensure the rapid repair of transportation infrastructure in the event of an emergency.
   a. SCAG, in cooperation with local and state agencies, should identify critical infrastructure needs necessary for: a) emergency responders to enter the region; b) evacuation of affected facilities; and c) restoration of utilities.
   b. SCAG, in cooperation with CTCs, California, and the federal government, should develop a transportation recovery plan for the emergency awarding of contracts to rapidly and efficiently repair damaged infrastructure.
2. SCAG should continue to deploy and promote the use of intelligent transportation system technologies that enhance transportation security.
   a. SCAG should work to expand the use of ITS to improve surveillance, monitoring and distress notification systems and to assist in the rapid evacuation of disaster areas.
   b. SCAG should incorporate security into the Regional ITS Architecture.
   c. Transit operators should incorporate ITS technologies as part of their security and emergency preparedness and share that information with other operators.
   d. Aside from deploying ITS technologies for advanced customer information, transit agencies should work intensely with ethnic, local and disenfranchised communities through public information/outreach sessions ensuring public participation is utilized to its fullest. In case of evacuation, these transit-dependent persons may need additional assistance to evacuate to safety.

3. SCAG should establish transportation infrastructure practices that promote and enhance security.
   a. SCAG should work with transportation operators to plan and coordinate transportation projects, as appropriate, with the Department of Homeland Security grant projects, to enhance the regional transit security strategy (RTSS).

b. SCAG should establish transportation infrastructure practices that identify and prioritize the design, retrofit, hardening, and stabilization of critical transportation infrastructure to prevent failure; to minimize loss of life and property, injuries; and avoid long-term economic disruption.

c. SCAG should establish a Transportation Security Working Group (TSWG) with goals of RTP consistency with RTSS, and to find ways SCAG programs can enhance RTSS.

4. SCAG should establish a forum where policy-makers can be educated and regional policy can be developed.

   a. SCAG should work with local officials to develop regional consensus on regional transportation safety, security, and safety/security policies.

5. SCAG will help enhance the region's ability to deter and respond to acts of terrorism and human-caused or natural disasters through regionally cooperative and collaborative strategies.

   a. SCAG should work with local officials to develop regional consensus on regional transportation safety, security, and safety/security policies.

   b. SCAG should encourage all SCAG elected officials to be educated in National Incident Management System (NIMS).

   c. SCAG should work with partner agencies and federal, state and local jurisdictions to improve communications and interoperability and to find opportunities to leverage and effectively utilize transportation and public safety/security resources in support of this effort.

6. SCAG will work to enhance emergency preparedness awareness among public agencies and with the public at large.

   a. SCAG should work with local officials to develop regional consensus on regional transportation safety, security, and safety/security policies.

7. SCAG should work to improve the effectiveness of regional plans by maximizing the sharing and coordination of resources that would allow for proper response by public agencies.

   a. SCAG should encourage and provide a forum for local jurisdictions to develop mutual aid agreements for essential government services during any incident recovery.

8. SCAG will help to enhance the capabilities of local and regional organizations, including first responders, through provision and sharing of information.
   a. SCAG should work with local agencies to collect regional GeoData in a common format, and provide access to the GeoData for emergency planning, training and response.
   b. SCAG should establish a forum for cooperation and coordination of these plans and programs among the regional partners including first responders and operations agencies.
   c. SCAG should develop and establish a regional information sharing strategy, linking SCAG and its member jurisdictions for ongoing sharing and provision of information pertaining to the region's transportation system and other critical infrastructure.
9. SCAG should provide the means for collaboration in planning, communication, and information sharing before, during, or after a regional emergency.
   a. SCAG should develop and incorporate strategies and actions pertaining to response and prevention of security incidents and events as part of the ongoing regional planning activities.
   b. SCAG should offer a regional repository of GIS data for use by local agencies in emergency planning and response in a standardized format.
   c. SCAG should enter into mutual aid agreements with other MPOs to provide this data, in coordination with the California OES in the event that an event disrupts SCAG's ability to function.

TRANSPORTATION SAFETY

The safety of the region's multimodal system is a critical priority for SCAG and the California Department of Transportation (Caltrans), which owns and operates the State Highway System. When examined historically, fatal and injury collisions (rate per million vehicle miles traveled) have steadily decreased in California since the 1930s.

While traffic fatalities in the SCAG Region are below the rest of California (the SCAG Region represents almost half of California's population), the number of fatalities has increased every year since 1999 after declining in the latter part of the 1990s.

In 2005, just over 1,800 people in the SCAG Region were killed in traffic accidents. Statewide, 4,304 were killed. Every year since 2002, the total number of traffic injuries in the SCAG Region has surpassed that in the rest of the state. Much of that can be attributed to the growth in vehicle miles traveled.

Additionally, in 2005, 372 pedestrians and 66 bicyclists were killed in the SCAG Region, representing 50 percent of pedestrians and 57 percent of bicyclists killed in California.

The 2008 RTP continues the commitment to improve safety for the region. In 2007, the region fully funded highway collision reduction and emergency response needs, estimated at $317 million and $110 million, respectively. This was the only category that was fully funded. Activities within this category include the construction of median barriers and response to landslides, as depicted in Exhibits 3.1.1 and 3.1.2.

EXHIBIT 3.1.1 HIGHWAY COLLISION REDUCTION MEASURES

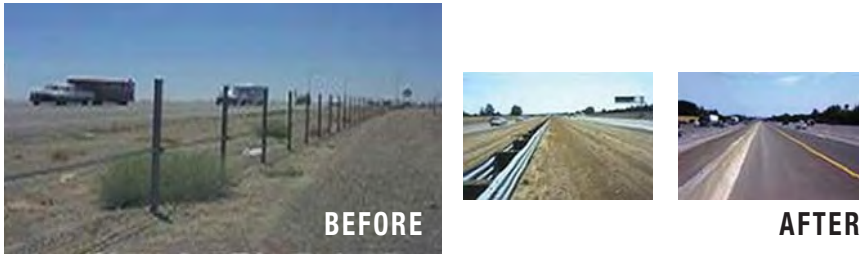


EXHIBIT 3.1.2 EMERGENCY RESPONSE NEEDS

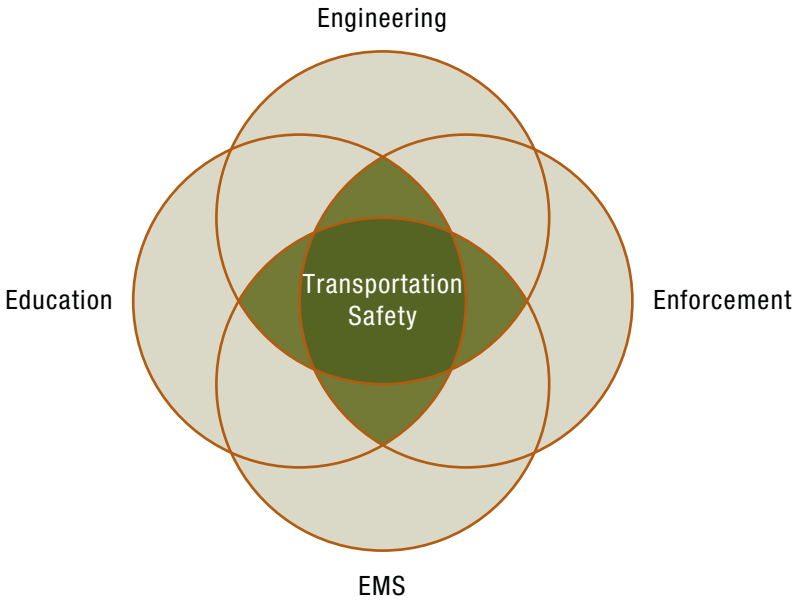
Through 2035, the RTP forecasts expenditures of $10 billion for safety-related projects and services. This is in addition to safety standards considered as part of every project design. The scope of this RTP goes beyond specific funding for safety preparedness or emergency response. It emphasizes the collaboration among SCAG, Caltrans, and their stakeholders to examine safety on a system basis so the region can use all the tools available to decrease traffic injuries and fatalities. The result of this collaboration is the California Strategic Highway Safety Plan.

CALIFORNIA STRATEGIC HIGHWAY SAFETY PLAN

In 2005, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was passed. The legislation required that each state develop a Strategic Highway Safety Plan (SHSP) and that all metropolitan long-range transportation plans should be consistent with the SHSP.

When addressing transportation safety, the four Es are frequently referenced to describe the multidisciplinary nature of transportation safety planning. The four Es are Engineering, Education, Emergency Medical Services (EMS), and Enforcement. The area in which planners have the most ability to effect change is likely to be engineering and the development of physical improvements to the transportation system.[1]

FIGURE 3.1 THE FOUR "E" ELEMENTS IN TRANSPORTATION SAFETY PLANNING



Additionally, a fifth E, or Evaluation, can be applied to this paradigm. Evaluation refers to monitoring and reviewing the effectiveness of the other four Es, allowing modifications where applicable. The California draft SHSP lists 16 challenge areas designed to reduce accidents, fatalities and injuries. Figure 3.2 presents the 16 Challenge Areas and resultant strategies that were developed during several workshops held by Caltrans for various stakeholder agen-

[1] Transportation Planner's Safety Desk Reference, Report No. FHWA-HEP-07-005.

FIGURE 3.2 CHALLENGE AREAS AND THE CORRESPONDING REGIONAL RESPONSE AS OUTLINED IN THE STRATEGIC HIGHWAY SAFETY PLAN (SHSP)

SAFETEA-LU requires that the region's plan be consistent with the California Strategic Highway Safety Plan

SHSP Challenge Area	RTP Discussion	Regional Response
• Reduce the Occurrence and Consequence of leaving the roadway and head-on collisions • Improve Driver Decisions about Rights of Way and Turning • Improve Intersection and Interchange Safety for Roadway Users • Make Walking and Street Crossing Safer • Improve Safety for Older Roadway Users • Improve Commercial Vehicle Safety • Improve Bicycle Safety	In Safety Chapter	• Identify projects that address safety in designated "hot spots" • Encourage transportation projects that specifically enhance safety or complement education, enforcement or EMS for each challenge area • Request RTP project submissions that identify the portion of the project that is applied to safety elements and/or project components for motorized and non-motorized users, including older drivers, bicyclists and pedestrians.
• Reduce Impaired Driving Related Fatalities • Ensure Drivers are Licensed and Competent • Increase Use of Safety Belts and Child Safety Seats • Reduce Young Driver Fatalities • Reduce Speeding and Aggressive Driving • Improve Motorcycle Safety • Enhance Work Zone Safety • Improve Post Crash Survivability • Improve Safety Data Collection, Access and Analysis	Outside of SCAG's RTP Role	• Endorse Cooperation with regional and local law enforcement, emergency response and education agencies as they address these transportation safety challenges. • Work with the state and county transportation commissions to determine if various project submissions have potential benefit to safety in these challenge areas.

cies statewide, including SCAG. Each Challenge Area contains the following elements:

- Establishment of a goal for improving safety by 2010
- Background information on the Challenge Area including a history of fatalities from 1995 – 2004
- Strategies being considered for implementation to achieve the Challenge Area goal
- Institutional and other issues that could affect the success of the implementation

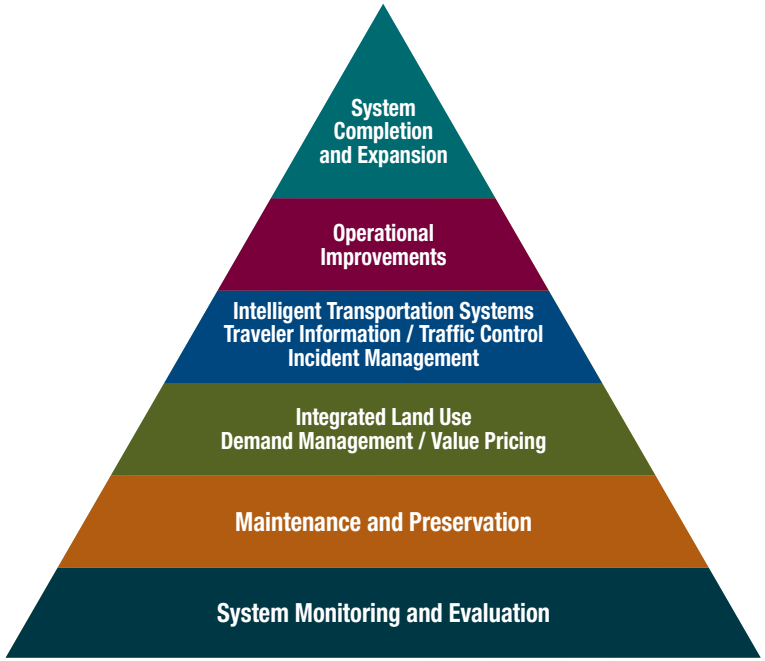
Separate security and safety reports elaborate on the contents of this table.

Managing Our Transportation System Wisely

The region recognizes that maintaining and improving mobility will no longer depend solely on its ability to expand its multimodal transportation system. Instead, an integrated approach--based on the statewide GoCalifornia initiative--is needed to maximize mobility. Depicted in Figure 3.3, the five elements of the pyramid represent integrated strategies that work cooperatively to maximize mobility. The pyramid depicts the idea that transportation investments would have more impact if they were prioritized strategically as suggested. System monitoring and evaluation is the basic foundation upon which the other strategies are built. System expansion and completion will provide the desired mobility benefits to the extent that investments in, and implementation of, the strategies below it achieve progress. An improvement in mobility will occur when strategic investments in each of the elements are coordinated between the elements. The mobility pyramid provides the framework for the discussion of the RTP's transportation investment strategies.

Complementing our transportation investment philosophy is the performance-measures approach utilized in developing this Plan. While the pyramid approach ensures that our funding priorities are clear and rational, performance measures ensure that the best performing projects are included in the Plan for funding.

FIGURE 3.3 MOBILITY PYRAMID



SYSTEM MONITORING AND EVALUATION

In order to be effective system managers, we must have an in-depth understanding of how our system performs and why it performs that way. For instance, we all know congestion is a problem in the region. But we must also be able to quantify congestion and understand its various causes. Only by understanding these causes can we identify the optimal mix of strategies and projects that yield the highest returns on the region's investments. The same holds true for transit, goods movement, and aviation.

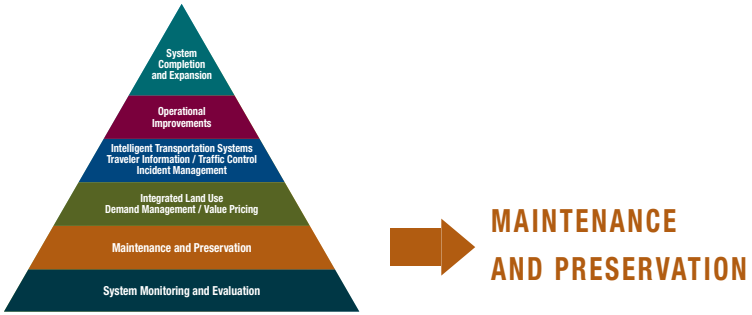
The base of the mobility pyramid, entitled "System Monitoring and Evaluation," is the foundation of sound system management. It calls for the use of

performance measures to track and monitor the progress of the transportation system so that the region can make informed decisions regarding transportation investments. Transportation professionals and decision-makers have recently committed to improving the region's ability to properly fund the investments needed to comprehensively monitor and evaluate system performance. These investments include detection, closed-circuit television systems, bus global positioning systems, and automatic ridership counting

systems. Although funding is modest for these activities, they lead to more informed decisions. Further discussion of system monitoring is contained in Chapter VI.

As we move forward, our focus will evolve into a comprehensive system management approach, which aims to protect, maximize the productivity of, and strategically expand our transportation system.

PROTECTING OUR REGION'S TRANSPORTATION ASSETS



Over the decades, the region has invested hundreds of billions of dollars in our multimodal transportation system. The system is now aging and requires immediate attention. Preserving our assets is a critical priority of this RTP.

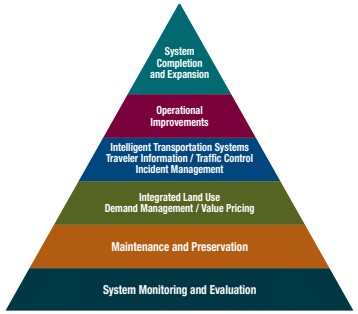
In a sense, the region must make up for past funding shortfalls. As discussed in Chapter II, roadway expenditures have not kept up with demand over the last three decades. As a result, we have not properly funded roadway preservation needs. The recent passage of the Infrastructure Bond injected much needed funding to highway preservation. However, SCAG estimates that an additional $30 billion is required to bring the system into a comprehensive state of adequate repair.

SCAG also estimates that an additional $10 billion is required for arterials and transit preservation needs. The subsequent shortfall for highway, arterial, and transit preservation needs totals $40 billion. Deferring maintenance only increases this shortfall over time.

Recognizing that every dollar expended today to address this shortfall would save much more in the future, the region committed $8 billion of new funding to preservation, thereby addressing at least 20 percent of preservation needs. As more funding becomes available, additional commitments will be made. These additional investments will ensure that over the next thirty years, our infrastructure will be in a better condition than it is today. This also

means that user costs (e.g., vehicle maintenance costs) will decline compared to today.

SCAG will continue to work with its stakeholders, particularly county transportation commissions and Caltrans, to prioritize funding for preservation and maintenance.



INTEGRATED LAND USE AND DEMAND MANAGEMENT

The next set of strategies on the mobility pyramid focus on better managing demand on the transportation system through the integrated growth forecast, a statement of advisory land use policies and strategies, and encouraging alternative modes of travel.

INTEGRATED GROWTH FORECAST

In February 2005, SCAG initiated the 2008 RTP Growth Forecast Update Process, now known as the 2008 "Integrated Growth Forecasting" process. The resulting Baseline Growth Forecast established the projected population, employment, households and housing units for use in the 2008 RTP.

The Baseline Growth Forecast sets the stage for a future regional growth scenario, as it ties housing to transportation planning, considering both needs simultaneously in communities throughout the region. This approach ensures that the resulting assumptions are consistent with planned transportation infrastructure. Based on a combination of recent and past trends, reasonable key technical assumptions, and existing and new local policy options, the Baseline Growth Forecast provides the basis for developing the land use

assumptions at the regional and small-area levels which build the 2008 RTP Plan Alternative. A detailed description of the growth forecast methodology is available in the 2008 RTP Growth Forecast Report.

Advisory Land Use Policies and Strategies

The 2008 RTP Plan Alternative incorporates the Baseline Growth Forecast and the approved transportation network. However, in the rapidly growing SCAG Region, these trends could be tempered, and in some cases bolstered, by policies and strategies designed to improve future travel patterns and vehicle emissions. In response, SCAG adopted a set of advisory land use policies and strategies for future regional planning efforts and for localities to consider as they accommodate future growth. These policies and strategies were founded upon the principles developed through the regional growth visioning efforts begun in 2001.

- **Identify regional strategic areas for infill and investment**

  Identify strategic opportunity areas for infill development of aging and underutilized areas and increased investment in order to accommodate future growth. This strategy makes efficient use of existing and planned infrastructure, revitalizes communities, and maintains or improves quality of life.

  Strategic areas are primarily identified as those with potential for:

  - Transit-oriented development (TOD)
  - Existing and emerging centers
  - Small mixed-use areas

- **Structure the plan on a three-tiered system of centers development**

  Identify strategic centers based on a three-tiered system of existing, planned, and potential, relative to transportation infrastructure. This strategy more effectively integrates land use planning and transportation investment.

- **Develop "complete communities"**

  Create mixed-use districts or "complete communities" in strategic growth areas through a concentration of activities with housing, employment, and a mix of retail and services, located in close proximity to each other. Focusing a mix of land uses in strategic growth areas creates complete communities wherein most daily needs can be met within a short distance of home, providing residents with the opportunity to patronize their local area and run daily errands by walking or cycling rather traveling by automobile.

- **Develop nodes on a corridor**

  Intensify nodes along corridors with people-scaled, mixed-use developments. Many existing corridors lack the residential and commercial concentration to adequately support non-auto transit uses, without which the existing transit system cannot fully realize its potential for accommodating additional trips and relieving the transportation system. These nodes along the corridor also create vibrant, walkable communities with localized access to amenities, further reducing reliance on the automobile for a variety of trips.

- **Plan for additional housing and jobs near transit**

  Pedestrian-friendly environments and more compact development patterns in close proximity to transit serve to support and improve transit use and ridership. Focusing housing and employment growth in transit-accessible locations through this transit-oriented development approach will serve to reduce auto use and support more multimodal travel behavior.

- **Plan for a changing demand in types of housing**

  Shifts in the labor force, as the large cohort of aging "baby boomers" retires over the next 15 years and is replaced by new immigrants and "echo boomers," will likely induce a demand shift in the housing market for additional development types such as multi-family and infill housing in central locations, appealing to the needs and lifestyles of these large populations.

- **Continue to protect stable existing single-family areas**

  Continue to protect stable existing single-family neighborhoods as future growth and a more diverse housing stock are accommodated in infill locations near transit stations, in nodes along corridors and in existing centers. Concurrently, focusing growth in central areas and maintaining less development in outlying areas preserves the housing option for large-lot single-family homes, while reducing the number of long trips and vehicle miles traveled to employment centers.

- **Ensure adequate access to open space and preservation of habitat**

  Ensure access to open space and habitat preservation despite competing quality-of-life demands driven by growth, housing and employment needs, and traditional development patterns. Development patterns that focus growth in centers and corridors make the most efficient use of developed land and minimize encroachment on public open space and natural habitat. This approach would ensure improved access to existing large-scale and neighborhood-scale open space.

- **Incorporate local input and feedback on future growth**

  Continue public outreach efforts and incorporate local input through the Integrated Growth Forecast process. This innovative approach provides a more accurate forecast that integrates future land use and transportation planning through growth projections for population, employment, households and housing units. Public workshops, scenario planning, and stakeholder outreach improve the accuracy and feasibility of pursuing regional plans at the local level.

These policies have evolved since 2001, when SCAG initiated one of the first large-scale regional growth visioning efforts in the nation. Through its Compass Blueprint Growth Vision, SCAG sought to integrate land use and transportation through a consensus-built regional plan. Compass Blueprint was developed with the goal of accommodating the six million additional residents expected by 2030, while improving mobility for all residents, fostering livability in all communities, and enabling prosperity for all people, and promoting sustainability for future generations. The 2004 Growth Vision Alternative was approved and adopted by the Regional Council as the Preferred Growth Alternative for the 2004 Regional Transportation Plan. The Compass Blueprint principles that were established provide the foundation for the advisory land use policies and strategies adopted in the 2008 Regional Transportation Plan.

These advisory policies and strategies encourage changes to the urban form that improve accessibility to transit and create more compact development, which yields a number of transportation benefits to the region, including reductions in travel time, vehicle miles traveled, vehicle hours traveled, and vehicle hours of delay, as well as increased transit use and mode share. All of these effects lead to tangible air quality improvements.

SCAG's Compass Blueprint Program has become a model for turning regional vision into local reality. Since 2004, SCAG has used innovative planning tools, creative strategies and dynamic partnerships to expand its Suite of Services and Demonstration Project consulting services that are available to all local governments in the region, free of charge.

As a voluntary program, SCAG provides these cutting-edge tools, analyses and comprehensive planning services to cities that seek additional technical expertise or strategic planning in order to implement a plan, ordinance or program consistent with the Compass Blueprint Principles.

Popular tools in the Compass Blueprint Suite of Services include photo-morph and 3D video "fly-through" visualizations, a sophisticated "Tipping Point" return-on-investment tool that simulates a developer's pro forma for potential projects and the "Envision" GIS based land use scenario-building tool. Building upon the Suite of Services, Compass Blueprint Demonstration Projects combine public participation, design and financial analysis to produce local plans that respond to community interests and are market feasible, i.e., plans that will be adopted and realized because of their benefits to all stakeholders. Demonstration Projects range from parcel-specific zoning analyses to county-wide plans around transit stations, and include an array of services including tipping point and business functionality analyses, design charrettes and com-

munity workshops, housing prototypes and conceptual land use plans, parking studies, and transit-oriented development strategies.

With an ever-growing portfolio of completed, documented Demonstration Projects, an expanding Suite of Services, and significant improvements to existing tools, implementation efforts have seen sustained improvement since the Growth Vision was adopted. SCAG recently launched "Toolbox Tuesdays," a series of training seminars for local planning staff through which they can learn the skills and software capabilities necessary to build their own in-house capacities for using the Compass Blueprint-developed tools. This transferability is a cornerstone of the implementation strategy. Demonstration Projects are scoped to be just that -- examples for others to emulate. The Compass Blueprint website and annual Awards Program event are other important vehicles for sharing lessons learned. Services have been sought through the Compass Blueprint program for over 50 sites in jurisdictions all over the region.

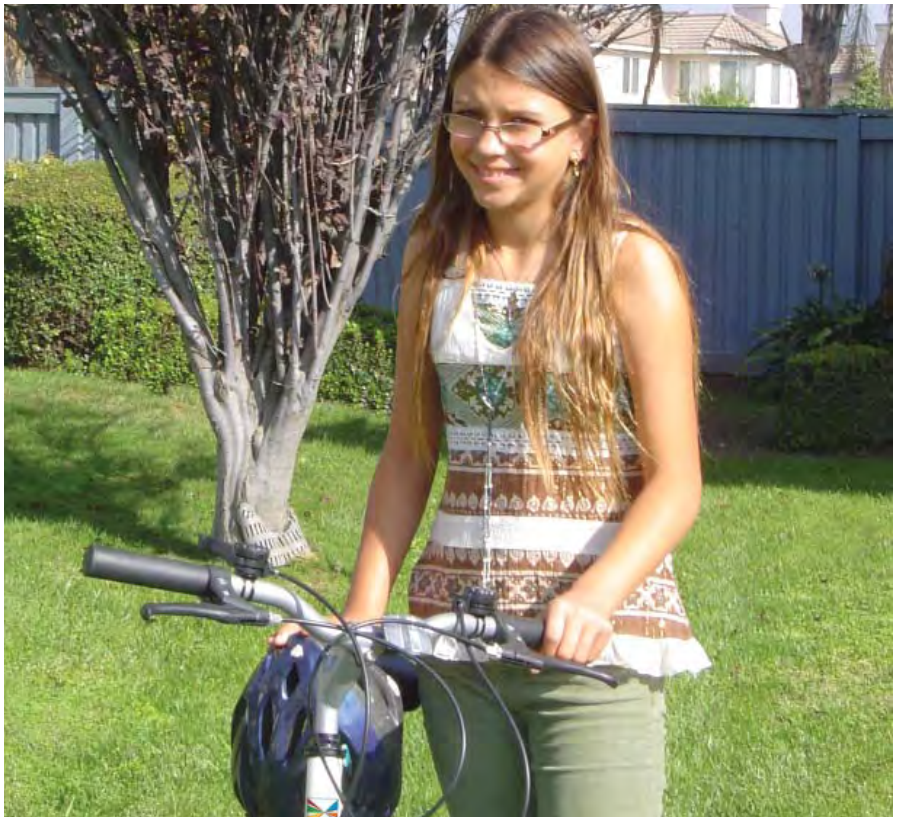
- Azusa
- Baldwin Park
- Brea
- Coachella
- Colton
- Compton
- Corona
- Covina
- El Centro
- El Monte
- Fillmore
- Fontana
- Fullerton
- Glendora
- Hawthorne
- Hemet
- Highland
- Imperial County
- Irwindale
- La Habra
- Lake Elsinore
- Lancaster
- Lawndale
- Los Angeles
- Los Angeles County
- Montclair
- Moreno Valley
- Ontario
- Perris
- Placentia
- Rancho Cucamonga
- Rialto
- Riverside
- Rolling Hills Estates
- San Bernardino
- San Gabriel
- South Pasadena
- Temecula
- Upland
- Ventura (City)
- Ventura County

TRAVEL DEMAND MANAGEMENT

Travel demand management (TDM) strategies are designed to influence an individual's travel behavior by making alternatives to the single-occupant automobile more attractive, especially during peak commute periods. There are two types of TDM strategies: voluntary, or "soft," strategies – such as preferential parking for carpoolers – that aim to lure some to alter their travel behavior in response to voluntary inducements; and "hard" strategies – such as congestion pricing – that shift the behavior of a large number of travelers by changing the price of travel. TDM also can include regulatory strategies, such as regional employer ridesharing mandates.

TDM strategies that encourage the use of alternatives modes of transportation to the single-occupant vehicle include rideshare (carpools and vanpools), transit (bus and rail), and non-motorized modes (bicycling and walking). Additional TDM strategies include alternative work-hour programs, such as compressed work-week programs, flextime (variable work schedules), and work at home (telework-part time and home-based businesses/self-employed-full time) and parking management (preferential parking for carpoolers and parking pricing). Providing the public with reliable and timely traveler information is an operational strategy that allows people to make better decisions about when and how to travel. Knowledge about current travel conditions on the transportation system can be used by travelers to select among alternatives to driving alone or by avoiding making the trip altogether, which is also known as congestion avoidance.

The potential effectiveness of TDM now and in the future depends largely on social and institutional commitments that cause individual travelers to choose a mode of travel other than solo driving, as well as funding (marketing and incentives that change travel behavior). If we were to do nothing beyond our current efforts, the region would not sustain the current levels of ridesharing, non-motorized and telework/telecommute/work at home, let alone expand them over the 2008 RTP period. The region recognizes the importance of TDM strategies and includes a significant level of funding to meet the TDM goals.



The "soft" strategies identified in this Plan include increasing ridesharing, work at home, and non-motorized transportation. For rideshare, telecommute, and park-n-ride activities, the RTP provides investments of over $1.3 billion through 2035. In the future, we will need to emphasize some of the "hard" strategies, especially parking and congestion pricing. This will require significant analysis, consensus building, and public education. However, pricing benefits have proven to be more sustainable over time and complement the integrated land use strategies adopted by the region.

Increasing Rideshare (Carpool and Vanpool)

The SCAG Region continues to invest heavily in High-Occupancy Vehicle (HOV) infrastructure that provides incentives for commuters to share rides with others. While HOV utilization is growing over time, the percent of total travelers using carpools and vanpools is not. SCAG and its partners will strengthen their efforts to encourage this efficient mode, which reduces travel time and improves air quality. These efforts will include:

- Program public funds in the RTIP to help maintain the public sector share of the existing rideshare market and to increase the number of carpools
- Provide "seamless" intra- and inter-county carpool services to the regional traveler
- Formalize and expand partnerships among public- and private-sector stakeholders to improve delivery of vanpool services regionally
- Increase the number of commuter vanpools through more effective marketing and the provision of non-monetary public-sector incentives
- Identify current dedicated funding sources and work with county transportation commissions and partners on identifying additional new funding sources
- Expand the provision for vanpool services in the region by encouraging employers to offer incentives, and develop policies that encourage employers to provide such services
- Maintain and sustain a regionally coordinated marketing strategy among the public and private sectors to enhance vanpool programs, increase ridership and improve outreach efforts

Increasing Work at Home

Increasing the number of workers who work at home (self-employed, home-based business owners) or who telework/telecommute (wage and salary employees conducting some or all of their work from home) decreases home-based work trips, vehicle-miles of travel, congestion and vehicle emissions. National and regional surveys of those who telecommute indicate that it is a lack of support and trust from "management," rather than the provision of equipment or the desire of workers to telecommute, that hampers the growth

of telecommuting. The 2008 RTP, therefore, recommends the following actions:

- Formalize and expand partnerships among public- and private-sector stakeholders to increase opportunities for wage and salary workers regionally to telecommute in lieu of daily commuting
- Promote telecommuting to increase opportunities for wage and salary workers regionally to telecommute in lieu of daily commuting.

Non-Motorized Transportation

Commuter trips within the region average a self-reported distance to work of 19.2 miles, too far for many bicyclists and all pedestrians. However, the integration between bicycle and transit nodes offers the opportunity to extend the commuting range of bicyclists. In addition to work trips, there are many ways that bicycling and walking are playing an important role in our transportation system. According to the 2001 National Household Travel Survey, in urban areas, 50 percent of all trips were less than 3 miles, and 28 percent of all trips were less than 1 mile. These trips are ideal for biking, walking, and transit or a combination of those modes of travel.

Caltrans photo © Steve DeVorkin

Bicycle transportation infrastructure has a role in regional mobility and air quality improvements. Every single percent of automobile drivers that switch to alternative transportation choice (walking, bicycling, using transit) reduces air pollution, congestion, the need for increasing roadway capacity, and, in the case of walking and bicycling, improves public health.

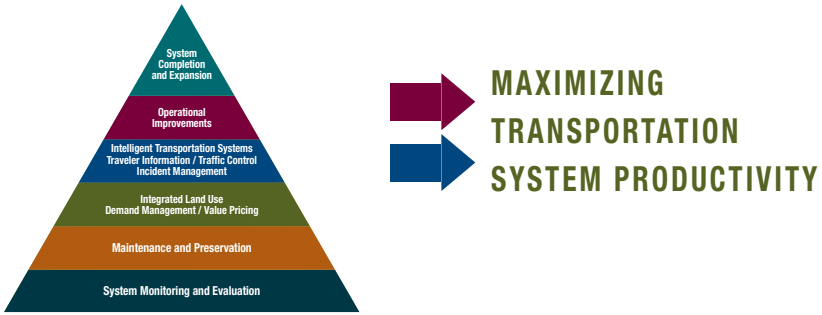
Bicyclist and pedestrian improvements are included as part of many street maintenance and construction projects. These investments and the supporting policies summarized below all aim to maximize the benefits of these efficient modes of transportation.

1. Decrease bicyclist and pedestrian fatalities and injuries in the state to 25% below 2000 levels. Ways to address non-motorized safety were discussed under Transportation Safety.
2. Increase accommodation and planning for bicyclists and pedestrians: The needs of non-motorized travel (including pedestrian, bicyclists and persons with disabilities) need to be fully considered for all transportation planning projects.
3. Increase bicycle and pedestrian use in the SCAG Region as an alternative to utilitarian vehicle trips: Create and maintain an atmosphere conducive to non-motorized transportation, including well-maintained bicycle and pedestrian facilities, easy access to transit facilities, and increasing safety and security. While pedestrian sidewalks are fairly well established in most areas, it is estimated that there are only 3,218 miles of dedicated bicycle facilities in the region, with an additional 3,170 miles planned.
4. Increase non-motorized transportation data: To make non-motorized modes an integral part of the region's intermodal transportation planning process and system, reliable data for planning are needed. Non-motorized transportation data needs include, but are not limited to, comprehensive user statistics; user demographics; bicycle travel pat-

terns/corridors; accident mapping; bikeway system characteristics; and sub regional improvement projects and funding needs.

5. Bicyclists and pedestrians should always be included in general plan updates. SCAG also encourages the development of local Non-Motorized Plans. Also, Non-Motorized Plans that have been created or updated within the previous five years are eligible for bicycle transportation account (BTA) funds. SCAG can assist in the development of these plans through the Compass Blueprint Program.
6. Develop a Regional Non-Motorized Plan: SCAG will work with all counties and their cities to coordinate and integrate all Non-Motorized Plans from counties and jurisdictions in the SCAG Region in a collaborative process, including interested stakeholders.

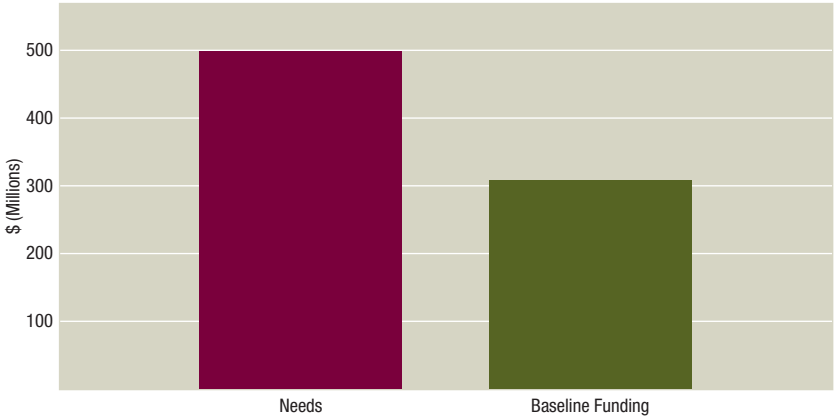
The RTP allocates over $1.8 billion for non-motorized transportation.



The region has built a vast and expensive transportation system. Like any system, it can be operated to be much more productive. Just like a factory can be refined and modernized to produce more output per day or hour, our transportation system can be refined and modernized to carry more people and goods in a day or during peak commute conditions.

Chapter II of this document discussed the lost productivity quantified in terms of "lost lane-miles" on the State Highway System. Similar productivity losses occur for all modes when they are not operated adequately. The investments needed to maximize the productivity of our system through 2035 total $308 million, and include implementation of advanced traffic control strategies (e.g., signal coordination, ramp metering), improved incident management, and smaller physical infrastructure modifications (e.g., auxiliary lanes). Figure 3.4 shows that originally planned investments in operational strategies for the highway system reflect a shortfall of approximately $190 million per year.

FIGURE 3.4 SCAG REGION HIGHWAY OPERATIONS NEEDS VS. BASELINE FUNDING, 2007-2035



Source: SCAG estimates based on Caltrans SHOPP and county transportation commission project submittals

The shortfall through 2035 adds up to $8.4 billion once inflation is taken into account. Similarly, SCAG estimates a deficit of $1.6 billion through 2035 for implementing operational strategies for arterials of regional significance and transit.

Recognizing that funding these provide a higher return on investments than most other transportation projects, this RTP allocates an additional $2 billion, representing 20 percent of the shortfall. As these allocations are programmed and implemented, it is SCAG's hope that the benefits will become apparent to decision-makers and the public, and additional funding is secured to address the remaining shortfall.

SCAG will work with stakeholders, particularly the county transportation commissions and Caltrans, to better determine the benefits and cost effectiveness of operational strategies. SCAG will also continue to partner with Caltrans on corridor system management plans.

Transit Operations

In addition to funding for operations, the 2008 RTP highlights the following policies to improve the performance of the regional transit system.

Strategic Transit Service Policies

In an effort to maximize transit productivity, the 2008 RTP calls upon regional transit operators to address significant challenges to achieve better operational efficiency, maintain a discipline of cost recovery through a consistent fare policy, embrace the use of performance metrics to better serve their existing customer base, and attract new transit users. The Plan encourages the regional transit operators to work cooperatively to offer complementary services, with ease of transfer between modes and operators. It further encourages utilization of new intelligent transportation system (ITS) technologies that measure system performance and offer their customers reliable "on-time" performance and real-time information.

Reliability and On-Time Performance

On-time performance is the key to delivering the greatest customer satisfaction. Wait times are affected by service irregularities and therefore customers are more sensitive to unpredictable delays. Reliability can also be related to transfer times between buses or between modes (bus to train). When customers experience long unscheduled gaps in service and if timely connections are not made, they are less likely to see transit as a viable alternative.

The Plan recommends that SCAG and transit operators analyze and assess the use of ITS technologies to track, report, and improve on-time performance of transit systems. In addition, operators should utilize this data to identify the causes of delay and use it to improve performance of transit systems through operational improvements, rapid bus implementation, and better scheduling of services. SCAG will seek funding in the next OWP (FY08-09) to conduct this assessment.

Transit Service Levels

Frequency of service is also a concern for transit customers. Long waits for service make transit service inconvenient and deter the use of transit. Poor service levels limit the potential use of transit for non-work trips for social, retail, recreational, and tourism purposes. SCAG should work cooperatively with regional and local transit operators to develop service delivery policies to optimize transit service levels, including frequency, coverage, and hours of operation to achieve maximum potential use of our transit investments. SCAG will seek funding in the next OWP (FY08-09) to conduct this assessment.

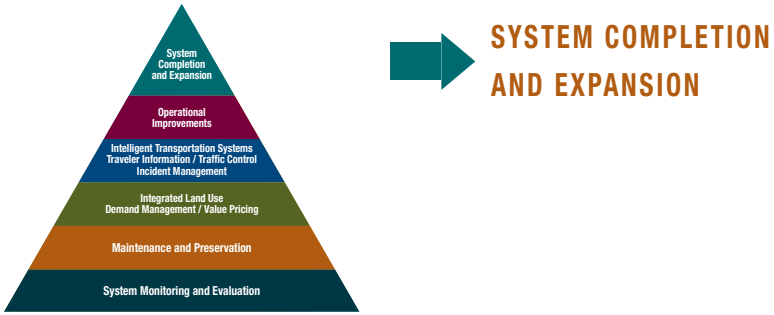
Fare Policies, Fare Media, and Subsidies to Transit

SCAG recommends that an analysis be conducted to identify and recommend appropriate adjustments to transit fares to maximize transit usage, including fare-free concepts. This includes utilizing new automated fare media to allow for ease of transit use; increasing subsidy levels to maximize transit usage; and analyzing regional transit fare policies to assess the proper level of fares, optimal fare media to allow for ease of connectivity among transit systems, appropriate subsidy policies, and appropriate mechanisms to assure stable operational funding to maximize transit use in the region. SCAG will seek funding in the next OWP (FY08-09) to conduct this assessment.

Increase Transit Service Connectivity

SCAG recommends that transit operators assess how to better restructure transit services, as needed, to more effectively connect different urban centers and activities. SCAG also recommends that transit operators assess ways to enhance connectivity and ease of transfer between transit modes. In consultation with transit operators, SCAG will conduct an analysis of transit operations; identify existing and emerging hubs and centers; and analyze how to more effectively ensure optimal coverage, access, and connectivity to regional centers. SCAG will also work with transit operators to develop service poli-

cies and route structures that support the RTP land use concepts, facilitate intermodal transit connectivity, and maximize transit usage. SCAG will seek funding in the next OWP (FY08-09) to conduct this assessment.



Despite the increases in funding commitments to both preservation and operations, more than half of the available transportation revenues in the region are dedicated to the completion and expansion of our people and goods movement transportation systems. This section first summarizes the expansion investments for the SCAG Region by mode, and then presents additional regionally significant expenditures to facilitate and mitigate the movement of goods in the SCAG Region.

HIGHWAY IMPROVEMENTS

Major categories of highway improvements included in the 2008 RTP are High- Occupancy Vehicle (HOV) lanes and connectors, mixed-flow (or general purpose) lanes, toll facilities and High-Occupancy Toll (HOT) lanes, and strategic arterial improvements.

A significant number of system expansion projects have already been committed through SCAG's RTIP for the highway network. These priority projects close critical gaps in the system, relieve significant bottlenecks, and address inter-county travel needs. Recent extraordinary increases in the costs of concrete and steel have resulted in substantial project cost increases and forced implementing agencies to piece together enough additional funding to deliver the improvements. Voter approval of Proposition 1B in November 2006 brought much-needed revenue to the table, through programs such as the Corridor Mobility Improvement Account (CMIA). Much of the additional improvements recommended in the 2008 RTP, beyond those projects that are already in the delivery pipeline, have been committed through local sales tax revenues such as those recently approved by voters in Orange, Riverside, and San Bernardino Counties. The proposed projects and strategies are based on a performance framework established for the 2004 RTP and updated for the 2008 RTP.

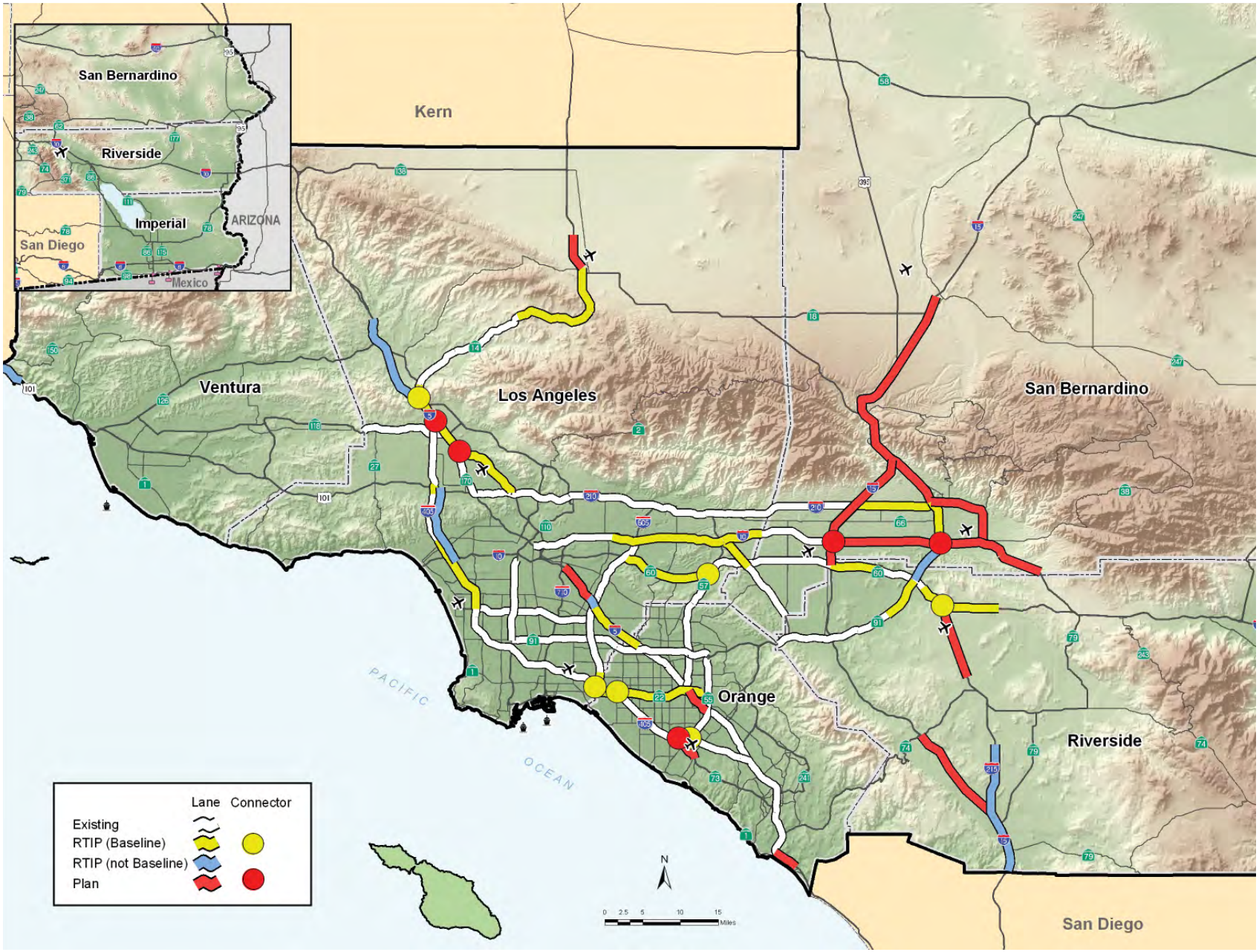
Recently completed Regionally Significant Transportation Investment Studies (RSTIS) have helped to identify additional corridor improvements needed in the SCAG Region. These corridor projects provide capacity enhancements and mobility improvements to address rapidly growing inter-county travel, often on already congested facilities with few alternatives. These projects have been incorporated into the RTP, and they will depend in part on financial contributions from the private sector for their construction, operation, and maintenance.

HOV Gap Closures and Connectors

Southern California has invested heavily in HOV lanes, producing one of the nation's most comprehensive HOV networks and highest rideshare rates. The HOV projects proposed in the RTP focus on strategic gap closures and freeway-to-freeway direct HOV connectors to complete the system. The HOV lane network could eventually serve as the backbone of a regional HOT lane or managed lane system. Determining the feasibility of such a regional system will require further study and discussion before inclusion in a future RTP update.

In 2007, the new SR-22 HOV lanes in Orange County opened as the first continuous-access HOV lanes in Southern California. Monitoring and evaluation of these HOV lanes will conclude in 2008 and transportation officials will decide whether the continuous access will be made permanent.

EXHIBIT 3.2 HOV GAP CLOSURES AND CONNECTORS



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

The HOV lane system is a regional network and operations should be coordinated across jurisdictional boundaries to optimize performance and minimize confusion. SCAG supports further study and evaluation of these proposed operational changes to the HOV lane system to fully understand the mobility, safety, and air quality impacts, as well as any implications for a potential regional HOT lane system.

Projects in the Pipeline

The RTIP includes HOV gap closures and connectors as shown in Exhibit 3.2.

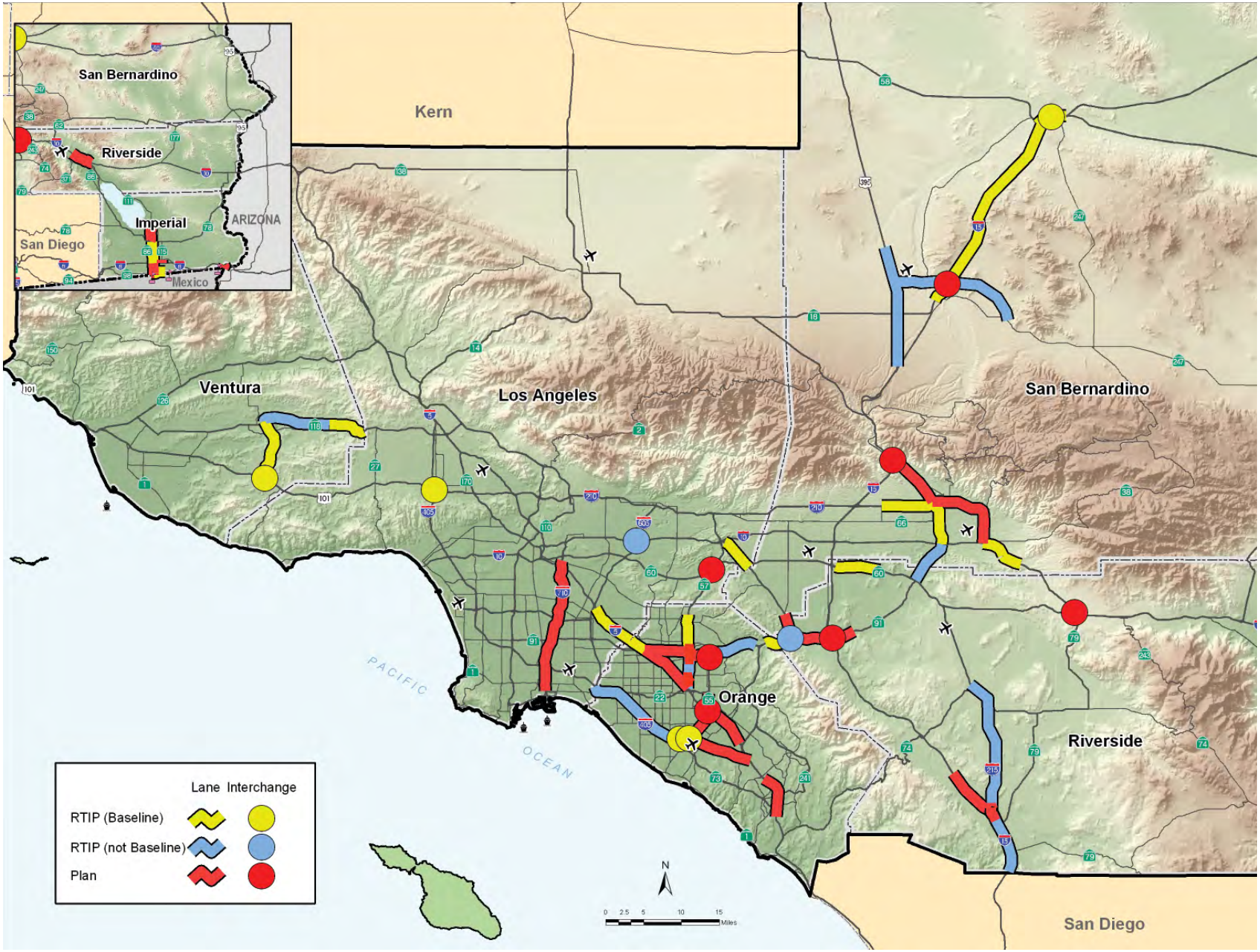
- I-405 in the Westside of Los Angeles
- SR-91 in Riverside
- I-5 and SR-14 connecting the San Fernando Valley to North Los Angeles County
- I-5 and I-605 connecting Los Angeles and Orange Counties
- I-10 and SR-60 connecting Los Angeles and San Bernardino Counties
- SR-60 and I-215 connecting Riverside and San Bernardino Counties
- US-101 connecting Ventura and Santa Barbara Counties
- HOV connectors at I-5/SR-14, SR-57/SR-60, SR-22/I-405, I-405/I-605, and SR-60/I-215

Additional Investments

The 2008 RTP calls for additional investments to extend the HOV network and construct additional connectors, as shown in Table 3.1 and in Exhibit 3.2. It invests close to $8 billion for HOV improvements through 2035. These gap closures and connectors help users to maximize the overall system performance by minimizing weaving conflicts and maintaining travel speeds.

Caltrans photo ©Steve DeVorkin

EXHIBIT 3.3 MIXED FLOW LANE ADDITIONS



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

TABLE 3.1 HOV AND HOV CONNECTOR PROJECTS

Project	County	Implementation Schedule*
I-5 (SR-19 to I-710)	Los Angeles	2035
SR-14 (Ave P-8 to Ave L)	Los Angeles	2030
I-5/I-170 connector	Los Angeles	2030
I-5 / I-405 connector	Los Angeles	2030
I-5 (Avenida Pico to Coast Hwy)	Orange	2018
I-5 (SR-55 to SR-57)	Orange	2035
SR-73 (I-405 to MacArthur)	Orange	2035
SR-73/I-405 connector	Orange	2035
I-15 (I-215 to SR-74)	Riverside	2020
I-215 (Nuevo to Box Springs)	Riverside	2020
I-10 (Haven to Ford)	San Bernardino	2020
I-10 (Ford to Riverside County)	San Bernardino	2030
I-10/I-15 connector	San Bernardino	2030
I-10/I-215 connector	San Bernardino	2030
I-15 (Riverside County to I-215)	San Bernardino	2020
I-15 (I-215 to SR-18)	San Bernardino	2020
SR-210 (I-215 to I-10)	San Bernardino	2020
I-215 (SR-210 to I-15)	San Bernardino	2030

** Represents the Plan network year for which a project was analyzed for the RTP modeling and regional emissions analysi*

Mixed Flow

Since mixed-flow lanes carry more traffic than any other component of our transportation system, mixed-flow capacity enhancements are necessary to address traffic bottlenecks and relieve congestion on heavily traveled corridors. This is especially true in areas outside of the urban core where transit service and the HOV network are not fully developed. The majority of mixed-flow projects in the pipeline and proposed in the 2008 RTP are located outside of Los Angeles County.

Projects in the Pipeline

The RTIP contains mixed-flow lane additions on the following routes (see Exhibit 3.3).

- Brawley Bypass in Imperial County
- I-5, I-405, and SR-57 connecting Los Angeles and Orange Counties
- SR-91 connecting Orange and Riverside Counties
- CETAP Mid-County Parkway in Riverside County
- SR-60 and I-215 connecting Riverside and San Bernardino Counties
- I-15 and I-215 connecting Riverside and San Diego Counties
- US-395 in northern San Bernardino County
- Completion of the 210 freeway in San Bernardino County
- SR-23, SR-118, and US-101 in Ventura County

Additional Investments

The 2008 RTP invests $26.2 billion through 2035 for mixed-flow improvements and interchange ramps. Major mixed-flow improvements are listed in Table 3.2 and shown in Exhibit 3.3.

TABLE 3.2 MIXED-FLOW HIGHWAY PROJECTS

Project	County	Implementation Schedule*
SR-111 (SR-98 to I-8)	Imperial	2030
I-710 (Ocean Blvd in Long Beach to intermodal railroad yards in Commerce/Vernon)	Los Angeles	2020
I-5 (SR-73 to El Toro)	Orange	2035
I-5 (SR-133 to SR-55)	Orange	2030
I-5 (SR-57 to SR-91)	Orange	2030
SR-55 (I-405 to SR-22)	Orange	2030
SR-57 (Orangewood to Katella)	Orange	2018
SR-57 (Lincoln to Orangethorpe)	Orange	2020
SR-91 westbound (SR-57 to I-5)	Orange	2018
SR-91 eastbound (SR-57 to SR-55)	Orange	2023
SR-91 westbound (SR-241 to Gypsum Cyn)	Orange	2018
I-405 (I-5 to SR-55)	Orange	2035
I-10 (Monterey to Dillon)	Riverside	2030
I-15 (Bundy Cyn to I-215)	Riverside	2014
SR-71 (SR-91 to San Bernardino County)	Riverside	2035
SR-91 (Pierce to Orange County)	Riverside	2018
I-215 (Murrieta Hot Springs to I-15)	Riverside	2014
SR-210 (I-215 to I-10)	San Bernardino	2020
I-215 (SR-30 to I-15)	San Bernardino	2030

** Represents the Plan network year for which a project was analyzed for the RTP modeling and regional emissions analysis*

Toll and High-Occupancy Toll (HOT) Lane Corridors and Facilities

The 2008 RTP proposes to expand upon the existing HOT lane and toll road system in Orange County to address the congested commuter corridor between housing-rich Riverside County and job-rich Orange County. Additionally, improvements to several major corridors elsewhere in the region are proposed to be financed by tolls.

Projects in the Pipeline

The RTIP includes lane additions to each of the toll roads in Orange County and the construction of the Foothill South corridor connecting to I-5 in San Diego County (see Exhibit 3.4).

- SR-73 – San Joaquin Hills Corridor
- SR-133/SR-241/SR-261 – Eastern Transportation Corridor
- SR-241 – Foothill Transportation Corridor North
- SR-241 – Foothill Transportation Corridor South (extension to I-5)

Additional Investments

The recommendations from several recent major RSTIS efforts examining inter-county travel have been considered in the development of the 2008 RTP. First, the Riverside County to Orange County study completed in 2006 identifies a comprehensive set of improvements that includes extending the SR-91 Express Lanes into Riverside County and providing direct connections to and from the Express Lanes. Additionally, the study identifies two major new facilities, one parallel to the SR-91 and one on a new alignment further south. Secondly, a North Los Angeles County study completed in 2004 recommended a new east-west facility called the High Desert Corridor to connect the high-growth areas of Lancaster/Palmdale and Victor Valley. While the RSTIS provides input to the RTP on a locally preferred strategy, SCAG recognizes and respects the local processes that must continue to solidify community consensus and further refine each project.

In 2006, MTA completed a technical feasibility study examining the potential for constructing the SR-710 Gap Closure between the I-10 and I-210 freeways as a tunnel. SCAG has further assessed the potential for the Gap Closure to be financed in part through a public-private partnership. A number of tolling structures were considered in the financial analyses, including both flat-rate

EXHIBIT 3.4 HOT LANES AND TOLL FACILITIES

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

and variable-toll rate structures. SCAG anticipates that structuring financing alternatives with lower-cost Private Activity Bonds (PABs) and 30- to 50-year -term bonds could help to improve shareholders' internal rate of return.

Additionally, SCAG's current evaluations to date indicate that the project is feasible from a construction standpoint. Two 46-foot inner diameter tunnels could provide two levels of lanes. The upper level could include three lanes for passenger vehicles, and two lanes in the middle level could accommodate truck and high-occupancy vehicles. The SR-710 Gap Closure is estimated to cost $4.6 billion.

The 2008 RTP invests $25.6 billion for toll and HOT lane facilities. These additional investments are listed in Table 3.3 and shown in Exhibit 3.4.

TABLE 3.3 HOT LANES AND TOLL FACILITIES

Project	County	Implementation Schedule*
SR-710 Tunnel Gap Closure (710/Valley Blvd to California Blvd/Pasadena Ave)	Los Angeles	2020
High Desert Corridor (I-5 to US-395)	Los Angeles/ San Bernardino	2030
SR-91/SR-241 HOT connectors	Orange	2020
CETAP Riverside County to Orange County Corridor A (Parallel to SR-91 from I-15 to SR-241)	Orange/Riverside	2035
CETAP Riverside County to Orange County Corridor B (I-15/Mid-County Pkwy to SR-133/SR-241) Preliminary Engineering and Environmental Impact Report/Statement	Orange/Riverside	PE/EIR/EIS ONLY
SR-91 Express Lanes (extend east to I-15)	Riverside	2020
I-15 HOT Lanes (SR-74 to San Bernardino County)	Riverside	2020
SR-91/I-15 HOT connectors	Riverside	2020

** Represents the Plan network year for which a project was analyzed for the RTP modeling and regional emissions analysis*

Arterial Improvements

Local streets and roads account for over 80 percent of the total road network and carry a high percentage of total traffic. In many cases, arterials serve as alternate parallel routes to congested freeway corridors. In mature urban areas there is often little right-of-way available for capacity enhancements. In the fast-growing suburban and exurban parts of the region, local jurisdictions ensure that roadway capacity improvements keep pace with new developments by implementing mitigation fees. In all parts of the region, operational and technological improvements have the potential to maximize system productivity in a more cost-effective way than simply adding capacity. Such strategic "smart street" improvements include spot widening, signal prioritization, driveway consolidation and relocation, and grade separations at high-volume intersections. The 2008 RTP invests approximately $17.1 billion for arterial system improvements as shown in Table 3.4.

TABLE 3.4 ARTERIAL INVESTMENT SUMMARY

County	Investment (in billions, nominal dollars through 2035)
Imperial	$1.0
Los Angeles	$1.5
Orange	$2.0
Riverside	$6.9
San Bernardino	$4.8
Ventura	$0.9
Regional Total	$17.1

Note: Numbers may not add due to rounding

TRANSIT STRATEGIES

Public transit has grown in recent years to become an increasingly integral mode of transportation for the movement of people to and from jobs, school, shopping, and cultural and recreational activities. The region has experienced substantial growth in daily regional transit trips since 2003, and anticipates the trend to continue.

The goals of public transportation services are to ensure mobility for people without access to automobiles, and to provide attractive alternatives for drive-alone motorists or discretionary riders. The public transportation strategies and programs presented in the RTP are developed with these goals in mind. As listed previously in this chapter, these strategies target improving customer service and system reliability, achieving financial stability for operators, and enhancing the safety and security of the system for all riders and operators.

Transit Expansion

The RTP recommends closing critical gaps in the transit system to improve service, and extending routes to serve a greater number of passengers. Our regional transit investments in new modes and innovative services are a significant factor in achieving increased transit use. The development of new rail and bus transit corridors has also spawned investment in new housing, retail, and business development at and near transit stations.

Projects in the Pipeline

The transit projects that are programmed in the RTIP and ready for implementation include expansions to the Bus Rapid Transit (BRT) system, commuter rail, and light rail. Refer to Exhibit 3.5 for an illustration of bus transit projects, and Exhibit 3.6 for rail projects that are included in the 2008 RTP.

Bus Rapid Transit (BRT) is designed to provide fast, high-quality bus service to passengers by taking advantage of signal priority at intersections, operating in mixed traffic or in a dedicated right-of-way, and providing improved bus stop spacing at planned stations. The following BRT projects are programmed in the RTIP:

- Metro Rapid Bus Expansion (to 28 lines) in LA County
- San Fernando Valley North-South BRT (Reseda/Sepulveda & Canoga Corridor) in LA County
- Wilshire Metro Rapidway in LA County
- Harbor Blvd. BRT (Fullerton to Costa Mesa) in Orange County
- Westminster/17th BRT (Santa Ana to Long Beach) in Orange County
- 28-Mile BRT (Brea Mall to Irvine Transportation Center) in Orange County
- E Street Transit Corridor (San Bernardino to Loma Linda) in San Bernardino County

Metrolink is the commuter rail service that operates in five Southern California counties. The Southern California Regional Rail Authority (SCRRA) provides and maintains Metrolink services and facilities. The following commuter rail project is programmed in the RTIP.

- Perris Valley Line (Riverside to Perris) in Riverside County

Light Rail Transit (LRT) utilizes electric-powered vehicles that operate primarily on exclusive rights-of-way. The Metro Rail system comprises the Metro Blue, Green, Red, Purple and Gold Lines. LRT projects programmed in the RTIP include:

- Gold Line Eastside Extension (Union Station to Atlantic) in LA County
- Exposition Corridor Phase 1 (Downtown LA to Culver City - Washington/National) in LA County
- Exposition Corridor Phase 2 (Culver City - Washington/National to Santa Monica) in LA County
- Gold Line Foothill Extension Phase 1 (Pasadena to Azusa-Citrus) in LA County
- Crenshaw Corridor in LA County (may be BRT or LRT)

EXHIBIT 3.5 BUS RAPID TRANSIT PROJECTS

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 3.6 RAIL TRANSIT PROJECTS

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

Additional Investments

The 2008 RTP invests over $44.0 billion in transit projects. Of this amount, nearly $23.3 billion is allocated to bus and intermodal facilities; nearly $6.2 billion to commuter rail projects; and close to $14.5 billion to heavy rail, light rail, and other projects. The major projects included in the RTP that address system gaps and provide strategic corridor expansion are listed in Table 3.5.

TABLE 3.5 TRANSIT CORRIDOR PROJECTS

Project	County	Implementation Schedule*
Regional Connector LRT (Union Station to 7th St/Metro Center)	Los Angeles	2035
Gold Line Foothill Extension Phase 2 (Azusa-Citrus to Montclair)	Los Angeles	2020
Westside Extension (Metro Purple/Red Line Extension)	Los Angeles	2020
Green Line Extension (Mariposa/Nash to Century/Sepulveda LAX, technology TBD)	Los Angeles	2030
Katella BRT (Orange Transportation Center to Long Beach/Blue Line)	Orange	2014
Edinger BRT (Tustin to Huntington Beach)	Orange	2018
Beach Blvd BRT (Huntington Beach to Buena Park)	Orange	2012
La Palma BRT (Anaheim to Buena Park)	Orange	2018
Great Park/Spectrum 5-Mile Transit System	Orange	2012
Western Riverside BRT (Magnolia Corridor Phase 1 City of Riverside; Moreno Valley Corridor Phase 2 City of Moreno Valley)	Riverside	2018
Coachella Valley BRT	Riverside	2018
Perris Valley Line Extension (Perris to San Jacinto)	Riverside	2030
Perris Valley Line Extension (Perris to Temecula)	Riverside	2030
Redlands Extension (4th St/Mt. Vernon to Grove/Central, rail technology TBD)	San Bernardino	2014

** Represents the Plan network year for which a project was analyzed for the RTP modeling and regional emissions analysis*

AVIATION

The SCAG Region supports the nation's largest regional airport system in terms of number of airports and aircraft operations, operating in a very complex airspace environment. The system has six established air carrier airports including Los Angeles International (LAX), Bob Hope (formerly Burbank), John Wayne, Long Beach, Ontario and Palm Springs. There are also four new and emerging air carrier airports in the Inland Empire and North Los Angeles County. These include San Bernardino International Airport (formerly Norton AFB), March Inland Port (joint use with March Air Reserve Base), Southern California Logistics Airport (formerly George AFB) and Palmdale Airport (joint use with Air Force Plant 42). Southern California airports play a crucial role in international trade, particularly with Pacific Rim countries, and to the regional economy. The value of airborne commodity exports out of the Los Angeles Customs District are about equal to waterborne exports, and airborne export values would be significantly greater if service exports, including impacts from tourism, were added to total export values.

The aviation strategy is very similar to the 2030 decentralized regional aviation system adopted for the 2004 RTP. It respects all legally enforceable policy and physical-capacity constraints at urban airports. It assumes much more willingness on the part of the airlines to invest in new flights at new and emerging airports, and a package of market and ground access incentives to promote decentralization at underutilized suburban airports.

The aviation strategy incorporates the HSRT system Initial Operating Segment (IOS) running from West Los Angeles to Ontario Airport, and extending west to LAX and east to San Bernardino International. The region is projected to reach 165.3 million annual passengers (MAP) in 2035 (190.7 MAP including San Diego).

TABLE 3.6 2035 AIR PASSENGER ALLOCATIONS BY AIRPORT

Commercial Airports	Annual Air Passengers (in millions)
Bob Hope	9.4
John Wayne	10.8
LAX	78.9
Long Beach	4.2
March Inland Port	2.5
Ontario	31.6
Palmdale	6.3
Palm Springs	4.1
San Bernardino	9.4
So. Cal. Logistics	2.9
Imperial*	3.5
Oxnard*	1.7
Region Total	**165.3**

** Existing commuter airport with potential to accommodate short-haul service*

Regional Aviation Policies

New regional aviation policies have been developed for the 2008 RTP with input from both the SCAG Aviation Task Force and the SCAG Aviation Technical Advisory Committee. They respond to changing circumstances and new priorities in the regional aviation system. The policies are divided into Aviation Guiding Principles and Aviation Action Steps, as follows:

Aviation Guiding Principles:

- Provide for regional capture of economic development opportunities and job growth created by the prospect of significant regional air traffic growth between now and 2035

- Distribute maximum opportunity to Southern California airports where population and job growth are expected to be strong and where local communities desire air traffic for economic development
- Reflect environmental, environmental justice and local quality-of-life constraints at existing airports that operate in built-out urban environments
- Reflect that each county should have both the obligation and the opportunity to meet its own air traffic needs where feasible
- Reflect that the region as a whole has an obligation to help pay the costs of airport environmental mitigation and ground access improvement in counties that serve a disproportionate share of regional air travel demand at their airports

Aviation Action Steps:

- Support capacity enhancements at existing and potential airports to handle anticipated increases in passengers and cargo volume where it is desired
- Mitigate the effects of expanding airports and maximize air passenger and air cargo utilization of outlying airports in less-populated areas so that community impacts are minimized
- Support the continued responsibility of SCAG for developing regional aviation and ground access plans for the region
- Support the close cooperation between SCAG and other aviation organizations to facilitate the implementation of adopted regional aviation plans prepared by SCAG
- Support legislative, marketing and ground access initiatives that promote the decentralization of aviation demand to underutilized suburban airports where it is desired
- Support more flexible use of airport revenues for off-airport ground access projects
- Support giving priority to key airport ground access projects in the programming of transportation projects in the RTP and the RTIP
- Support the development of a regional network of new FlyAways that connect to multiple airports via HOV, light rail and commuter rail facilities, to help decentralize aviation demand to underutilized suburban airports where it is desired
- Support efforts to redesign the regional airspace system that may be needed to reduce significant conflicts and delays associated with future air traffic in SCAG's adopted 2035 regional aviation forecast
- Support a more active role by the federal government in developing substantial incentives for airlines to upgrade their aircraft fleet to cleaner and quieter aircraft

Air Cargo Forecasts

The aviation strategy forecasts a total of almost 8.3 million tons of air cargo for the region's airports in 2035. The adopted 2030 air cargo forecast for the 2004 RTP was 8,724 tons. There is a variety of reasons why the new air forecast is lower than the adopted forecast in the last RTP. These include more domestic cargo being transported by truck and train, more international air cargo over-flying the region on longer-range aircraft or flying the Arctic Circle route with a stop at Anchorage, and high value-to-weight goods such as computers forecast to be lighter per unit volume. The 2035 modeling results of the air cargo forecast are shown in Table 3.7.

TABLE 3.7 2035 TOTAL ANNUAL AIR CARGO TONNAGE BY AIRPORT (THOUSANDS)

Air Carrier Airports	Air Cargo Tonnage (thousands)
Bob Hope	86
John Wayne	45
LAX	2,496
Long Beach	134
March Inland Port	1,130
Ontario	1,959
Palmdale	781
Palm Springs	129
San Bernardino	1,290
So. Cal. Logistics	230
Region Total	**8,280**

Airport Ground Access

The 2008 RTP may have localized ground access impacts at a number of airports. The RTP will result in significant increases in airport activities (people as well as cargo) at Ontario, San Bernardino International, and Palmdale Airports. Regional Airport Demand Allocation Model (RADAM) modeling for the Preferred Scenario shows that airport ground access deficiencies are concentrated near airport areas but that background congestion affects both airports and local communities.

SCAG's adopted Regional Aviation Decentralization Strategy calls for making substantial airport ground access improvements throughout the region, in both the short term and long term. The short-term program emphasizes relieving immediate bottlenecks around airports through arterial, intersection and interchange improvements, and increasing transit access to airports. Many of these improvements were programmed in the RTIP, and have been updated with strong local input from airport, city and county transportation planners.

SCAG is currently working with Los Angeles World Airports (LAWA) on planning and programming a regional system of FlyAways, based on the very successful Van Nuys FlyAway, where passengers park their cars and take a bus to LAX. The locations of the proposed new FlyAways can be optimized by taking advantage of the region's developing high-occupancy vehicle (HOV) and light and heavy rail networks that can provide direct linkages to Ontario and Palmdale as well as LAX. Making seamless HOV and rail connections with enhanced service to those and other suburban airports will also compose SCAG's short- and medium-range airport ground access strategy. The FlyAway, HOV and rail improvements to the suburban airports will help establish a pattern of decentralization, by attracting a critical mass of passengers and airline service

at those emerging airports. SCAG is also working with the newly reactivated SCRAA in its ongoing efforts to restructure and redefine its mission, with the focus of helping to implement the Regional Aviation Decentralization Strategy through facilitating key airport ground access improvements.

Over the long term, SCAG aviation demand modeling indicates that the region will also need a system of high-speed rail to the suburban airports to reach our adopted air passenger and air cargo forecasts, which are moderate and even conservative when compared to other forecasts for the region such as those developed by the FAA. The high speed, reliability and predictability of high-speed airport access will be needed to overcome mounting and increasingly unpredictable traffic congestion. For example, the Initial Operating Segment of SCAG's proposed high-speed rail system from West Los Angeles to Ontario Airport will take only 33 minutes to travel from end to end, compared to over two hours by car in 2030. The regional high-speed rail system is an integral component of the 2008 RTP Preferred 2035 regional aviation demand forecast.

Provision of high-speed rail service to the suburban airports would also provide significant economic benefits to region. It is estimated that the regional aviation system with a full high-speed rail network would create an additional 76,600 direct, indirect and induced jobs by 2035, compared to a system with no high-speed access. These would include an additional 28,900 jobs from high-speed access to Palmdale Airport, and an additional 27,100 jobs from high-speed access to San Bernardino International Airport.

HIGH-SPEED REGIONAL TRANSPORT

SCAG has advanced a vision of regional transport based on high-performance, high-speed, and environmentally sensitive alternatives. A High-Speed Regional Transport (HSRT) system has the potential for relieving both airport and freeway congestion in urbanized areas by providing an alternative to the automobile as well as making less-congested airports more accessible to air travelers, and providing alternative capacity for freight movement in the region.

The HSRT system is a long-term vision connecting the region's ports, airports, and urban activity centers. The system can be constructed in multiple stages that can each be financially viable. The financial performance will be enhanced as the system is extended throughout the region and the volume of users increases. The HSRT plan is constructed on three core components:

- **Goods Movement/Logistics:**
  Connect the San Pedro Bay Ports with an inland port facility via the high-speed, high-capacity link. This would provide capacity to handle containers, relieving a major constraint to port expansion, and facilitate efficient and environmentally sensitive goods handling in areas that have sufficient space outside of the urban areas. A detailed discussion on goods movement strategies is included in this chapter.

- **Aviation System:**
  Create a direct and reliable link capable of connecting airports and urban centers. Continue use of LAX as a major hub and sharing de-

mand with other regional airports such as Ontario International Airport (ONT), Palmdale Regional Airport (PMD) and San Bernardino International Airport (SBD) based on a high-speed connection via the HSRT. This would enable a higher level of service for airport access and connecting passengers, improved operation of the aviation system for passengers and airborne cargo, and optimize investment in aviation system infrastructure.

- **Surface Transport System:**

  Link urban activity centers throughout the region, serving the needs of commuters while reducing the number of private vehicles on the road. This would lead to reduced traffic congestion, enhanced accessibility between activity centers, as well as reduced air and noise pollution from automobiles. Additionally, enhanced accessibility at transit stations would enable intensification of land uses and thereby encourage more effective land use patterns.

The SCAG HSRT system will ultimately grow to cover over 275 miles of corridors in the SCAG Region, and will move up to 500,000 riders a day. When fully deployed, the HSRT system could complement the regional state highway transportation system. The HSRT program also envisions a longer-term connection to San Diego and other southern airports in the SCAG Region, a connection between San Bernardino and Palmdale via a high desert alignment, an LAX to Orange County route, and a San Bernardino to the Coachella Valley segment, intertwining with the proposed state high-speed rail system.

The California High-Speed Rail Authority (CHSRA) has been commissioned to do preliminary development work on several north-south corridors. SCAG has supported the Antelope and San Joaquin Valley corridors (Resolution #96-357-1-B). The State of California should coordinate all high-speed rail-planning activities with SCAG and other stakeholders within the state, especially with regard to HSRT, aviation, environment, growth, access, finance, and community development. SCAG is supportive of CHSRA's efforts to build a high-speed rail system in Southern California.

Three phases have been developed to implement the HSRT deployment program:

- **Phase I**, Pre-Deployment Analysis, was completed in October 2003 and includes right-of-way assessment on the freeway system and railroad corridors, assessment of ridership and interaction with other transportation systems, Los Angeles Union Passenger Terminal (LAUPT) capacity analysis, stakeholder outreach, financial feasibility, public-private partnership, technology transfer, and identification of an Initial Operating Segment (IOS).
- **Phase 2**, Preliminary Engineering, was completed in 2006 for the IOS, and focused on defining the project to prepare preliminary engineering for the purpose of environmental assessment and analysis (EIR/EIS) for public-private investment.
- **Phase 3**, Project Deployment Strategy, was initially done via a consultant study completed in 2007. It focused on an extended IOS with a link to the Ports of Los Angeles and Long Beach. The goal was to provide an initial investment quality analysis necessary to take the deployment program to the private market. The next step in this phase (date to be determined) will include an investment-grade ridership and revenue forecast, operation plans, a detailed financial plan, and creation of a public-private consortium for project deployment.

In December 2002, SCAG's Regional Council approved the deployment of a 54-mile IOS of the HSRT system that would connect West Los Angeles via LAUPT to Ontario Airport. It is a component of an 81-mile corridor between LAX and the San Bernardino Airport. In selecting the IOS, SCAG considered the RTP performance measures, stakeholder support and environmental issues. At the same time, SCAG's Regional Council approved the advance planning of the LAX to Palmdale corridor and Los Angeles to Orange County corridor (Orangeline).

The feasibility studies for the four corridors demonstrated that the HSRT system could be constructed and deployed through a public-private partnership

structure administered through a public agency, a joint powers authority (JPA), a public nonprofit (PNP), or a public-private partnership (PPP) format using a number of innovative and traditional funding mechanisms.

A JPA is in the process of being formed for the express purpose of implementing the IOS (West Los Angeles/LAX to Ontario Airport). Voting members of the yet-to-be-named JPA are the City of Los Angeles, the City of West Covina, and the City of Ontario. SCAG would be one of several non-voting members of the JPA.

TABLE 3.8 2008 RTP REGIONAL HSRT MILESTONES

Milestone	Capital Cost (in nominal dollars, billions)	Implementation Schedule*
IOS: Ontario – West Covina-LA Union Station – West LA/LAX	$19	2020
IOS extension to San Bernardino	$3.5	2020
San Pedro Ports to the IOS	$18	2020
Anaheim - Ontario	$6.7	2020
California High-Speed Train (Union Station - Anaheim)	$4.0**	2020

** Represents the network year for which a project was analyzed for the RTP modeling and regional emissions analysis.*
*** Assumes cost covered by state HSRT Bond Act. State bond revenues for HSRT are not included in the regional revenue forecast.*

Implementation and operation of the HSRT is being proposed on the basis of a business plan approach whereby it will be largely self-financed based on the goods movement, aviation, and commuter operations. The use of public rights-of-way is a critical component of the system as is some level of financial commitment from the public sector. The net performance of the HSRT will be further bolstered by related development in real estate property. A business and institutional structure for the movement of goods, movement of people, and associated development patterns has been developed by SCAG to serve as the basis for implementation of the movement systems.

The HSRT would enhance airport access and connections between regional airports by allowing passengers to bypass the congested highway network. It is envisioned that the HSRT would serve as the basis for a regional airport system and aviation system users would become a key component of HSRT passenger ridership.

Next Steps:

- Prepare preliminary engineering for the Ontario – West Covina-LA Union Station – West LA/LAX IOS for the purpose of preparation of the federal Environmental Impact Statement (EIS) and/or State Environmental Impact Report (EIR) to a level necessary for public-private investment.
- Form a Joint Powers Authority (JPA) for the IOS, and market projects to public-private stakeholders.
- Secure federal, state and local funds to supplement private investment to complete deployment of the IOS and coalesce community support
- Seek legislative support at the regional, state and federal levels for the HSRT deployment
- Continue working on public-private partnerships (PPP) to fund HSRT projects and to fast-track institutional issues

Anaheim-Ontario Maglev Segment

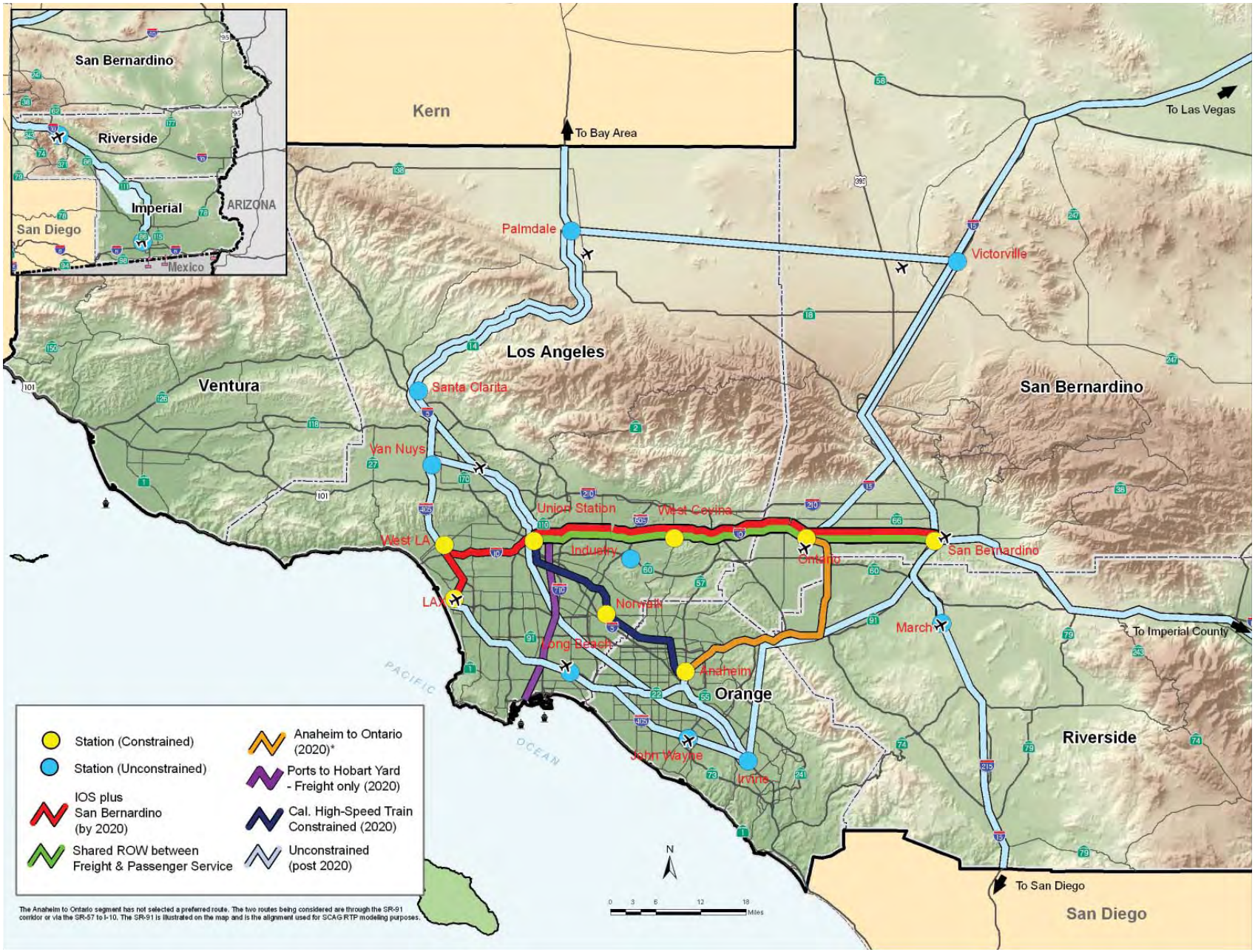
The California-Nevada Super Speed Train Commission (CNSSTC) was formed in 1988 to promote the development of, and issue a franchise to build, a superspeed train system connecting Las Vegas with Anaheim and other points in Southern California. In 1991 the Commission selected Transrapid International (TRI) Maglev technology for the corridor.

The critical segment of this route for Southern California is the Anaheim to Ontario Airport link. This would further the airport decentralization strategy for the region and provide a viable transit system to help mitigate transportation congestion/pollution caused by the jobs/housing imbalance between Orange and Riverside Counties.

EXHIBIT 3.7 IOS WITH EXTENSION TO SAN BERNARDINO AND LINK TO SAN PEDRO PORTS

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 3.8 PROPOSED HIGH-SPEED REGIONAL TRANSPORT SYSTEM



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

According to a feasibility study done by CNSSTC in 2000, the Anaheim to Ontario Airport segment will be 32 miles long and take 14.5 minutes with no stops between the two end points and 18 minutes with a station stop mid-route. The capital cost is estimated at $6.7 billion. Annual ridership projections are 13.9 million passengers per year (approximately 38,000 riders per day) with 10-minute headways.

It is not yet determined whether the primary route for this segment will be in the SR-91 corridor or the SR-57. These routes need to be re-examined in future feasibility and planning studies. For modeling purposes, the SR-91 corridor was the selected route.

CNSSTC is seeking funding for future studies and construction of the project from the U.S. federal government.

In 2002, the Western States Maglev Alliance was formed between SCAG and the California-Nevada Super Speed Train Commission and was approved by the Regional Council. As a result of this alliance, the Plan supports continued analysis of the proposed Las Vegas to Anaheim Maglev, especially the segment from Anaheim to Ontario.

California High-Speed Train

Established in 1996, the California High-Speed Rail Authority (CHSRA) is charged with planning, designing, constructing, and operating a high-speed steel wheels on steel rails train system. The financing plan is to pass statewide bonds to pay for the capital infrastructure. The first bond to fund the project is $9.95 billion and is currently on the ballot for November 2008.

The proposed system stretches from San Francisco, Oakland and Sacramento in the north -- with service to the Central Valley -- to Los Angeles and San Diego in the south. With bullet trains operating at speeds up to 220 mph, the express travel time from downtown San Francisco to Los Angeles is just under 2 ½ hours. Intercity travelers (trips between metropolitan regions) along with longer-distance commuters would enjoy the benefits of a system designed to connect with existing rail, air and highway systems.

In the SCAG Region there is a planned 210 miles of rail. One line covers 30 miles from Orange County to Union Station and the other from Union Station veering east to Riverside and then down Interstate 15 (I-15) to San Diego. Northbound from Union Station, the route heads through Burbank to Palmdale and then to the Central Valley. If built out, the state system is planned to connect up with SCAG's HSRT system in Palmdale, Union Station and Ontario. Funding ($7 million) to begin a project-specific EIR/EIS in the Union Station to Orange County segment in the LOSSAN corridor is being provided to CHSRA from OCTA.

SPOTLIGHT ON GOODS MOVEMENT

The goods movement strategies identified in the 2008 RTP merit a focused discussion because of the critical and far-reaching impacts on our region's transportation system, economy, and public health. The goods movement sector of transportation is growing at a tremendous pace and will continue to do so over the time frame of the RTP. The San Pedro Bay Ports (Port of Los Angeles and the Port of Long Beach) forecast that by 2030 container volume could triple. The productivity gains that are realized by Southern California's geographical advantage and the extraordinary logistics network of ports, warehouses and distribution systems are the primary reasons for this growth.

Cross-border trade activity also contributes to the region's international trade growth. The growth in the manufacturing industry in Mexico has increased truck trips through Calexico East in Imperial County by 77 percent between 1994 and 2005. Also, the Port of Hueneme plays an important role in facilitating the movement of goods. Approximately $7 billion in cargo traverses through the Port annually, and trade-related activity generated by the Port contributes significantly to the local economy.

To continue to provide this critical service, a combination of federal, state, local and private investment is needed. The 2008 RTP calls for approximately $13 billion in freight rail investments, nearly $18 billion in a freight HSRT system, and over $5 billion in highway investments to enable the region to handle the dramatic growth in goods movement. Rail investments consist of

additional mainline capacity, grade separations, and locomotive engine upgrades. About half of the rail-related investments are for highway-rail grade separations, which reduce traffic congestion, improve safety, and reduce pollution. Highway investments include the first phase of a dedicated, toll clean technology truck lane system and truck climbing lanes. Additionally, the proposed alternative technology system for freight includes a shared guideway with passenger vehicles. Service would be operating between passenger intervals, effectively utilizing the available capacity of the system (see Exhibit 3.8).

An essential element of improving the region's goods movement system is reducing its current and long-term impacts on public health and the environment. Accordingly, the 2008 RTP includes investments that integrate air quality mitigation into the goods movement system improvements. Substantial air quality benefits can be realized by accelerating fleet modernization with cleaner technologies.

Further, this Plan maximizes the utilization of the scarce land area near the ports, includes the development of inland port capacity, and has dedicated ground access systems that enable the region to protect communities and meet demand. Specific elements of this Plan are described in the following sections.

PORT ACCESS IMPROVEMENTS

Port access improvements include short-term initiatives to improve access to Terminal Island and to remove bottlenecks to truck movements. They include the replacement of the Gerald Desmond Bridge, SR-47 Truck Expressway/Heim Bridge replacement, I-110/SR-47 Connectors Improvement Program, and the SR-47/Navy Way Interchange. These projects are programmed over the short-term in the 2006 RTIP.

To provide for the landside port access improvements in Imperial County, the 2006 RTIP includes the Brawley Bypass project, which is a four-lane expressway connecting SR-78 and SR-111. The completion of the project will provide continuity between the California/Baja California border to Riverside County, ensuring smooth and reliable movement of goods through the border.

DEDICATED LANES FOR CLEAN TECHNOLOGY TRUCKS

Over the past several RTP updates, the region has been exploring dedicated truck-lane facilities and continues to refine the concept of such user-supported corridors to improve the flow of goods. More recent effort has focused on adding dedicated truck lanes for clean technology vehicles along truck-intensive corridors in Southern California. Operationally, such a corridor would be aligned to connect freight-intensive locations such as the Ports, warehousing/distribution center locations, and manufacturing locations. These dedicated

EXHIBIT 3.9 DEDICATED LANES FOR CLEAN TECHNOLOGY TRUCKS

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

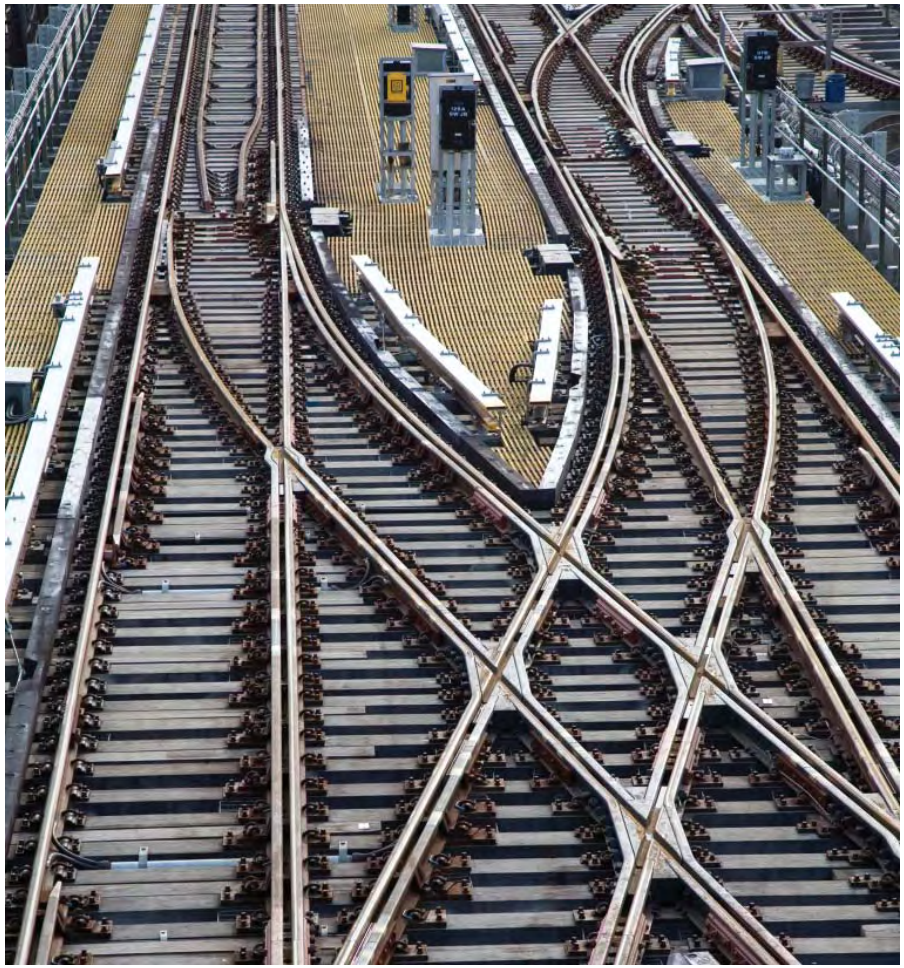
facilities would have fewer entrance/egress locations than typical urban interstates to smooth the flow of goods.

This proposal has the potential to relieve many of the negative truck impacts in Southern California such as recurrent delay, pavement deterioration, safety, emissions, and design deficiencies. Dedicated truck lanes would also increase reliability in the freeway system. Despite these benefits, substantial financial constraints as well as environmental impact considerations could hinder project implementation. Recognizing these challenges, the 2008 RTP funds the I-710 segment as the first phase of a comprehensive system that addresses truck-related issues in the region (Exhibit 3.9). This segment includes roughly 78 lane-miles (two lanes in each direction) of dedicated lanes for clean technology trucks along alignments extending from Ocean Blvd. in Long Beach to the intermodal railroad yards in Vernon/Commerce. This represents an investment of over $5 billion.

The region's longer-term strategic vision would include an east-west corridor and the I-15 freeway, serving strategic distribution centers in Barstow. Major corridor studies have already been completed for I-710, SR-60, and I-15. An EIR/EIS and preliminary engineering are currently underway for I-710. The technical analysis for the 2008 RTP assumes the implementation of dedicated lanes accommodating clean technology vehicles along the I-710 corridor until a preferred alternative is identified by the EIR/EIS.

REGIONAL FREIGHT RAIL INVESTMENT AND EMISSION REDUCTION PACKAGE

Recent projections included in SCAG's *Inland Empire Railroad Main Line Study* suggest that the number of freight trains on most BNSF and UP lines will more than double between 2000 and 2025 in response to a tripling of container volumes at the San Pedro Bay Ports. Passenger train volumes are expected to experience similar volume growth.



The UP and BNSF mainlines east of downtown Los Angeles will reach capacity before the end of the decade and will need to be triple-tracked or even quadruple-tracked in some segments. Investments in the 2008 RTP include $3.2 billion for mainline rail capacity improvements, $6.0 billion to build an estimated 131 highway-rail grade separations east of downtown Los Angeles, and a total of $3.8 billion for accelerating upgrades to cleaner diesel locomotive engines—namely, Tier 4 engines.

In March of 2007, the US Environmental Protection Agency (EPA) proposed new standards to reduce emissions from diesel locomotives: Tier 3 and Tier 4 exhaust emission standards for newly built engines with high-efficiency catalytic after-treatment technology. Tier 3 engines will be available in 2009 and the associated estimated reduction in emissions is less than 50 percent of current conditions. The reduction in emissions from Tier 4 engines is estimated at 90 percent of current conditions. The 2008 RTP assumes nearly $2 billion in federal EPA funding to accelerate the deployment of Tier 4 engines in the region.

Exhibit 3.10 shows planned projects for regional rail capacity enhancement in Southern California. Most of the BNSF system south and west of Colton Crossing will need additional track by 2025, and several of these segments will require additional track as soon as 2010. By 2025 this line will require grade-separated crossings at junctions where the two railroads have lines crossing. North of Colton Crossing over the Cajon Pass to Barstow substantial additional mainline capacity will be needed by 2010 as well as new connections to the system. In the UP system, most of the Yuma line will require double-tracking by 2025 and the San Gabriel line may require double-tracking over major segments during the same time frame. Also by 2025, UP will require several grade-separated junctions.

Exhibits 3.11, 3.12, 3.13, and 3.14 show the grade separation projects by county planned in the region. Stakeholder agencies throughout the region have identified priority grade separations that were analyzed in the Inland Empire Railroad Main Line Study and it was determined that without additional grade separations, motor vehicle delay at grade crossings will more than triple between 2000 and 2025. Analysis of vehicle delay from high-priority grade separations shows that these could reduce growth in vehicle hours of daily delay (VHDD), cutting delay in half by 2025. This will reduce motor vehicle idling delay and associated idling emissions, and by increasing train speeds, will reduce train emissions through more efficient operations.

ALTERNATIVE TECHNOLOGY-BASED GOODS MOVEMENT/LOGISTICS

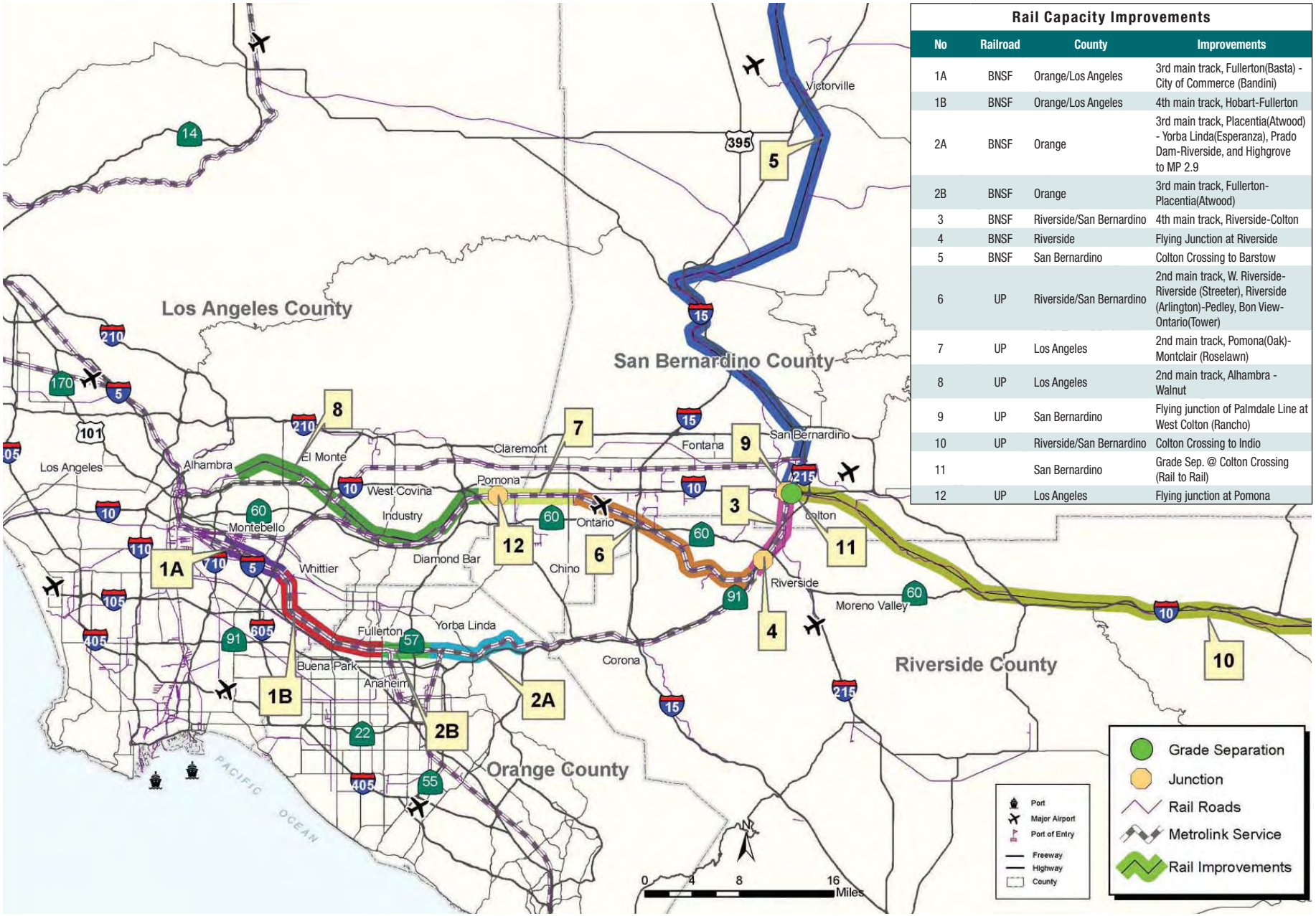
The region is also exploring new alternative technology-based systems that can provide greater throughput and reliability with near zero emissions (the emissions would be only those associated with electricity generation). A recent

TABLE 3.9 SBD CAPACITY SHARED GUIDEWAY WITH PASSENGER SERVICE - 9.2M TEU

	Operating Period			Trains/Day/Direction		Potential Capacity				
	Hr/Day	Trains/Hr/Direction		Passenger	Freight	Per Day and Direction				Per Year and Direction
		Passenger	Freight			Passenger	Freight			(24/7 Operation)
							20 ft	40 ft	TEU	TEU
Peak	8	6	6	48	48	42,528	96	1,824	3,744	1,366,560
Off-Peak	10	3	9	30	90	26,580	180	3,420	7,020	2,562,300
Night	2	0	12	0	24	-	48	912	1,872	683,280
Maintenance	4	0	0	0	0	-	-	-	-	-
Total	24	9	27	78	162	69,108	324	6,156	12,636	4,612,140
Total Passengers/Freight in Both Directions						**138,216**	**648**	**12,312**	**25,272**	**9,224,280**

Source: IBI Group

EXHIBIT 3.10 PLANNED PROJECTS FOR REGIONAL RAIL CAPACITY ENHANCEMENT

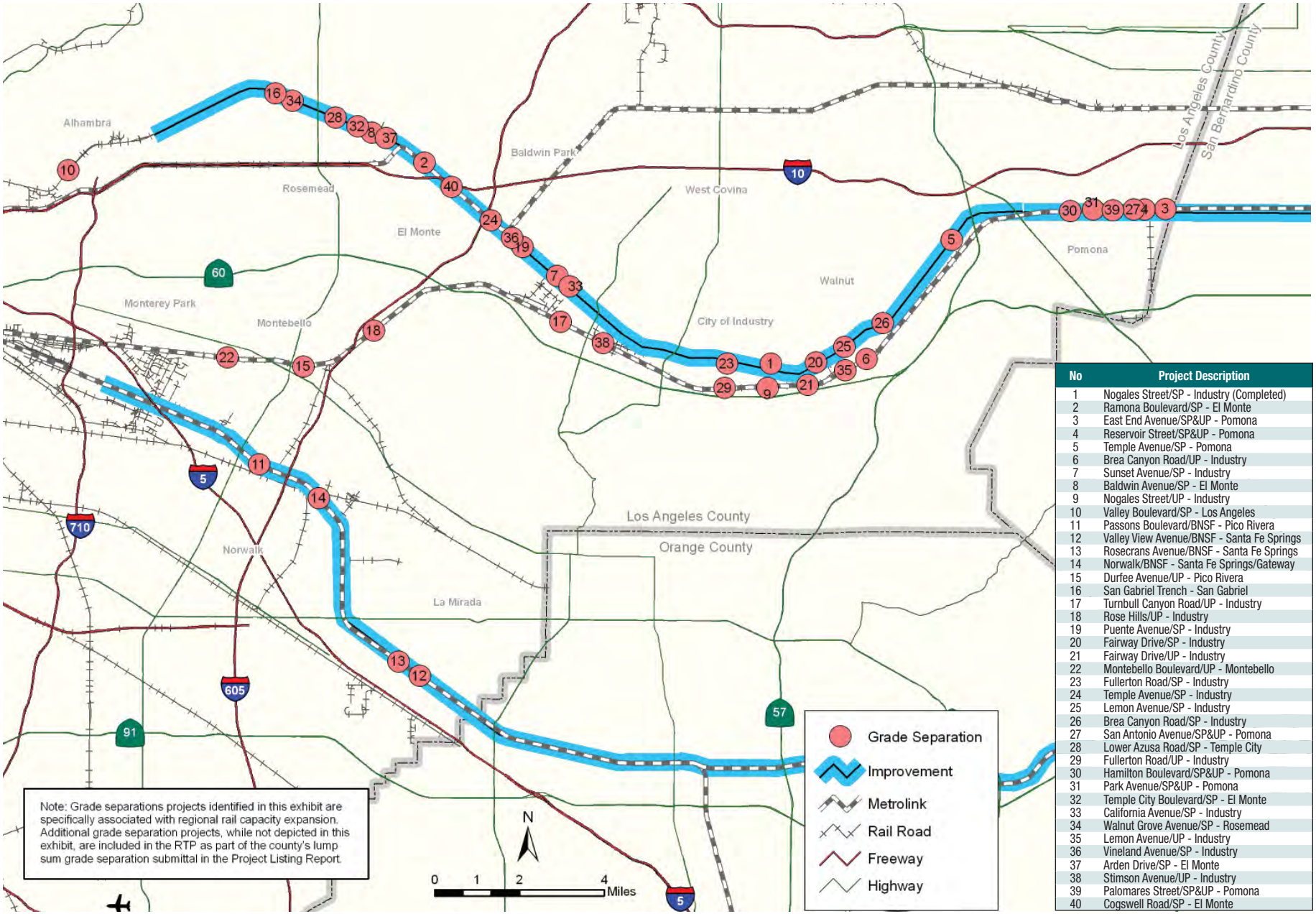


Rail Capacity Improvements

No	Railroad	County	Improvements
1A	BNSF	Orange/Los Angeles	3rd main track, Fullerton(Basta) - City of Commerce (Bandini)
1B	BNSF	Orange/Los Angeles	4th main track, Hobart-Fullerton
2A	BNSF	Orange	3rd main track, Placentia(Atwood) - Yorba Linda(Esperanza), Prado Dam-Riverside, and Highgrove to MP 2.9
2B	BNSF	Orange	3rd main track, Fullerton-Placentia(Atwood)
3	BNSF	Riverside/San Bernardino	4th main track, Riverside-Colton
4	BNSF	Riverside	Flying Junction at Riverside
5	BNSF	San Bernardino	Colton Crossing to Barstow
6	UP	Riverside/San Bernardino	2nd main track, W. Riverside-Riverside (Streeter), Riverside (Arlington)-Pedley, Bon View-Ontario(Tower)
7	UP	Los Angeles	2nd main track, Pomona(Oak)-Montclair (Roselawn)
8	UP	Los Angeles	2nd main track, Alhambra - Walnut
9	UP	San Bernardino	Flying junction of Palmdale Line at West Colton (Rancho)
10	UP	Riverside/San Bernardino	Colton Crossing to Indio
11		San Bernardino	Grade Sep. @ Colton Crossing (Rail to Rail)
12	UP	Los Angeles	Flying junction at Pomona

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

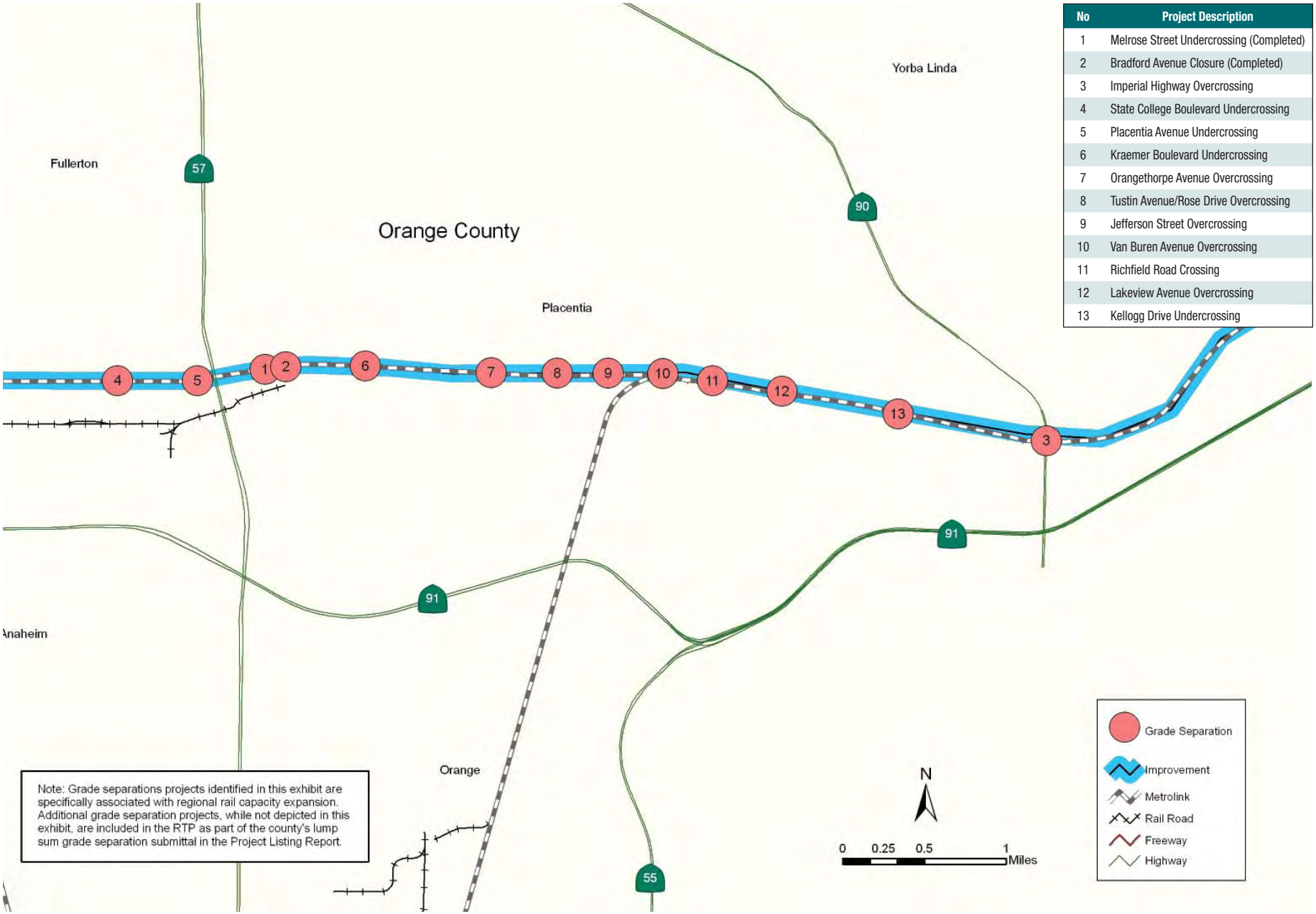
EXHIBIT 3.11 GRADE SEPARATION PROJECTS IN LOS ANGELES COUNTY



No	Project Description
1	Nogales Street/SP - Industry (Completed)
2	Ramona Boulevard/SP - El Monte
3	East End Avenue/SP&UP - Pomona
4	Reservoir Street/SP&UP - Pomona
5	Temple Avenue/SP - Pomona
6	Brea Canyon Road/UP - Industry
7	Sunset Avenue/SP - Industry
8	Baldwin Avenue/SP - El Monte
9	Nogales Street/UP - Industry
10	Valley Boulevard/SP - Los Angeles
11	Passons Boulevard/BNSF - Pico Rivera
12	Valley View Avenue/BNSF - Santa Fe Springs
13	Rosecrans Avenue/BNSF - Santa Fe Springs
14	Norwalk/BNSF - Santa Fe Springs/Gateway
15	Durfee Avenue/UP - Pico Rivera
16	San Gabriel Trench - San Gabriel
17	Turnbull Canyon Road/UP - Industry
18	Rose Hills/UP - Industry
19	Puente Avenue/SP - Industry
20	Fairway Drive/SP - Industry
21	Fairway Drive/UP - Industry
22	Montebello Boulevard/UP - Montebello
23	Fullerton Road/SP - Industry
24	Temple Avenue/SP - Industry
25	Lemon Avenue/SP - Industry
26	Brea Canyon Road/SP - Industry
27	San Antonio Avenue/SP&UP - Pomona
28	Lower Azusa Road/SP - Temple City
29	Fullerton Road/UP - Industry
30	Hamilton Boulevard/SP&UP - Pomona
31	Park Avenue/SP&UP - Pomona
32	Temple City Boulevard/SP - El Monte
33	California Avenue/SP - Industry
34	Walnut Grove Avenue/SP - Rosemead
35	Lemon Avenue/UP - Industry
36	Vineland Avenue/SP - Industry
37	Arden Drive/SP - El Monte
38	Stimson Avenue/UP - Industry
39	Palomares Street/SP&UP - Pomona
40	Cogswell Road/SP - El Monte

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 3.12 GRADE SEPARATION PROJECTS IN ORANGE COUNTY

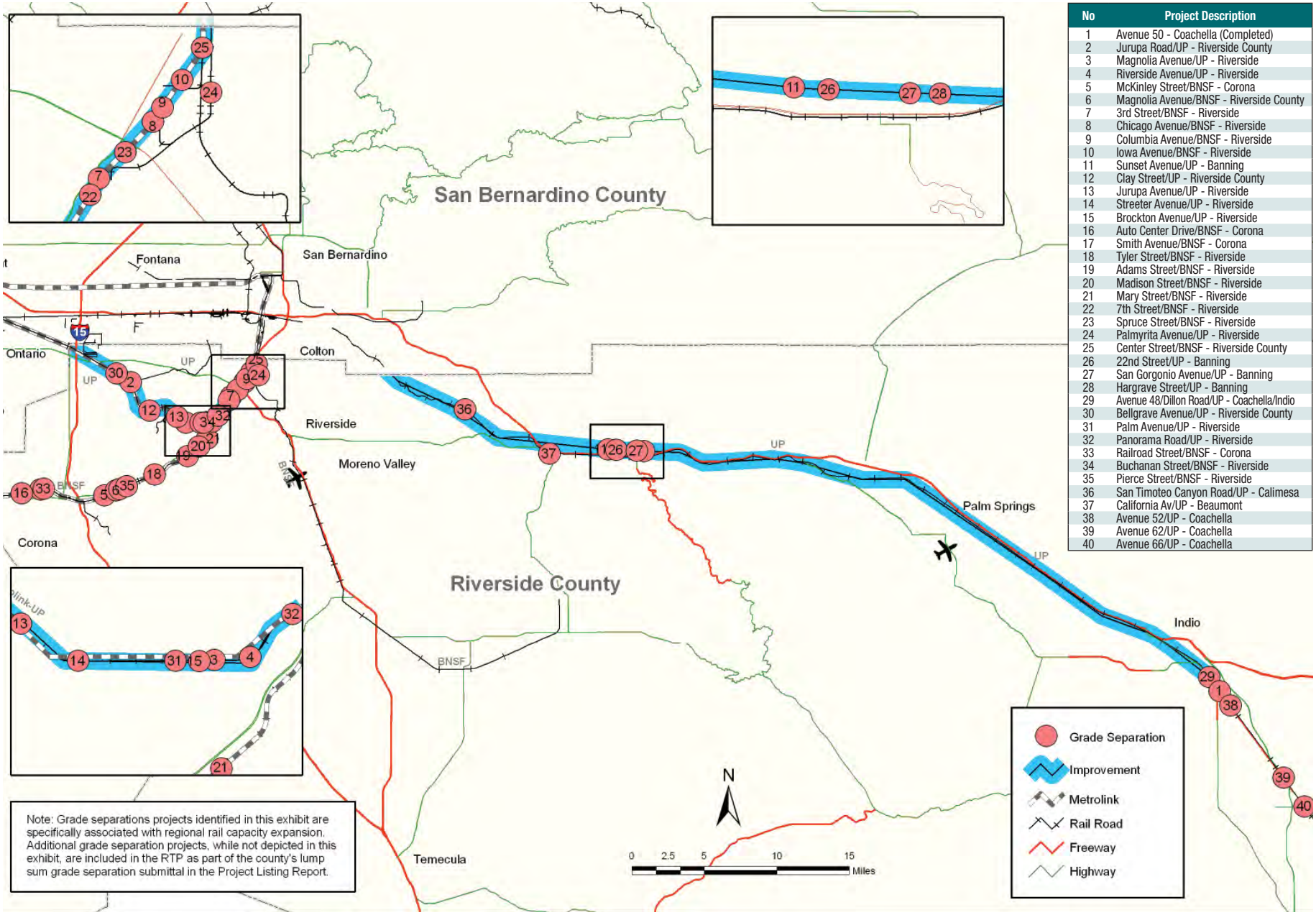


No	Project Description
1	Melrose Street Undercrossing (Completed)
2	Bradford Avenue Closure (Completed)
3	Imperial Highway Overcrossing
4	State College Boulevard Undercrossing
5	Placentia Avenue Undercrossing
6	Kraemer Boulevard Undercrossing
7	Orangethorpe Avenue Overcrossing
8	Tustin Avenue/Rose Drive Overcrossing
9	Jefferson Street Overcrossing
10	Van Buren Avenue Overcrossing
11	Richfield Road Crossing
12	Lakeview Avenue Overcrossing
13	Kellogg Drive Undercrossing

Note: Grade separations projects identified in this exhibit are specifically associated with regional rail capacity expansion. Additional grade separation projects, while not depicted in this exhibit, are included in the RTP as part of the county's lump sum grade separation submittal in the Project Listing Report.

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

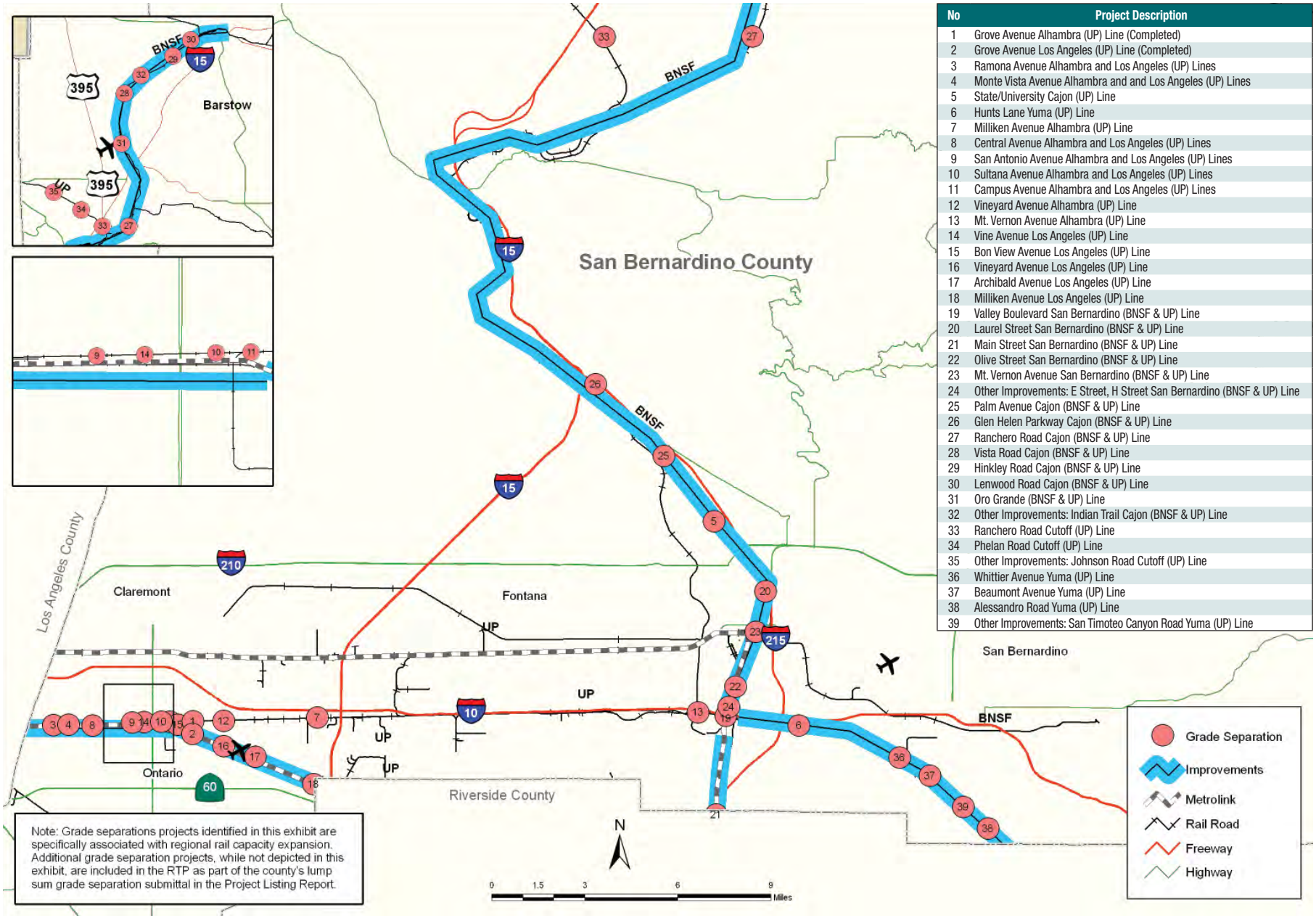
EXHIBIT 3.13 GRADE SEPARATION PROJECTS IN RIVERSIDE COUNTY



No	Project Description
1	Avenue 50 - Coachella (Completed)
2	Jurupa Road/UP - Riverside County
3	Magnolia Avenue/UP - Riverside
4	Riverside Avenue/UP - Riverside
5	McKinley Street/BNSF - Corona
6	Magnolia Avenue/BNSF - Riverside County
7	3rd Street/BNSF - Riverside
8	Chicago Avenue/BNSF - Riverside
9	Columbia Avenue/BNSF - Riverside
10	Iowa Avenue/BNSF - Riverside
11	Sunset Avenue/UP - Banning
12	Clay Street/UP - Riverside County
13	Jurupa Avenue/UP - Riverside
14	Streeter Avenue/UP - Riverside
15	Brockton Avenue/UP - Riverside
16	Auto Center Drive/BNSF - Corona
17	Smith Avenue/BNSF - Corona
18	Tyler Street/BNSF - Riverside
19	Adams Street/BNSF - Riverside
20	Madison Street/BNSF - Riverside
21	Mary Street/BNSF - Riverside
22	7th Street/BNSF - Riverside
23	Spruce Street/BNSF - Riverside
24	Palmyrita Avenue/UP - Riverside
25	Center Street/BNSF - Riverside County
26	22nd Street/UP - Banning
27	San Gorgonio Avenue/UP - Banning
28	Hargrave Street/UP - Banning
29	Avenue 48/Dillon Road/UP - Coachella/Indio
30	Bellgrave Avenue/UP - Riverside County
31	Palm Avenue/UP - Riverside
32	Panorama Road/UP - Riverside
33	Railroad Street/BNSF - Corona
34	Buchanan Street/BNSF - Riverside
35	Pierce Street/BNSF - Riverside
36	San Timoteo Canyon Road/UP - Calimesa
37	California Av/UP - Beaumont
38	Avenue 52/UP - Coachella
39	Avenue 62/UP - Coachella
40	Avenue 66/UP - Coachella

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 3.14 GRADE SEPARATION PROJECTS IN SAN BERNARDINO COUNTY



No	Project Description
1	Grove Avenue Alhambra (UP) Line (Completed)
2	Grove Avenue Los Angeles (UP) Line (Completed)
3	Ramona Avenue Alhambra and Los Angeles (UP) Lines
4	Monte Vista Avenue Alhambra and and Los Angeles (UP) Lines
5	State/University Cajon (UP) Line
6	Hunts Lane Yuma (UP) Line
7	Milliken Avenue Alhambra (UP) Line
8	Central Avenue Alhambra and Los Angeles (UP) Lines
9	San Antonio Avenue Alhambra and Los Angeles (UP) Lines
10	Sultana Avenue Alhambra and Los Angeles (UP) Lines
11	Campus Avenue Alhambra and Los Angeles (UP) Lines
12	Vineyard Avenue Alhambra (UP) Line
13	Mt. Vernon Avenue Alhambra (UP) Line
14	Vine Avenue Los Angeles (UP) Line
15	Bon View Avenue Los Angeles (UP) Line
16	Vineyard Avenue Los Angeles (UP) Line
17	Archibald Avenue Los Angeles (UP) Line
18	Milliken Avenue Los Angeles (UP) Line
19	Valley Boulevard San Bernardino (BNSF & UP) Line
20	Laurel Street San Bernardino (BNSF & UP) Line
21	Main Street San Bernardino (BNSF & UP) Line
22	Olive Street San Bernardino (BNSF & UP) Line
23	Mt. Vernon Avenue San Bernardino (BNSF & UP) Line
24	Other Improvements: E Street, H Street San Bernardino (BNSF & UP) Line
25	Palm Avenue Cajon (BNSF & UP) Line
26	Glen Helen Parkway Cajon (BNSF & UP) Line
27	Ranchero Road Cajon (BNSF & UP) Line
28	Vista Road Cajon (BNSF & UP) Line
29	Hinkley Road Cajon (BNSF & UP) Line
30	Lenwood Road Cajon (BNSF & UP) Line
31	Oro Grande (BNSF & UP) Line
32	Other Improvements: Indian Trail Cajon (BNSF & UP) Line
33	Ranchero Road Cutoff (UP) Line
34	Phelan Road Cutoff (UP) Line
35	Other Improvements: Johnson Road Cutoff (UP) Line
36	Whittier Avenue Yuma (UP) Line
37	Beaumont Avenue Yuma (UP) Line
38	Alessandro Road Yuma (UP) Line
39	Other Improvements: San Timoteo Canyon Road Yuma (UP) Line

Note: Grade separations projects identified in this exhibit are specifically associated with regional rail capacity expansion. Additional grade separation projects, while not depicted in this exhibit, are included in the RTP as part of the county's lump sum grade separation submittal in the Project Listing Report.

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

analysis carried out by the IBI Group considered the application of an HSRT system for the movement of containers (logistics and systems technology) to and from the San Pedro Bay Ports. This container movement system would provide a high-capacity, fast, and efficient method of moving containerized cargo from the Ports to an inland port facility in San Bernardino. The system capitalizes on the inherent savings of multiple uses on a single infrastructure by operating on shared alignments with the HSRT passenger system. The technology permits operation of HSRT freight vehicles on a shared guideway with passenger vehicles even during peak hour service. Freight vehicle trips can be interspersed with passenger trips while still meeting required passenger vehicle headways. Additionally, full utilization of the freight line can be achieved during the passenger system's off-peak hours. The deployment of the HSRT system would create value in associated components which could in turn contribute to the HSRT's total financial performance.

The connection for the HSRT system would begin at the Ports and join up with the IOS2 at a point just east of LAUPT. This alignment runs north-south and is assumed to follow a route parallel to the I-710/Alameda Corridor. After connecting to the IOS and other segments, the freight-only service would be interspersed with passenger service.

As Table 3.9 shows, current estimates indicate that the HSRT container movement system is capable of moving over 9.2 million Twenty-foot Equivalent Units (TEUs) annually. The total freight component is estimated to cost nearly $18 billion in nominal dollars.

For a more detailed discussion of the regional HSRT system and associated documentation on its financial performance, refer to the supplemental HSRT Report. Critical to the implementation of an alternative technology system, such as this HSRT system, the location of inland port facilities and associated costs need to be further evaluated. The development of inland ports served by the system would reduce truck VMT, lower emissions, and encourage efficient patterns of industrial development and land use.

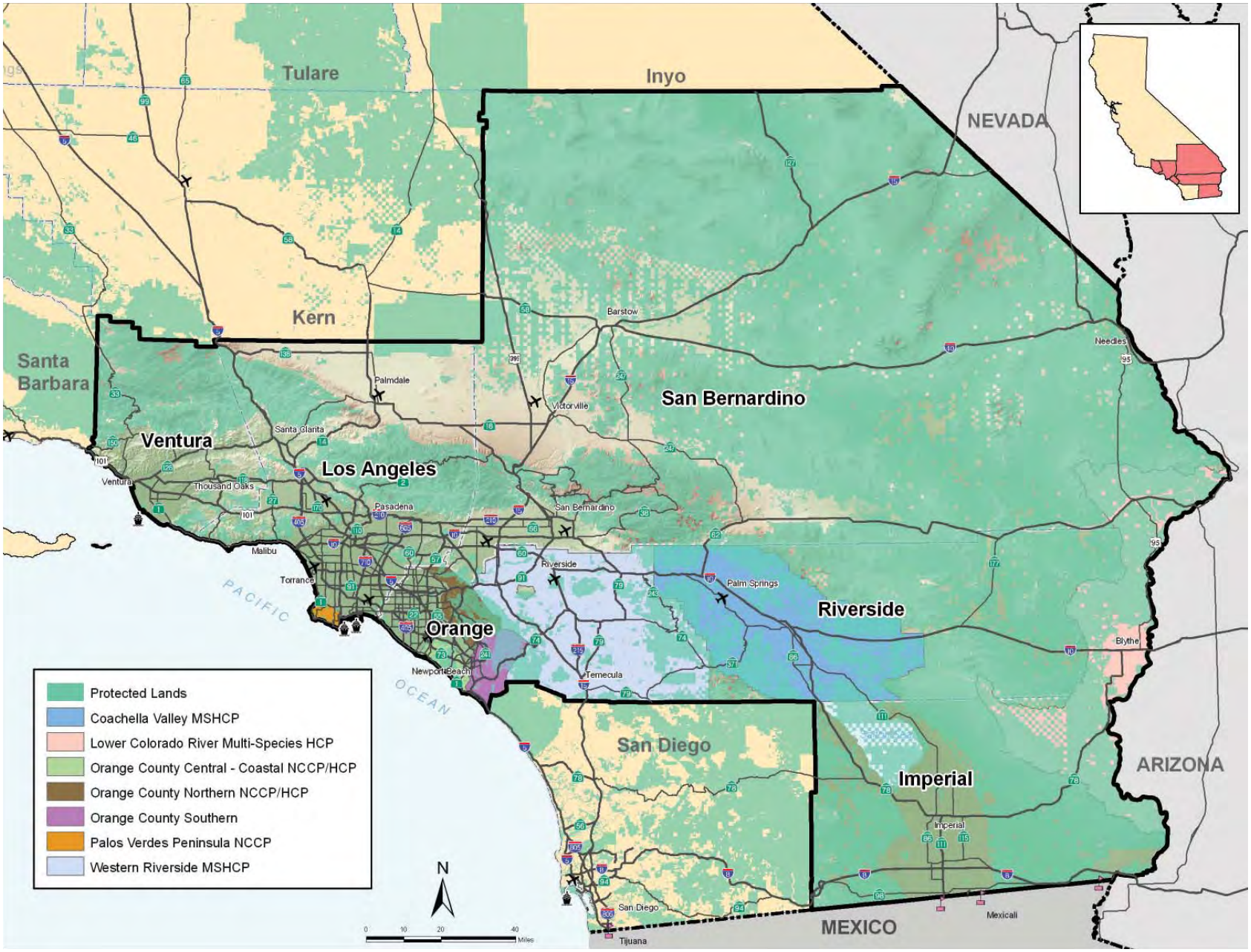
[2] Initial Operating Segment, or IOS, is discussed in further detail in the supplemental HSRT Report and Appendices.

Mitigating Environmental Impacts

California law requires SCAG to prepare and certify a Program Environmental Impact Report (PEIR) prior to adopting the RTP. The PEIR evaluates the environmental impacts of the RTP and proposes specific measures to mitigate impacts to the maximum extent feasible. Although the 2008 RTP, in and of itself, is a plan to mitigate the transportation-related effects of population growth, such as traffic congestion and poor air quality, because the transportation improvements can result in additional growth, the PEIR goes further by recommending additional environmental mitigation at the program level for those resource areas that would be affected by the Plan (and associated growth) such as land use, open space, biological resources, water and energy. The section below summarizes the mitigation program. A list of all the mitigation measures included in the 2008 RTP PEIR will be included in the Environmental Mitigation Report of the Final 2008 RTP.

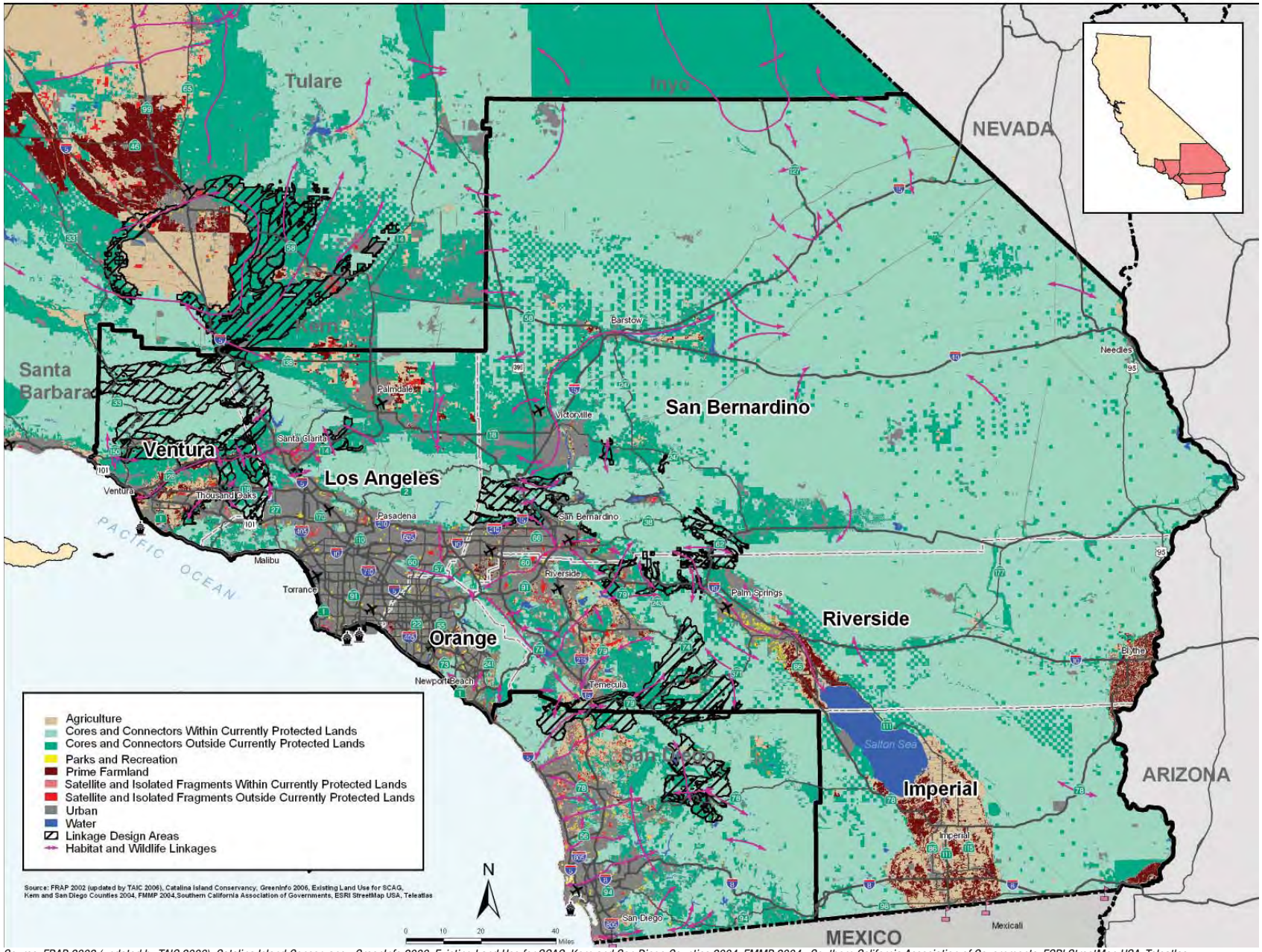
The general purpose of the mitigation measures included in the PEIR and summarized below, is to identify how to protect the environment, improve air quality, and promote energy efficiency in concert with the proposed transportation improvements and related planning. They provide a framework through which implementing agencies and subregions can address the environmental impacts of RTP projects, while implementing RTP goals and policies. The PEIR provides three different types of mitigation measures. The first type can be implemented by SCAG at the regional level. These measures are generally aimed at gathering additional information that can assist in measuring impacts and determining appropriate mitigation and promoting policies that reduce impacts. The second type of measures are to be implemented at the local level by implementing agencies, and individual cities and counties. These measures can strengthen planning documents to ensure for provision of mitigation in the planning process. The third type of measures are project specific and seek to reduce impacts for the myriad different types of projects anticipated in the region. As a programmatic document, many of the measures in the PEIR refer to performance standards because site-specific conditions are not reasonably evaluated at the programmatic level.

EXHIBIT 3.15 PROTECTED LANDS, NATURAL COMMUNITY CONSERVATION PLANS (NCCP) AND HABITAT CONSERVATION PLANS (HCP)



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas, California Legacy Project 2005

FIGURE 3.16 REGIONAL OPEN SPACE INFRASTRUCTURE



Source: FRAP 2002 (updated by TAIC 2006), Catalina Island Conservancy, GreenInfo 2006, Existing Land Use for SCAG, Kern and San Diego Counties 2004, FMMP 2004, Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

Summary of the Environmental Mitigation Program

As required by SAFETEA-LU, the RTP includes an environmental mitigation program that links transportation planning to the environment. Building on its strong commitment to the environment as demonstrated in the 2004 PEIR, SCAG's mitigation program creates an implementation strategy to show varying levels of authority (state, regional, and local). This mitigation discussion also utilizes documents created by the federal agencies to guide environmental planning for transportation projects.

OPEN SPACE

Section 6001(i) of SAFETEA-LU requires that long-range transportation plans such as the RTP include a discussion of potential environmental mitigation activities along with potential sites to carry out these activities. As a result of this expanded requirement, SCAG enhanced its Open Space Program to evaluate potential sites to mitigate the impacts associated with transportation activities. The RTP includes two regional scale maps (Exhibits 3.15 and 3.16) that identify sensitive environmental resources, such as protected lands and sensitive habitats. As part of the open space planning effort undertaken for the Regional Comprehensive Plan, SCAG completed a comprehensive evaluation of open space resources in the region, including Kern and San Diego Counties. SCAG collected GIS data from existing sources to assist with and inform the evaluation of open space planning issues. SCAG then evaluated and analyzed the data to show the distribution of existing open space resources, levels of existing and planning protection, and areas of key habitat linkages. Concurrent with this mapping effort, and as required under SAFETEA-LU, SCAG reviewed existing plans and programs to determine which areas were covered by conservation strategies.

According to the Federal Highways Administration, there are more than 3.9 million centerlane miles of public roads that span the United States. Each day, an estimated one million animals are killed on roads, making road kill the greatest human cause of wildlife mortality in the country. The open space program seeks to minimize transportation-related impacts on wildlife, and also better integrate transportation infrastructure into the environment.

Locations for Mitigation

Exhibit 3.15 shows the distribution of protected and unprotected lands within the SCAG Region and its vicinity. It also shows the location of county-level conservation efforts such as Habitat Conservation Plans (HCPs) and Natural Communities Conservation Plans (NCCPs). Although portions of these areas fall within the "protected" category, large portions of habitat within these areas remain "unprotected" and therefore should still be considered for mitigation activities. Beyond looking at just protected and unprotected lands, SCAG mapped locations of the protected and unprotected areas in relation to wildlife linkages, linkage design areas, park and recreation areas (from SCAG's 2005 land use inventory), agricultural lands, and developed lands. Together, these form the region's open space infrastructure. Exhibits 3.15 and 3.16 demonstrate areas where project sponsors should consider directing mitigation activities. Specifically, those areas that are "unprotected" could be possible locations for mitigation. Although SCAG does not have the authority to purchase or manage lands, conservation of these areas will be achieved through already-established programs or through compacts facilitated by SCAG.

Types of Mitigation Activities

The mitigation program of the 2008 RTP generally includes strategies to reduce impacts where transportation and sensitive lands intersect and also encourages smart land use strategies that maximize the existing system and eliminate the need for new facilities that might impact open space and habitat. Potential mitigation programs include better planning of transportation projects to avoid or lessen impacts to open space, recreation land, and agricultural lands through information and data sharing, increasing density in developed areas, and minimizing development in previously undeveloped areas that may contain important open space.

The mitigation program also emphasizes the importance of integrating consideration of wildlife and habitat into the design of transportation facilities in those areas where impacts cannot be avoided. SCAG encourages project sponsors to review Ventura County's Wildlife Crossing Guidelines and FHWA's Critter Crossings. Both documents provide examples of context-sensitive solutions (CSS) which is a way of involving all stakeholders to develop transportation facilities that fit their physical setting and preserve scenic, aesthetic, historic and environmental resources, while maintaining safety and mobility. CSS is an approach that considers the total context within which a transportation improvement project will exist. CSS principles include the employment of early, continuous, and meaningful involvement of the public and all stakeholders throughout the project development process. Additional information on CSS is available on FHWA's website at: http://www.fhwa.dot.gov/context/index.cfm

In summary, the open space mitigation programs include the following types of measures:

- Identifying open space areas that can be preserved and developing mitigation measures such as mitigation banking, transfer of development rights (for agricultural lands), and payment in lieu of fees
- Updating General Plan information from cities to provide the most recent land use data to the region
- Coordinating with cities and counties to implement growth strategies that maximize the existing transportation network
- Evaluating project alternatives and alternative route alignments where projects intersect with sensitive habitats
- Integrating the planning of transportation facilities with context-sensitive design elements such as wildlife crossings

ENERGY

As the region continues to add more people, households and jobs, the demand for energy will continue to grow. Every day, the SCAG Region consumes over 23 million gallons of oil and the SCAG Region's vehicle fuel consumption has increased 20 percent over the last ten years.[3] In the face of this growth in energy demand and concerns about future oil supplies, there is the mounting realization that we are living in an energy-constrained world. As such, the 2008 RTP includes strategies to reduce Vehicle Miles Traveled (VMT), and as a result, per capita energy consumption from the transportation sector. The PEIR also includes mitigation measures relating to energy designed to reduce

[3] California Department of Transportation, Division of Transportation System Information. (December 2006.) California Motor Vehicle Stock, Travel and Fuel Forecast.

consumption and increase the use and availability of renewable sources of energy in the region.

The mitigation program in the PEIR generally includes opportunities to reduce petroleum vehicle fuel consumption and increase energy efficiency in the region. Potential mitigation programs include coordinating transportation, land use and air quality planning to reduce VMT, energy use and greenhouse gas emissions as well as increasing automobile fuel efficiency and construction of infrastructure to accommodate increased use of motor vehicles powered by alternative fuels. In California, efforts are underway to reduce petroleum use, reduce emissions from light-duty vehicles, reduce the carbon intensity of fuels, improve transportation energy efficiency, and encourage smart land use and intelligent transportation strategies.

In addition to transportation strategies, building design and housing types also have a strong relationship to energy use and efficiency. The mitigation program generally includes energy-efficient building practices, smarter land use planning with a focus on access to public transportation, and participation in energy efficiency incentive programs. All publicly owned utilities and most municipality-owned utilities that provide electric or natural gas service also administer energy conservation programs. These programs typically include home energy audits; incentives for replacement of existing appliances with new, energy-efficient models; and provision of resources to inform businesses on development and operation of energy-efficient buildings.

In summary, the energy mitigation program includes the following types of measures:

- Considering best practices and technological improvements that can reduce the consumption of fossil fuels such as modernizing older engines and equipment
- Developing programs to reduce single-occupancy vehicle trips such as telecommuting, ridesharing, alternative work schedules, and parking cash-out (offering employees a cash allowance in lieu of a parking space)
- Creating communities where people live closer to work, bike, walk, and take transit as a substitute for personal auto travel
- Integrating green building measures into project design and zoning such as those identified in the U.S. Green Building Council's Leadership in Energy and Environmental Design, Energy Star Homes, Green Point Rated Homes, and the California Green Builder Program

As stated above, energy experts have suggested that there is a potential for energy demand to exceed supply. Recommendations to reduce energy consumption are included in the EIR as mitigation measures. Over the next RTP planning cycle, as technology evolves, SCAG will continue to refine recommendations to reduce regional energy consumption.

AIR QUALITY AND CLIMATE CHANGE

The 2008 RTP includes programs, policies and measures to address air emissions including greenhouse gases. Measures that help mitigate air emissions, including GHG emissions, are comprised of strategies that reduce congestion, increase access to public transportation, improve air quality, and enhance coordination between land use and transportation decisions. SCAG's vision includes the introduction of a high-speed, high-performance regional transport system that may potentially reduce airport and freeway congestion and provide an alternative to the single-occupancy automobile. In order to disclose potential environmental effects of the RTP, SCAG has prepared an estimated inventory of the region's existing GHG emissions, identified mitigation measures, and compared alternatives in the PEIR. The mitigation measures seek to achieve the maximum feasible and cost-effective reductions in emissions. There are difficulties in quantifying reductions in GHG emissions due to insufficient data. During the next RTP cycle, SCAG will focus on refining techniques to better estimate emission reductions associated with identified mitigation measures.

The air quality mitigation program includes, but is not limited to, the following types of measures:

- ARB measures that set new on-road and off-road engine standards and accelerate turnover of higher emitting engines from the in-use fleet;
- Project specific measure to reduce impacts from construction activities such as the use of water and dust suppressants and restrictions on trucks hauling dirt, sand and soil.
- Encouragement of green construction techniques such as using the minimum amounts of GHG emitting construction equipment; and
- Incorporating planting of shade trees into construction projects where feasible

In addition, the RTP includes Transportation Control Measures (TCMs), which are those projects that reduce congestion and improve air quality in the region.

TRANSPORTATION

The 2035 transportation model takes into account the population, households, and employment projected for 2035, and therefore the largest demand on the transportation system expected during the lifetime of the 2008 RTP. In accounting for the effects of regional population growth, the model output provides a regional, long-term and cumulative level of analysis for the impacts of the 2008 RTP on transportation resources. The regional growth and thus cumulative impacts are captured in the VMT, VHT, and heavy-duty truck VHT data.

Implementation of the 2008 RTP would include implementation of a series of projects which are described in the Regional Transportation Plan. The 2035 transportation system performance is compared to the performance of the existing (2008) system for the purpose of determining the significance of impacts.

The transportation mitigation program includes the following types of measures:

- Increasing rideshare and work-at-home opportunities to reduce demand on the transportation system
- Investments in non-motorized transportation and maximizing the benefits of the land use-transportation connection
- Travel Demand Management (TDM) measures
- Goods movement capacity enhancements
- Key transportation investments targeted to reduce heavy-duty truck delay

POPULATION AND HOUSING

Transportation projects including new and expanded infrastructure are necessary to improve travel time and can enhance quality of life for those traveling throughout the region. However, these projects also have the potential to induce population growth in certain areas of the region. Although SCAG does not anticipate that the RTP would affect the total growth in population in the region, the RTP has the ability to affect the distribution of that growth. In addition to induced population growth, transportation projects in the RTP

also have the potential to divide established communities, primarily through acquisition of rights-of-way.

The population and housing mitigation program includes the following types of measures:

- Develop advisory land use policies and strategies that utilize the existing transportation network and enhance mobility while reducing land consumption
- Require project implementation agencies to provide relocation assistance, as required by law, for residences and businesses displaced
- Require project implementation agencies to design new transportation facilities that consider existing communities

LAND USE

The 2008 RTP contains transportation projects to help more efficiently distribute population, housing, and employment growth. These transportation projects are generally consistent with the county- and regional-level general plan data available to SCAG. However, general plans are not updated consistently. In addition, the RTP's horizon year of 2035 is beyond the timeline of even the most recent general plans.

The land use mitigation program includes the following types of measures:

- Encourage cities and counties to update their general plans and provide the most recent plans to SCAG
- Work with member cities to ensure that transportation projects are consistent with the RTP and general plans
- Work with cities and counties to ensure general plans reflect RTP policies

AESTHETICS

The SCAG Region includes several highway segments that are recognized by the State of California as designated scenic highways or are eligible for such designation. Construction and implementation of projects in the RTP could impact designated scenic highways and restrict or obstruct views of scenic resources such as mountains, ocean, rock outcroppings, etc. In addition, some transportation projects could add urban visual elements, such as transportation infrastructure (highways, transit stations) to previously natural areas.

In summary, the aesthetics mitigation program includes the following types of measures:

- Require project implementation agencies to implement design guidelines to protect views of scenic corridors
- Require project implementation agencies to use construction screens and barriers that complement the existing landscape
- Require project implementation agencies to complete design studies for projects in designated or eligible scenic highways
- In visually sensitive areas, require local land use agencies to apply development standards and guidelines that maintain compatibility

PUBLIC SERVICES

Impacts to public services from the 2008 RTP generally include additional demands on fire and police services, schools and landfills. Additional police and fire personnel would be needed to adequately respond to emergencies and routine calls, particularly on new or expanded transportation facilities. The 2008 RTP's influence on growth could contribute to impacts on public schools, requiring additional teachers and educational facilities. Additional population growth could result in a greater demand for solid waste disposal facilities. Furthermore, collecting solid waste and transporting it to an available disposal facility would impact roads and railways.

In summary, the public services mitigation program includes the following types of measures:

- Require the project implementation agencies to identify police protection, fire service, emergency medical service, waste collection and public school needs and coordinate with local officials to ensure that the existing public services would be able to handle the increase in demand for their services
- Require the project implementation agencies to identify the locations of existing utility lines and avoid all known utility lines during construction
- Encourage green building measures to reduce waste generation and reduce the amount of waste sent to landfills
- Encourage the use of fire-resistant materials and vegetation when constructing projects in areas with high fire threat

BIOLOGICAL RESOURCES

Impacts to biological resources generally include displacement of native vegetation and habitat on previously undisturbed land; habitat fragmentation and decrease in habitat connectivity; and displacement and reduction of local, native wildlife including sensitive species. Building new transportation routes and facilities through undisturbed land or expanding facilities and increasing the number of vehicles traveling on existing routes will directly injure wildlife species, cause wildlife fatalities, and disturb natural behaviors such as breeding and nesting. This will result in the direct reduction or elimination of species populations (including sensitive and special-status species) and native vegetation (including special-status species and natural communities) as well as the disruption and impairment of ecosystem services provided by native habitat areas.

The biological resources mitigation program includes the following types of measures:

- Planning transportation routes to avoid/minimize removal of native vegetation, displacement of wildlife, and impacts to regionally and locally significant habitat types such as oak woodlands, vernal pools, estuaries, lagoons, and other riparian areas
- Including provisions for habitat enhancement such as mitigation banking, improving/retaining habitat linkages, preserving wildlife corridors and wildlife crossings to minimize the impact of transportation projects on wildlife species and habitat fragmentation
- Conducting appropriate surveys to ensure no sensitive species' habitat or special-status natural communities is unnecessarily destroyed
- Avoiding and minimizing impacts to wildlife activities (such as breeding, nesting, and other behaviors) during construction of the project by avoiding construction during critical life stages or sensitive seasons
- Avoiding and minimizing impacts to habitat during project construction through actions such as fencing off sensitive habitat, minimizing vehicular accessibility, and salvaging native vegetation and topsoil
- Minimizing further impacts to wildlife and their habitats after project construction by replanting disturbed areas; providing vegetation buffers at heavily trafficked transportation facilities; and restoring local, native vegetation

GEOLOGY, SOILS, AND SEISMICITY

Impacts to geological resources generally include the disturbance of unstable geologic units (rock type) or soils, causing the loss of topsoil and soil erosion, slope failure, subsidence, project-induced seismic activity and structural damage from expansive soils. These activities, in addition to building projects on and around Alquist-Priolo Fault Zones and other local faults, could expose people and/or structures to the risk of loss, injury, or death.

The geological mitigation program includes the following types of measures:

- Employing appropriate grading, construction practices, siting, and design standards, such as adherence to the California Building Code and State of California design standards
- Obtaining site-specific geotechnical data from qualified geotechnical experts
- Complying with all relevant local, state, and federal construction and design requirements for structures located on or across Alquist-Priolo Fault Zones and other local faults

CULTURAL RESOURCES

Impacts to cultural resources generally include substantial adverse changes to historical and archaeological resources and direct or indirect changes to unique paleontological resources or sites or unique geological features. Adverse changes include the destruction of culturally and historically (recent or geologic time) significant and unique historical, archaeological, paleontological, and geological features.

The cultural resources mitigation program includes the following types of measures:

- Obtaining consultations from qualified cultural and paleontological resource experts to identify the need for surveys and preservation of important historical, archaeological, and paleontological resources
- Implementing design and siting measures that avoid disturbance of cultural and paleontological resource areas, such as creating visual buffers/landscaping or capping/filling the site to preserve the contextual setting of the resource
- Monitoring construction activity in areas with moderate to high potential to support paleontological resources and overseeing salvage operations of paleontological resources
- Consulting local tribes and the Native American Heritage Commission for project impacts to sacred lands and burial sites

WATER RESOURCES

Impacts to water resources from the 2008 RTP include potential water quality impairment from increased impervious surfaces. Increased impervious surfaces in water recharge areas potentially impact groundwater recharge and groundwater quality. Cumulative impacts from the projected growth induced by the RTP include increased impervious surfaces; increased development in alluvial fan floodplains; and increased water demand and associated impacts, such as drawdown of groundwater aquifers. Increased output of greenhouse gases from the region's transportation system impacts the security and reliability of the imported water supply.

The water resources mitigation program includes the following types of measures:

- Utilizing advanced water capture and filtration techniques, showing a preference for naturalized systems and designs, to control stormwater at the source
- Avoiding any new construction of impervious surfaces in non-urbanized areas, such as wetlands, habitat areas, parks, and near river systems
- Avoiding any new construction that provides access to flood-prone areas, such as in alluvial fans and slide zones
- Protection and preservation of existing natural flood control systems, such as wetlands and riparian buffers, and expansion of such systems in areas where they do not currently exist
- Constructing projects according to Best Management Practices for water quality protection and water conservation, including low-impact development and green building standards

- Coordinating project development and construction efforts across jurisdictional, agency, and departmental boundaries, to increase project benefits

HAZARDOUS MATERIALS

Implementation of the 2008 RTP would affect the transportation and handling of hazardous materials in the SCAG Region. Expected significant impacts include risk of accidental releases due to an increase in the transportation of hazardous materials and the potential for such releases to reach neighborhoods and communities adjacent to transportation facilities.

The hazardous materials mitigation program aims to minimize the significant hazard to the public or the environment that involves the release of hazardous materials into the environment. Potential mitigation programs include active coordination with regulatory agencies and first responders in order to ensure proper handling and transport of hazardous materials and their containers. Mitigation measures also involve ensuring that the project implementation agency complies with all applicable laws, regulations, and health and safety standards set forth by federal, state, and local authorities that regulate the proper handling of such materials and their containers and that the routine transport, use, and disposal of hazardous materials does not create a significant hazard to the public or the environment.

The hazardous materials mitigation programs include the following types of measures:

- Coordinating with regulatory agencies and first responders in order to continue to govern goods movement and hazardous materials transportation throughout the region
- Considering existing and known planned school locations when determining the alignment of new transportation projects and modifications to existing transportation facilities
- Encouraging project sponsors to consider published lists of contaminated properties, which are continually updated, in order to identify cases where new development would involve the disturbance of contaminated properties
- Developing appropriate mitigation measures to assure that worker and public exposure is minimized to an acceptable level and to prevent any further environmental contamination as a result of construction
- Ensuring that project implementation agencies comply with all applicable laws, regulations, and health and safety standards set forth by federal, state, and local authorities that regulate the proper handling of such materials and their containers and that the routine transport, use, and disposal of hazardous materials does not create a significant hazard to the public or the environment

SAFETY AND SECURITY

The SCAG Region is vulnerable to numerous threats that include both natural and human-caused incidents. A large-scale evacuation would be difficult in the SCAG Region. Impacts to safety and security resulting from the 2008 RTP include: 1) impairment of transportation safety, security, and reliability for all people and goods in the region; 2) prohibiting the prevention, protection, response to, and recovery from major human-caused or natural events that would create a significant hazard to the public, threatening and impacting lives, property, the transportation network and the region; and 3) exposure of people or structures to a significant risk of loss, injury or death involving wildland fires. As such, the mitigation programs for Safety and Security in the 2008 RTP aim for extensive coordination, collaboration and flexibility among all of the agencies and organizations involved in planning, mitigation, response and recovery.

The Safety and Security mitigation programs include the following types of measures:

- Continuing deployment and promotion of intelligent transportation system technologies that enhance transportation security
- Establishing transportation infrastructure practices that promote and enhance security
- Establishing a forum where policy-makers can be educated and regional policy can be developed
- Helping to enhance the region's ability to deter and respond to terrorist incidents, and human-caused or natural disasters by strengthening relationships and coordination with transportation agencies
- Working to enhance emergency preparedness awareness among public agencies and with the public at large

NOISE

Some of the principal noise generators within the SCAG Region are associated with transportation (i.e., airports, freeways, arterial roadways, seaports, and railroads). Additional noise generators include stationary sources, such as industrial manufacturing plants and construction sites. Noise impacts resulting from the 2008 RTP generally include exposure of sensitive receptors to noise in excess of normally acceptable noise levels or substantial increases in noise as a result of the operation of expanded or new transportation facilities. As such, the noise mitigation program includes mitigation measures designed to minimize the impact of noise on sensitive receptors as a result of the implementation of the 2008 RTP.

These mitigation measures include ensuring that project implementing agencies comply with all local sound control and noise level rules, regulations, and ordinances; utilizing the best available noise control techniques (including mufflers, intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds) in order to minimize construction noise impacts; and utilizing land use planning measures, such as zoning, restrictions on developments, buffers, etc., to minimize exposure to sensitive receptors.

The noise mitigation programs include the following types of measures:

- Encouraging project implementing agencies to comply with all local sound control and noise level rules, regulations, and ordinances
- Developing the best available noise control techniques in order to minimize construction noise impacts
- Conducting a project-specific noise evaluation as part of the appropriate environmental review of each project
- Encouraging project implementation agencies to maximize the distance between noise-sensitive land uses and new roadway lanes, roadways, rail, transit centers, park-and-ride lots, and other new noise-generating facilities

IV. FINANCIAL PLAN

The financial plan identifies how much money is available to support the region's surface transportation investments including transit, highways, local road improvements, system preservation and demand management goals. It also addresses the need for investment in goods movement infrastructure. Improving ground access in and around major goods movement facilities, and enhancing major highways and railways are critical to maintaining the health of Southern California's economy. The 2008 RTP calls for traditional and non-traditional revenue sources for implementing a program of infrastructure and environmental improvements to keep both freight and people moving.

The 2008 RTP financial plan identifies a number of new revenue sources to provide additional funding beyond existing transportation dollars. The SCAG region's financially constrained plan includes a core revenue forecast of existing local, state, and federal sources along with new funding sources that are reasonably available over the time horizon of the RTP. The plan also includes action steps to obtain the revenues necessary for implementing the region's transportation vision. The region has successfully secured the necessary resources to support transportation investments proposed in past RTPs and this plan will continue to meet the necessary milestones for implementation. Since 2002, three counties within the SCAG region (Riverside, San Bernardino, and Orange) reauthorized their local sales tax measures with overwhelming voter approval. More recently, the general electorate of California approved Proposition 1B, the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, which provides $19.9 billion in infrastructure bonds for transportation improvements throughout the state. Additional legislative gains include the protection of Proposition 42 revenues (sales tax on gasoline) for transportation purposes with the passage of Proposition 1A.

In 2006, the State Legislature also reviewed the potential for using public-private partnerships to facilitate project delivery. With the passage of AB 1467 (Nunez, Chapter 32, Statutes of 2006), the state established a framework for moving forward with partnership demonstration projects. Further, AB 521 (Runner, Chapter 542, Statutes of 2006) clarified the State Legislature's role in evaluating partnership proposals, mandating that the Legislature can only disapprove of the proposals. AB 1467 authorizes two public-private partnerships related to goods movement in Southern California. The bill also authorizes the implementation of high-occupancy toll (HOT) lanes, which would allow the region to better utilize its High-Occupancy Vehicle (HOV) lanes and generate toll revenues. Recent passage of AB 1467 and AB 521 provides a sound basis for SCAG's 2008 RTP financial strategies.

In developing the financial plan, SCAG followed a few basic principles to guide its regional financial forecast:

- Incorporate financial planning documents developed by local county transportation commissions and transit operators in the region where available
- Ensure consistency with both local and state planning documents
- Utilize published data sources to evaluate historical trends and augment local forecasts as needed, and
- Recommend new funding sources that target beneficiaries of transportation investments

The rest of the plan outlines our financial strategies and provides documentation of the financial assumptions and methodologies used for forecasting revenues and expenditures.

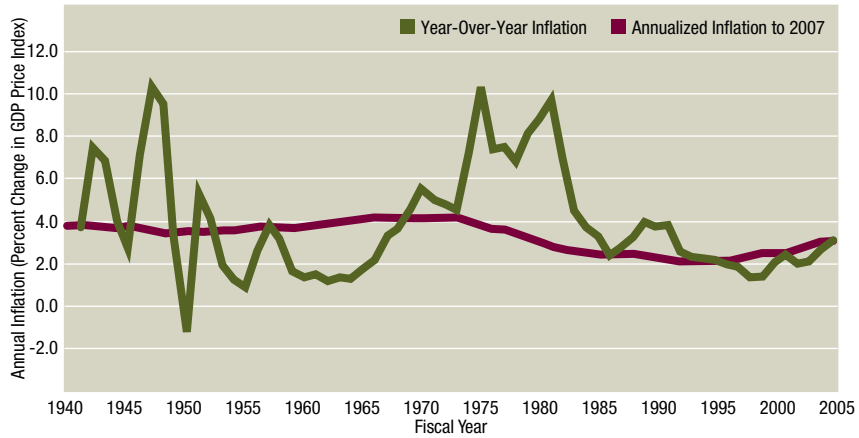
The Economic Outlook

Overall economic conditions play a large role in determining the level of revenues available for transportation. Although it is difficult to predict the future, SCAG's financial model takes a conservative approach in forecasting the latter years of the RTP planning horizon. The approach also includes maintaining historical growth trends for key revenue sources, including locally generated sales tax revenues as well as both state and federal gas tax revenues.

INFLATION

The effect of inflation over a long-range plan is significant, particularly in the last few years when inflation has had nearly 30 years to erode the value of money. This causes both costs and revenues to be higher in nominal dollar terms. Figure 4.1 shows inflation trends since World War II as measured by the Gross Domestic Product (GDP) Price Deflator. Inflation has varied considerably over the long term, but has trended between 2 and 4 percent, as illustrated by the red line. In recent years, inflation has increased. SCAG's revenue model utilizes historical inflation trends as measured by the GDP Price Deflator – an approach consistent with that used by the Federal Office of Management and Budget in preparing the Budget of the United States Government. On the basis of this information, a 3.8 percent inflation rate is used to adjust revenue model data to nominal dollars (year-of-expenditure dollars).

FIGURE 4.1 HISTORICAL INFLATION TRENDS

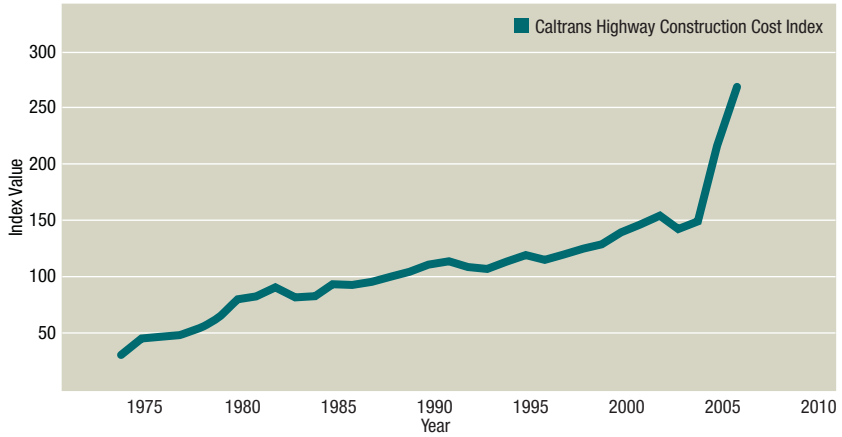


Source: Office of Management and Budget, Budget of the United States Government, Fiscal Year 2008 Budget (FY08).

CONSTRUCTION COST INCREASES

While revenues can be eroded by inflation, construction costs in California and the nation have escalated considerably over the last four years. This has been a major impediment to delivering transportation projects. The recent large increase in construction costs is due to a variety of factors, including a building boom and higher demand for commodities in developing countries, especially China with construction for the 2008 Olympics. Figure 4.2 shows the increase in California highway construction costs. It is unlikely that costs will continue to increase at a such a rapid rate in the future. The increase over the last few years is unprecedented. The financial plan uses a 5.3 percent annual inflation factor to estimate future, nominal costs.

FIGURE 4.2 HIGHWAY PROJECT COSTS



Source: California Department of Transportation

RETAIL SALES GROWTH

Available land, population increases, and new retail locations are the biggest contributors to growth in retail sales. According to statistics from the California Board of Equalization, retail sales grew by 2.3 percent in the SCAG region from FY1978 to FY2004, a period roughly equal in length to the 2008 RTP. Growth was uneven, ranging from 1.3 percent in Los Angeles County to 5.5 percent in Riverside County. The financial plan assumes that uneven growth will continue, with retail sales growth ranging from 1.2 to 4.7 percent.

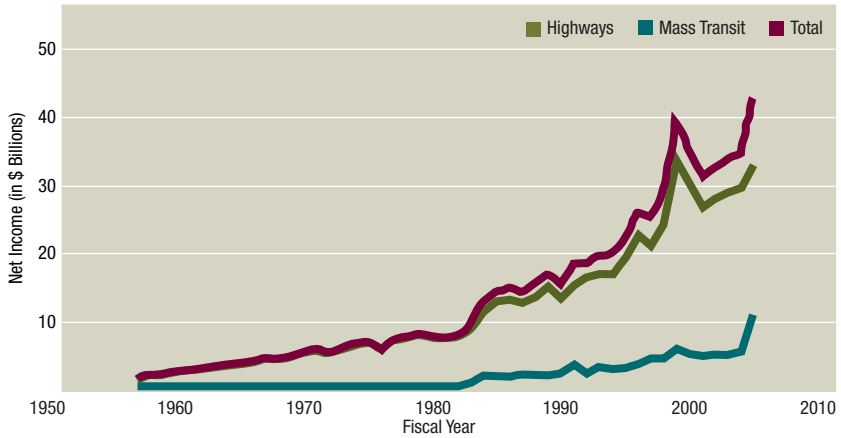
FUEL CONSUMPTION

Taxes on gasoline and diesel fuels are the basis of many transportation revenue sources. These types of revenues are solely dependent on fuel consumption. Over the next several decades, fuel consumption will continue to be impacted by increases in vehicle-miles traveled, increases in conventional vehicle fuel economy, and the adoption of alternative fuel vehicles. While Caltrans estimates that fuel consumption statewide will increase by 1.7 percent between 2004 and 2030, the financial plan takes a more conservative approach and assumes that fuel consumption will not increase over the RTP planning horizon.

STATUS OF THE FEDERAL HIGHWAY TRUST FUND

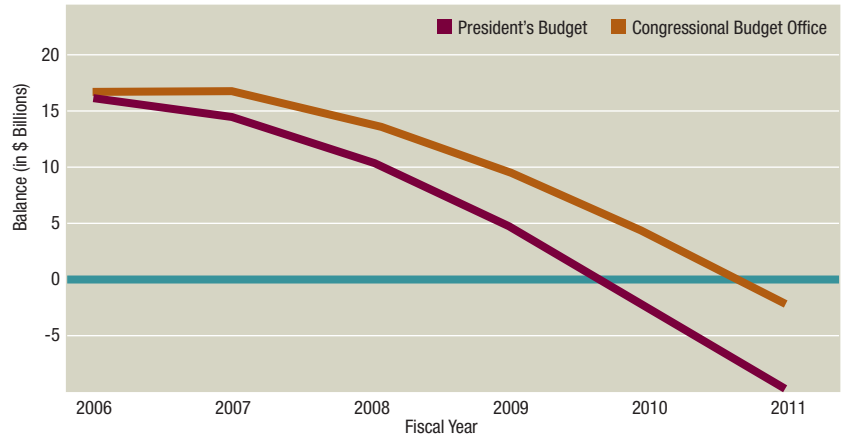
The Federal Highway Trust Fund provides federal highway and transit funding from a nationally imposed 18.3-cent-per-gallon gasoline tax. The Federal Highway Trust Fund has grown by 3.4 percent annually due to historical increases in fuel consumption, but recently, a larger share is being devoted to transit, as shown in Figure 4.3.

FIGURE 4.3 STATUS OF THE FEDERAL HIGHWAY TRUST FUND



Source: Federal Highway Administration, Federal Highway Statistics 2005

FIGURE 4.4 CURRENT HIGHWAY TRUST FUND YEAR-END BALANCE ESTIMATES



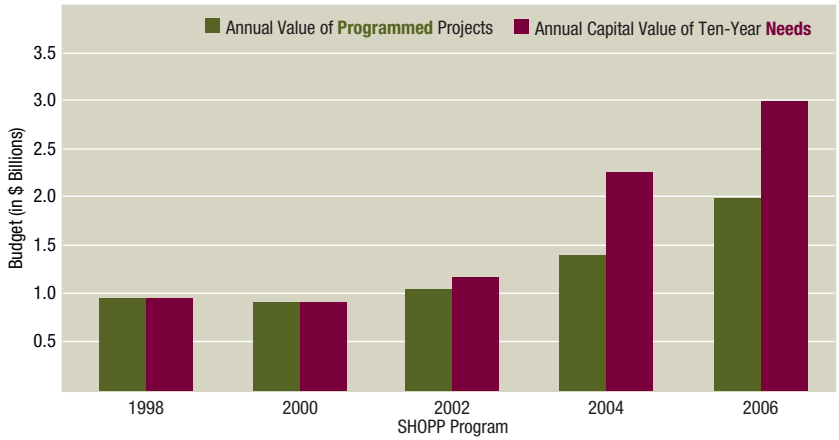
Source: United States Government Accountability Office, Highway Trust Fund: Overview of Highway Trust Fund Estimates, GAO Testimony before the Subcommittee on Highways, Transit, and Pipelines, Committee on Transportation and Infrastructure, GAO-06-572T

Many public officials and transportation professionals have become concerned about the health of the Federal Highway Trust Fund, as expenditures authorized under Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) have outstripped revenues generated by the tax. Figure 4.4 shows a chart from a recent Government Accountability Office (GAO) analysis of Federal Highway Trust Fund forecasts. Congressional leadership has shown concern over the problem and the SCAG 2008 RTP assumes that Congress will take action to ensure that the Highway Trust Fund maintains current funding levels.

STATUS OF THE STATE HIGHWAY ACCOUNT

The viability of the State Highway Account remains a critical issue. The state's gasoline tax revenues are now exclusively dedicated to funding the State Highway Operation and Protection Program (SHOPP). As shown in Figure 4.5, previous levels of funding have been considerably less than actual needs. Continued under investment in the rehabilitation and maintenance needs of the State Highway System has serious ramifications—rapidly increasing the number of distressed lane-miles on the State Highway System and eroding the condition of the state's bridges.

FIGURE 4.5 STATE HIGHWAY OPERATION AND PROTECTION PROGRAM



Source: California Department of Transportation, 2007 Ten-Year SHOPP Plan

Statewide, the 2007 Ten-Year SHOPP Plan identifies $4.2 billion in annual needs, while fiscally constrained funding plan for the next four years are only $1.9 billion annually. The RTP assumes that the State Legislature will address this need through an adjustment in the state gas excise tax and that other revenues will continue to be available for capital projects.

AIR QUALITY ATTAINMENT

Air quality determines the amount of Congestion Mitigation and Air Quality (CMAQ) funding available to the SCAG region. The 2008 RTP assumes that the region will be in attainment for a number of pollutants. It also assumes the severity level for other pollutants will lessen as of 2020. As a result, CMAQ funding is halved.

LOCAL SALES TAX MEASURES

Most of the counties in the SCAG region impose a local sales tax to fund transportation projects. Ventura County is the only county in the region without a dedicated sales tax. In recent years, several local sales taxes have been renewed and the 2008 RTP reflects these additional revenues:

- San Bernardino County renewed Measure I through 2040.
- Riverside County renewed Measure A through 2039.
- Orange County recently renewed Measure M through 2041.

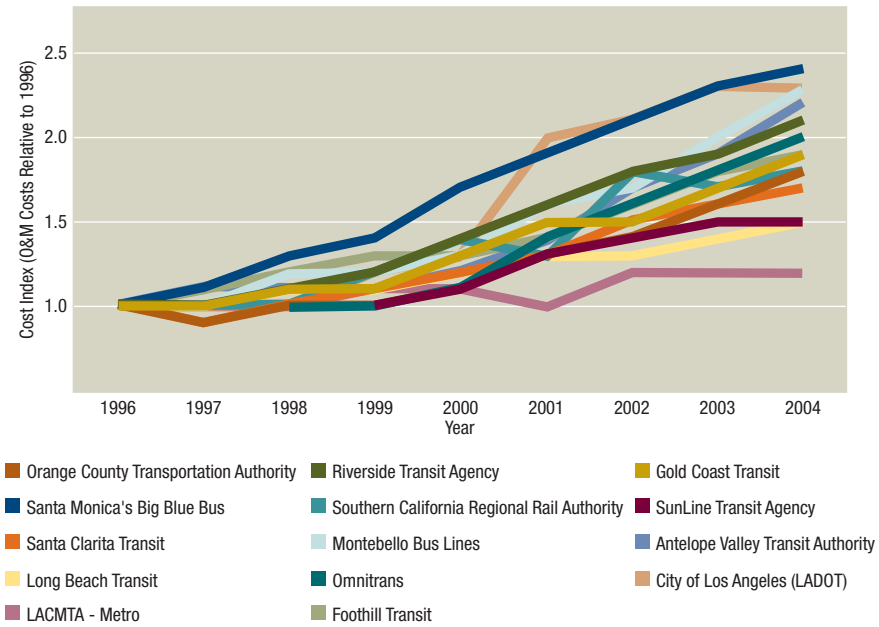
Los Angeles County levies a permanent 1 percent tax (a combination of two half-cent sales taxes). In Imperial County, Measure D will expire in 2010. However, the 2008 RTP assumes an extension of Measure D as part of new revenue sources.

TRANSIT OPERATING AND MAINTENANCE (O&M) COSTS

Future transit O&M costs are difficult to predict because they depend on a variety of factors, such as future revenue-miles of service, labor contracts, and the age of rolling stock. The addition of new transit service and capital proj-

ects, such as the Mid-City/Exposition Corridor Light Rail Transit (LRT), can add to ongoing O&M costs. Over the last decade, these O&M costs grew 1 to 10 percent annually, depending on the transit operator (see Figure 4.6). Some of the differences in O&M growth are due to rapid expansion among the newer operators and outsourcing among the older operators.

FIGURE 4.6 GROWTH IN TRANSIT OPERATING AND MAINTENANCE COSTS



Source: SCAG Analysis of National Transit Database Statistics

For the 2008 RTP, transit O&M costs are estimated based upon historical increases:

- The regional average increase (4 percent) is used for most operators. This assumes that some of the extraordinary increases for individual operators due to rapid expansion will not continue into the future.
- For Los Angeles County, the financial plan relies on detailed forecasts from the county transportation commission. These forecasts are consistent with historical data and take into account large shifts in O&M costs due to major capital projects.

DEBT SERVICE

Local agencies in the SCAG region have historically relied on debt financing to ensure that revenues are available to meet the cash flow requirements of future expenditures. The Los Angeles County Metropolitan Transportation Authority (LACMTA - Metro) has a detailed county financial model that estimates debt service on a project basis. Other county transportation commissions prepare debt service forecasts for rating agencies and report current debt service in their comprehensive annual financial reports (CAFRs). The 2008 RTP includes all outstanding commitments and interest payments on future bonds and commercial paper. Issued debt is expected to remain under debt ceilings. For counties without an established policy, debt service is assumed to be constrained to 50 percent of revenues.

Definition of Revenue Scenarios and Expenditure Categories

CORE AND REASONABLY AVAILABLE REVENUE SCENARIOS

For the 2008 RTP, SCAG prepared two types of revenue forecasts. Both are included in the financially constrained plan:

- Core revenues
- Reasonably available revenues

The *core revenues* identified are those that have been committed or historically available for the building, operations, and maintenance of the current roadway and transit systems in the SCAG region. Essentially, these revenues are existing transportation funding sources projected to FY2036. The core forecast includes neither future increases in tax rates nor extensions of tax

measures beyond their expiration date—unless already approved through ballot initiatives. These revenues provide a benchmark from which additional funding can be identified.

The region's *reasonably available revenues* include new sources of transportation funding likely to materialize within the 2008 RTP time frame. These new sources include adjustments to state and federal gas tax rates based on historical trends, extension of a local option sales tax, localized value capture strategies, container fees, as well as passenger and commercial truck tolls for specified facilities. Reasonably available revenues also include innovative financing strategies, such as private equity participation. In accordance with federal guidelines, the plan includes strategies for ensuring the availability of these sources.

EXPENDITURE CATEGORIES

Transportation expenditures in the SCAG region can be summarized into three main categories:

- Capital costs for state highways, regionally significant arterials, local streets and roads, as well as transit
- Operating and maintenance costs for state highways, regionally significant arterials, local streets and roads, as well as transit
- Debt service payments for current and anticipated bond issuances

Core Revenues

A regional revenue model was developed to forecast the revenues over the entire RTP time horizon. The revenue model is detailed and supports analysis by county or funding source. The basic process for developing the revenue forecast is as follows:

- Build on the revenue forecasts provided by the county transportation commissions
- Add assumptions based on historical data
- Compare historical data to Short-Range Transit Plans and other agency documents
- Work with the transportation commissions to modify assumptions and forecasts as needed

The region's revenue forecast horizon for the 2008 RTP is FY2007 through FY2036. Consistent with federal guidelines, the 2008 RTP takes into account inflation and reports statistics in nominal (year of expenditure) dollars. Table 4.1 shows these core revenues in five-year increments by county.

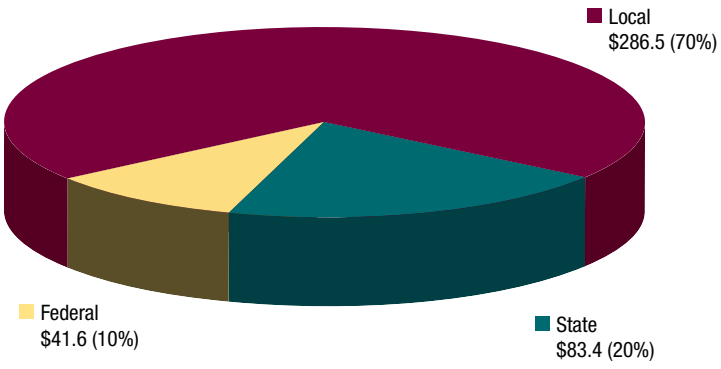
TABLE 4.1 CORE REVENUE FORECAST FY 2007-2036 (IN NOMINAL DOLLARS, BILLIONS)

County	FY2007-11	FY2012-16	FY2017-21	FY2022-26	FY2027-31	FY2032-36	Total
Imperial	$0.4	$0.4	$0.3	$0.4	$0.4	$0.4	$2.3
Los Angeles	$29.1	$30.5	$32.8	$39.7	$45.3	$53.2	$230.6
Orange	$6.8	$7.8	$9.2	$11.5	$14.4	$17.9	$67.7
Riverside	$4.3	$5.3	$6.8	$9.0	$12.9	$18.5	$56.8
San Bernardino	$5.2	$5.7	$6.6	$7.1	$8.9	$11.4	$44.9
Ventura	$1.0	$1.1	$1.2	$1.5	$1.9	$2.4	$9.1
Total	**$46.8**	**$50.7**	**$56.9**	**$69.2**	**$83.8**	**$103.9**	**$411.4**

Note: Numbers may not add due to rounding.

As shown in Figure 4.7, the majority of revenues in the SCAG region come from local sources. The share of state sources (20 percent) has increased since the last RTP (15 percent) as a result of two propositions. Proposition 1A protects funding from the state gasoline sales tax, and Proposition 1B authorizes $19.9 billion in bonds over the next several years to fund existing and new statewide transportation-related infrastructure programs.

FIGURE 4.7 SCAG REGIONAL REVENUES (IN NOMINAL DOLLARS) $411.4 BILLION TOTAL



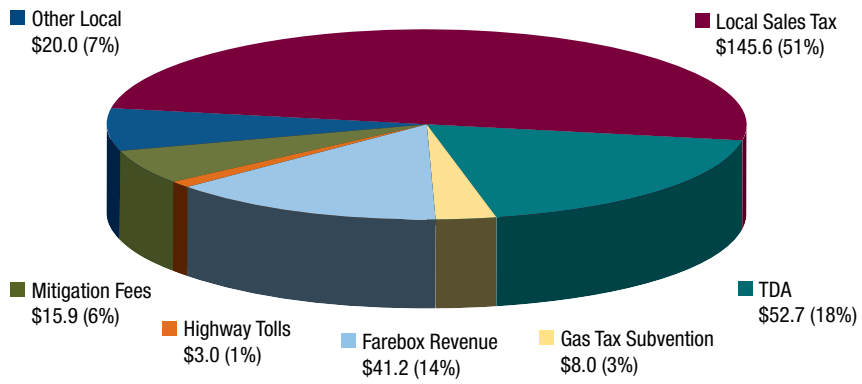
Source: SCAG Revenue Model 2007

Note: Numbers may not add due to rounding.

Local option sales taxes provide the largest single source of local funding as shown in Figure 4.8 and compose roughly a third (35.6 percent) of overall funding for the RTP. Local sales tax revenues have been boosted by the renewal of several local measures.

Specifically, sales tax extensions have significantly increased the funding available in San Bernardino and Riverside Counties and their shares of overall regional transportation revenues. Figure 4.9 shows the breakdown of revenues by county.

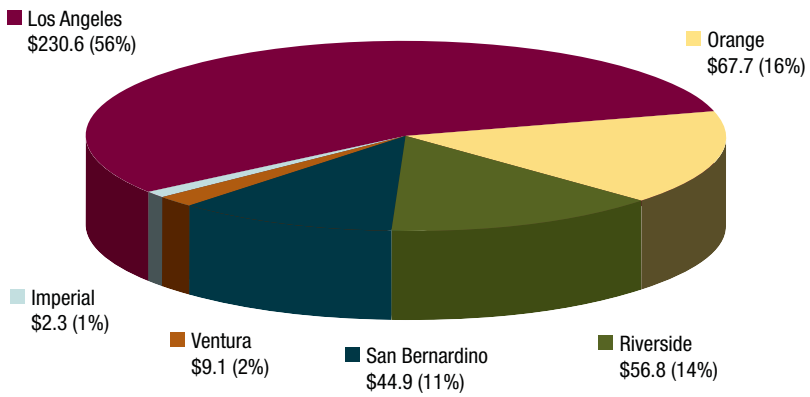
FIGURE 4.8 SCAG REGIONAL REVENUES, LOCAL SOURCES (IN NOMINAL DOLLARS) $286.5 BILLION TOTAL



Source: SCAG Revenue Model 2007

Note: Numbers may not add due to rounding.

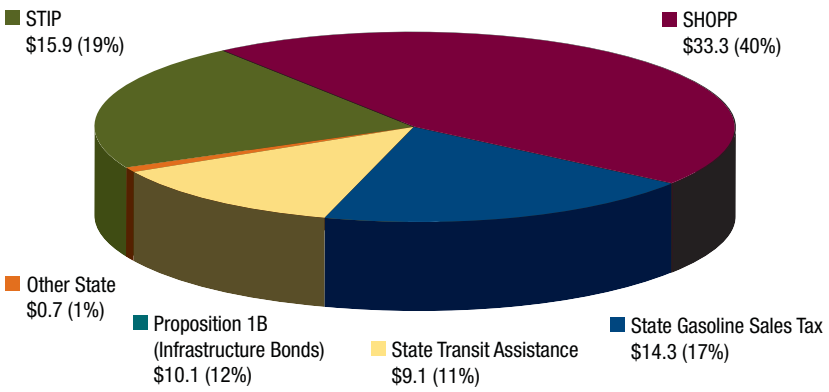
FIGURE 4.9 SCAG REGIONAL REVENUES BY COUNTY (IN NOMINAL DOLLARS) $411.4 BILLION TOTAL



Source: SCAG Revenue Model 2007

State sources generate a larger share of revenues than in the 2004 RTP, mostly due to the infrastructure bonds (Proposition 1B) and state gasoline sales tax protection (Proposition 1A). The infrastructure bonds and state gasoline sales taxes make up roughly 30 percent of the total $83.4 billion in forecasted state revenues (see Figure 4.10).

FIGURE 4.10 SCAG REGIONAL REVENUES, STATE SOURCES (IN NOMINAL DOLLARS) $83.4 BILLION TOTAL

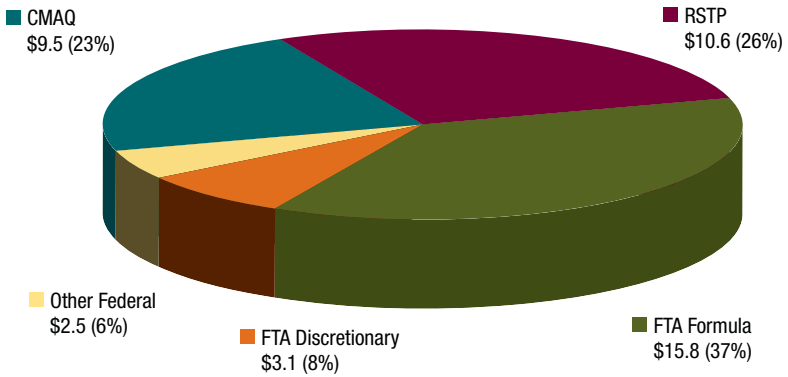


Source: SCAG Revenue Model 2007

Note: Numbers may not add due to rounding.

As shown in Figure 4.11, federal sources are anticipated to remain steady and represent a small portion of overall transportation funds ($41.6 billion). One of the largest declines in federal funding will be due to the region achieving attainment for a number of pollutants by 2020. This will result in less CMAQ funding.

FIGURE 4.11 SCAG REGIONAL REVENUES, FEDERAL SOURCES (IN NOMINAL DOLLARS) $41.6 BILLION TOTAL



Note: Numbers may not add due to rounding.

Reasonably Available Revenues

There are several new funding sources that will increase the revenues available for the 2008 RTP. The region also expects to leverage innovative financing strategies.

Table 4.2 presents twelve categories of funding sources and financing techniques that were evaluated for the RTP. They were selected as a result of their use in other areas of the state, the burgeoning potential, historical precedence and likelihood of implementation within the time frame of the 2008 RTP. These funding sources are reasonably available and are included in the financially constrained plan. For each funding source, SCAG has examined the policy and legal context of implementation and has prepared an estimate of the revenue potential.

TABLE 4.2 NEW REVENUE SOURCES AND INNOVATIVE FINANCING STRATEGIES (IN NOMINAL DOLLARS, BILLIONS)

Revenue Source	Description	Amount	Actions to Ensure Availability	Responsible Party
Value Capture Strategies	Various techniques assumed: formation of special districts, including Benefit Assessment Districts, Mello-Roos Community Facility Districts, as well as tax increment financing and joint development to provide gap financing for specific transit investments (Gold Line extension, Purple Line extension, and the HSRT system). SCAG also assumes one-time proceeds from the sale of Caltrans-owned property within the SR-710 tunnel vicinity.	$3.7	Pursue necessary approvals for special districts by 2012 (Benefit Assessment Districts require majority approval by property owners; Mello-Roos tax requires two-thirds approval); work with private entities for joint development opportunities; also, work with Caltrans to utilize proceeds from real estate sales to partially fill funding gap for the SR-710 tunnel; pursue legislation to enable sales and to establish escrow account for the proceeds	MPO, transit operators, local jurisdictions, property owners along project corridors, developers, Caltrans
Local Option Sales Tax Extension	Half-cent sales tax measure extension for Imperial County—existing Measure D expires in 2010	$0.8	Local sales tax measure to be placed on ballot by 2010	Imperial County
Highway Tolls (includes toll revenue bond proceeds)	Toll revenues generated from the SR-710 tunnel, I-710 dedicated truck lanes, High Desert Corridor, and CETAP Corridor	$22.0	Region was granted authority under AB 1467 (2006) to impose tolls and work with private entities for the financing of goods movement related facilities including the I-710 dedicated truck lanes; additional state legislative approval needed for the SR-710 tunnel	MPO, local county transportation commissions (LACMTA, SANBAG, RCTC), State Legislature
State and Federal Gas Excise Tax Adjustment to Maintain Historical Purchasing Power	Estimate equivalent to additional ten cent per gallon gasoline tax imposed by the state and federal government starting in 2012—extrapolation of historical trend	$17.0	Congressional and state legislative approval	MPO, State Legislature, Congress
Container Fees (includes container fee bond proceeds)	Charge imposed on containerized cargo moving through the Ports of LA/LB (includes railroad user-fees for rail capacity improvement program); fees are directly linked to specific goods movement projects	$41.5	Negotiated by ports, shipping community, regional stakeholders or state legislative approval (upon passage of SB 974 or other legislative effort)	Ports, shippers, goods movement stakeholders (MPO, railroads, local county transportation commissions), State Legislature
Private Equity Participation	Public Private Partnership arrangement whereby a private entity designs, finances, builds, operates, and maintains a facility under a lease arrangement for a fixed period of time	$4.4	Region was granted authority under AB 1467 (2006) to work with private entities for the financing of freight-related projects; additional state legislative approval needed for the SR-710 tunnel	MPO, local county transportation commissions, private consortium, State Legislature

Revenue Source	Description	Amount	Actions to Ensure Availability	Responsible Party
Private Activity Bonds (PAB)	Interest savings from the issuance of tax-exempt private activity bonds	$0.4 (included in container fees)	Work with railroads and other regional stakeholders to receive federal PAB allocation	MPO, freight railroads, local county transportation commissions, US DOT
U.S. Environmental Protection Agency (EPA) funding for clean freight rail technology	EPA subsidies to help mitigate locomotive emissions per the 2007 State Implementation Plan (SIP)	$1.9	Work with railroads, AQMD, ARB and US EPA for federal clean technology funding allocation	MPO, freight railroads, AQMD, ARB, US EPA
Interest Earnings	Interest earnings from toll bond proceeds (High Desert Corridor, CETAP, SR-710 tunnel, and I-710 truck lanes)	$0.4	See Highway Tolls	See Highway Tolls
Riverside County Measure A (Bond Anticipation Notes)	Short-term debt to help fund the CETAP Corridor in anticipation of the sale of Measure A revenue bonds	$1.5	Issuance of debt subject to RCTC Board policy	RCTC
Transportation Infrastructure Finance and Innovation Act (TIFIA) Loan	The TIFIA loan program provides credit assistance for transportation investments of national/regional significance; TIFIA loan assumed for the CETAP Corridor	$0.9	Work with US DOT and RCTC to evaluate applicability of the TIFIA loan program for the CETAP Corridor; further feasibility work necessary to assess traffic and revenue potential on CETAP Corridor	MPO, RCTC, US DOT TIFIA Office
HSRT Passenger System (Private Contribution & User Fee)	User fee-supported initiative for HSRT system. Assumes private-sector development: design, finance, build, operate and maintain. See HSRT Report for further details	$26.2	For the IOS: form JPA, finalize development of a comprehensive business plan; work with private entity to ensure commitment	MPO, private consortium, local/regional stakeholders

Summary of Revenue Sources and Expenditures

TABLE 4.3.1 CORE AND REASONABLY AVAILABLE REVENUE PROJECTIONS (IN NOMINAL DOLLARS, BILLIONS)

Revenue Source	Revenue Projection Assumptions	Revenue Estimate
LOCAL REVENUE SOURCES		
Local Option Sales Tax Measures	**Description:** Locally imposed ½ percent sales taxes in four counties (Imperial, Orange, Riverside, and San Bernardino). Permanent 1 percent (combination of two ½ cent sales taxes) in Los Angeles. **Assumptions:** Sales taxes grow consistent with county transportation commission forecasts and historical trends.	$145.6
Transportation Development Act (TDA) – Local Transportation Fund	**Description:** Local Transportation Funds (LTF) are derived from a ¼ cent sales tax on retail sales statewide. Funds are returned to the county of generation and used mostly for transit operations and transit capital expenses. **Assumptions:** Same sales tax growth rate as used for local option sales tax measures	$52.7
Gas Excise Tax Subventions (to Cities and Counties)	**Description:** Subventions to counties and local jurisdictions in region from the California state gas tax. Revenues for the forecast are proportionate to the percentage of streets and roads that are regionally significant. **Assumptions:** Fuel consumption does not grow except in Los Angeles and Orange counties where growth is less than historical trends and consistent with forecasts by local transportation commissions. Regionally significant streets and roads (37 to 50 percent of roads) are classified as either arterials or collectors.	$8.0
Transit Farebox Revenue	**Description:** Transit fares collected by transit operators in the SCAG region. **Assumptions:** Farebox revenues increase consistent with historic trends, planned system expansions, and operator forecasts.	$41.2
Highway Tolls (in core revenue forecast)	**Description:** Revenues generated from toll roads operated by the Transportation Corridor Agencies (TCA). **Assumptions:** Traffic does not grow (compared to historical growth of about 3.8 percent) in core revenue forecast scenario.	$3.0
Mitigation Fees	**Description:** Revenues generated from development impact fees. The revenue forecast includes fees from the Transportation Corridor Agency (TCA) development impact fee program; the Riverside County's Transportation Uniform Mitigation Fee (TUMF) for both the Coachella Valley and Western Riverside County; and the San Bernardino County's Development Impact Fee (DIF) program. **Assumptions:** The financial forecast is consistent with revenue forecasts from Riverside County Transportation Commission (RCTC), and San Bernardino Associated Governments (SANBAG).	$15.9
Local Agency Funds	**Description:** Includes committed local revenue sources, such as transit advertising and auxiliary revenues, lease revenues, and interest and investment earnings from reserve funds. **Assumptions:** Revenues are based on financial data from transit operators and local county transportation commissions.	$20.0
LOCAL SUBTOTAL		**$286.5**

Note: Numbers may not add due to rounding

TABLE 4.3.2 CORE AND REASONABLY AVAILABLE REVENUE PROJECTIONS (IN NOMINAL DOLLARS, BILLIONS)

Revenue Source	Revenue Projection Assumptions	Revenue Estimate
STATE REVENUE SOURCES		
State Transportation Improvement Program (STIP)	**Description:** The STIP is a five-year capital improvement program that provides funding from the State Highway Account (SHA) for projects that increase the capacity of the transportation system. The SHA is funded through a combination of state gas excise tax, the Federal Highway Trust Fund, and truck weight fees. The STIP may include projects on state highways, local roads, intercity rail, or public transit systems. The Regional Transportation Planning Agencies (RTPAs) propose 75 percent of STIP funding for regional transportation projects in Regional Transportation Improvement Programs (RTIPs). Caltrans proposes 25 percent of STIP funding for interregional transportation projects in the Interregional Transportation Improvement Program (ITIP). **Assumptions:** Funds are based upon the 2006 STIP program of projects. Long-term forecasts assume no growth in fuel consumption..	$15.9
State Highway Operation and Protection Plan (SHOPP)	**Description:** Funds state highway maintenance and operations projects. **Assumptions:** Short-term revenues are based on overlapping 2004, 2006 and 2008 SHOPP programs. Long-term forecasts are consistent with STIP forecasts and assume no growth in the fuel consumption.	$33.3
State Gasoline Sales Tax	**Description:** The state gasoline sales tax funds discretionary projects through the former Traffic Congestion Relief Program (TCRP). Proposition 42, recently restored by Proposition 1A, transfers future revenues to the Transportation Investment Fund, which distributes revenues to the STIP, local streets and roads, and transit. **Assumptions:** The financial forecast assumes that each county receives its fair share of state gasoline sales tax based upon county population. Future revenues are not expected to grow, with the exception of Orange County, which is expected to grow by a modest one percent.	$14.3
State Transit Assistance Fund (STA)	**Description:** STA is funded with 50 percent of State Public Transit Account (PTA) revenues, which come from diesel sales tax and "spillover" in the gasoline sales tax. Funding is distributed 50 percent by population share and 50 percent by revenue share of the transit operators. **Assumptions:** The forecast is based on current funding levels reported by the State Controller., except in Los Angeles and Orange counties, where growth is less than historical trends and consistent with forecasts by local transportation commissions.	$9.1
Highway Safety, Traffic, Air Quality, and Port Security Bond Act of 2006 (Proposition 1B)	**Description:** Proposition 1B authorizes $19.9 billion to be spent statewide over the next several years on existing and new statewide transportation-related infrastructure programs and projects. Several programs are included under Proposition 1B. The California Transportation Commission has not yet established priorities and funding formulas for all categories. **Assumptions:** The forecast assumes that the SCAG region receives its fair share of funding under the categories with established funding formulas. Other categories are assumed to be allocated according to population.	$10.1
Other State Sources	**Description:** Other state sources include Service Authority for Freeways and Expressways (SAFE), Freeway Service Patrol, Air Quality Vehicle Registration Fee (AB 2766), Environmental Enhancement and Mitigation, and other miscellaneous state grants. The Clean Air and Transportation Improvement Act added Proposition 116 to use state general obligation bonds to finance rail infrastructure. **Assumptions:** The RTP uses forecasts provided by LACMTA for Los Angeles County for consistency with the LACMTA long-range transportation plan. These revenues are not estimated for other counties.	$0.7
STATE SUBTOTAL (State STIP funds include FHWA IM and NHS funding categories)		**$83.4**

TABLE 4.3.3 CORE AND REASONABLY AVAILABLE REVENUE PROJECTIONS (IN NOMINAL DOLLARS, BILLIONS)

Revenue Source	Revenue Projection Assumptions	Revenue Estimate
FEDERAL REVENUE SOURCES		
FHWA Non-Discretionary Congestion Mitigation and Air Quality (CMAQ) Program	**Description:** Program to reduce traffic congestion and improve air quality in non-attainment areas. **Assumptions:** Short-term revenues are based upon the Caltrans apportionment estimates. Long-term revenues assume that the Federal Highway Trust Fund stays solvent, but revenues do not grow. CMAQ funding is assumed to be halved starting in 2020 due to improved air quality.	$9.5
FHWA Non-Discretionary Regional Surface Transportation Program (RSTP)	**Description:** Projects eligible for RSTP funds include rehabilitation and new construction on any highways included in the National Highway System (NHS) and Interstate Highways (including bridges). Also, transit capital projects, as well as intracity and intercity bus terminals and facilities, are eligible. **Assumptions:** Short-term revenues are based upon the Caltrans apportionment estimates. Long-term revenues assume that the Federal Highway Trust Fund stays solvent, but revenues do not grow.	$10.6
FTA Formula Programs 5307 Urbanized Area Formula (Capital), 5310 Elderly and Persons with Disabilities Formula, 5311 Non-Urbanized Area Formula, 5309 Fixed Guideway Program	**Description:** This includes a number of FTA programs that are distributed by formula. 5307 is distributed annually to state urbanized areas with a formula based on population, population density and transit revenue miles of service. Program funds capital projects (and operations expenses in areas under 200,000 in population), preventative maintenance and planning activities. 5310 funds are allocated by formula to states for capital costs of providing services to the elderly and disabled. The 5311 program provides capital and operating expenses for rural and small urban public transportation systems. Section 5309 Fixed Guideway (FG) funds are also distributed to regions on an urbanized area formula. **Assumptions:** Formula funds are assumed to increase in proportion with the Federal Highway Trust Fund. As with the FHWA sources, the Trust Fund is expected to stay solvent, but not grow. For Los Angeles and Orange Counties, the local transportation commissions have estimated formula allocations based on future increases in service and past allocations that yield results consistent with a no-growth assumption.	$15.8
FTA Non-Formula Program 5309 New and Small Starts, 5309 Bus & Bus-Related Grants	**Description:** Capital projects include preliminary engineering, acquisition of real property, final design and construction, initial acquisition of rolling stock for new fixed guideway systems or extensions, including bus rapid transit, light rail, heavy rail, and commuter rail systems. Capital investment grants of less than $75 million are considered "small starts." "Small starts" will have a separate funding category beginning in FY07. Program funds bus acquisition and other rolling stock, ancillary equipment and the construction of bus facilities. Also includes bus rehabilitation and leasing, park-and-ride facilities, parking lots associated with transit facilities and bus passenger shelters. **Assumptions:** Operators are assumed to receive FTA discretionary funds in rough proportion to what they have received historically. The Federal Highway Trust Fund is expected to stay solvent, but not grow. For Los Angeles and Orange counties, the local transportation commissions have estimated discretionary allocations based on future increases in service and past allocations. Los Angeles expects discretionary allocations to remain constant in nominal terms, while Orange County expects discretionary allocations to grow slower than inflation.	$3.1
Other Federal Funds	**Description:** Includes other federal programs, such as Regional Transportation Enhancements, Highway Bridge Replacement and Rehabilitation, Homeland Security Grants, Bus Preferential Signal Systems, Highway Earmarks, Hazard Elimination Safety, and Railroad/Highway Grade Crossing Protection (Section 130). **Assumptions:** LACMTA provided forecasted revenues for these programs, which have been adopted in the RTP for Los Angeles County. For other counties, Highway Bridge Program revenues are estimated in the short term using program allocations provided by the California Department of Transportation through FY2010. Longer-term estimates are based upon the no-growth assumption used for other federal funding sources.	$2.5
FEDERAL SUBTOTAL		**$41.6**

Note: Numbers may not add due to rounding

TABLE 4.3.4 CORE AND REASONABLY AVAILABLE REVENUE PROJECTIONS (IN NOMINAL DOLLARS, BILLIONS)

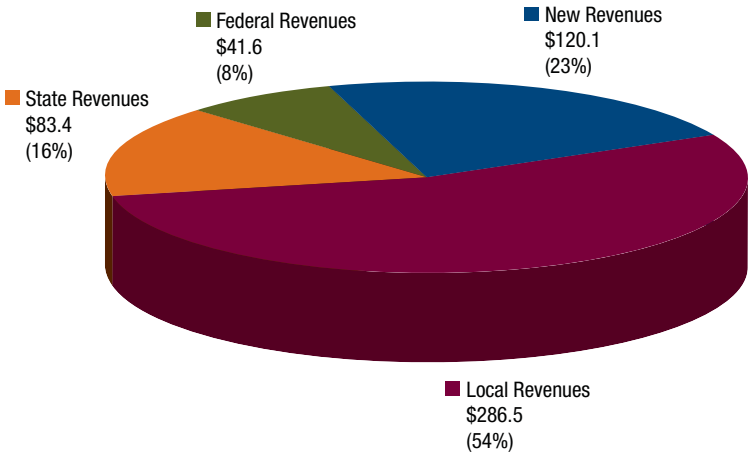
Revenue Source	Revenue Projection Assumptions	Revenue Estimate
INNOVATIVE FINANCING & NEW REVENUE SOURCES		
Value Capture Strategies	**Description:** This strategy refers to capturing the incremental value generated by transportation investments through formation of special districts, joint development, and tax increment financing. Also includes sale of Caltrans-owned property. **Assumptions:** SCAG assumes the formation of special districts, including Benefit Assessment Districts, Mello-Roos Community Facilities Districts, as well as use of tax increment financing and joint development to provide gap financing for specific transit investments: Gold Line extension, Purple Line extension, and passenger HSRT system. SCAG also assumes one-time proceeds from the sale of Caltrans-owned property within the SR-710 tunnel vicinity.	$3.7
Local Option Sales Tax Extension	**Description:** Locally imposed ½ percent sales tax measure extension for Imperial County—existing Measure D expires in 2010. **Assumptions:** Sales tax grows consistent with historical trends in county retail sales.	$0.8
Highway Tolls	**Description:** Toll revenues generated from SR-710 tunnel. Also, tolls assumed for the I-710 dedicated truck lanes, High Desert Corridor, and CETAP Corridor as well as SR-91. **Assumptions:** Toll revenues based on recent feasibility studies for applicable corridors. Also includes toll revenue bond proceeds.	$22.0
State and Federal Gas Excise Tax Adjustment to Maintain Historical Purchasing Power	**Description:** Equivalent to additional ten cent per gallon gasoline tax imposed by the state and federal government starting in 2012 - based on historical extrapolation. **Assumptions:** Forecast consistent with historical adjustments for both state and federal gas taxes.	$17.0
Container Fees	**Description:** Charge imposed on containerized cargo moving through the Ports of LA/LB and region (includes railroad user fees for rail capacity improvement program) and directly linked to specific goods movement projects. **Assumptions:** Container fees at $30 per Twenty-foot Equivalent Unit (TEU). Revenue total also includes railroad user fees assessed on a TEU basis for the rail capacity improvement program; revenue total includes bond proceeds.	$41.5
Private Equity Participation	**Description:** Public Private Partnership arrangement whereby a private entity designs, finances, builds, operates, and maintains a facility under a lease arrangement for a fixed period of time. **Assumptions:** Private capital is assumed for the financing of a number of projects including the SR-710 tunnel, CETAP Corridor and the HSRT system (freight only component assumed in this total). See separate line-item for passenger HSRT.	$4.4
Private Activity Bonds	**Description:** Title XI Section 11142 of SAFETEA-LU amends Section 142(a) of the IRS Code to allow the issuance of tax exempt private activity bonds for highway and freight transfer facilities. States and local governments are allowed to issue tax-exempt bonds to finance highway and freight transfer facility projects sponsored by the private sector. **Assumptions:** Partial interest savings from the issuance of tax-exempt private activity bonds for freight rail investment package are assumed to offset some of the grade separation costs.	$0.4 (included in container fees)
Federal (EPA) funding for clean freight rail technology	**Description:** Federal funding to mitigate locomotive emissions. **Assumptions:** In accordance with the proposed 2007 State Implementation Plan (SIP), it is assumed that the federal government (US EPA) will provide subsidies to mitigate locomotive emissions; the severity of the region's PM2.5 problem and the attainment deadline make it necessary to mitigate locomotive emissions	$1.9
Interest Earnings	**Description:** Interest earnings from toll bond proceeds. **Assumptions:** Interest earnings are assumed from toll bond proceeds (High Desert Corridor, CETAP, SR-710 tunnel, and I-710 truck lanes.	$0.4

Revenue Source	Revenue Projection Assumptions	Revenue Estimate
Riverside County Measure A (Bond Anticipation Notes)	**Description:** BANs are short-term debt financing strategies often used by local governments. The proceeds of a future issue are expected to cover anticipation notes. **Assumptions:** Short-term debt is assumed in the latter years of the RTP to help fund the CETAP Corridor in anticipation of the sale of Measure A revenue bonds.	$1.5
TIFIA Loan	**Description:** TIFIA loan program provides credit assistance under flexible terms for transportation investments of national or regional significance. **Assumptions:** A TIFIA loan is assumed to facilitate financing of the CETAP Corridor; a direct loan is assumed to be repaid by project generated toll revenue.	$0.9
HSRT Passenger System (Private Contribution & User Fee	**Description:** User-fee supported initiative for HSRT system. **Assumptions:** Assumes private sector development including design, finance, build, operate, and maintain. See HSRT report for further details.	$26.2
NEW REVENUE SOURCE SUBTOTAL		**$120.1**
GRAND TOTAL		**$531.5**

Note: Numbers may not add due to rounding

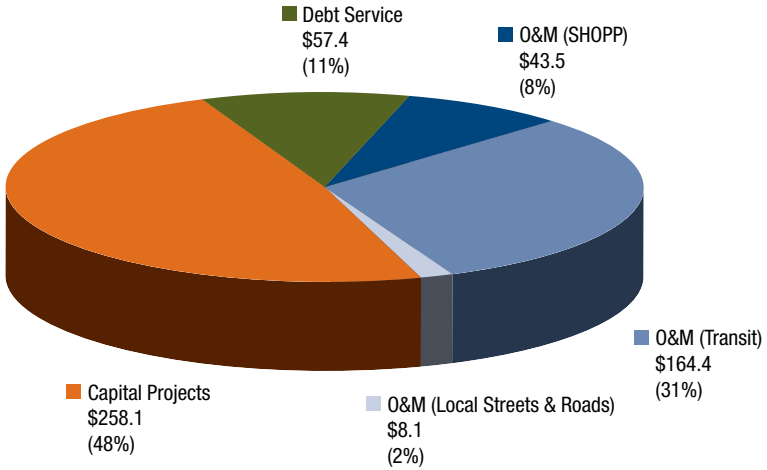
The SCAG region's financially constrained RTP includes revenues from both the core and reasonably available revenue sources. A summary of these forecasted revenues and expenditures is presented in Figures 4.12 and 4.13. As shown in these figures, the SCAG region's budget over the next 30 years totals an estimated $531.5 billion.

FIGURE 4.12 2008 RTP REVENUE SUMMARY
$531.5 BILLION (IN NOMINAL DOLLARS) FY2007-FY2036



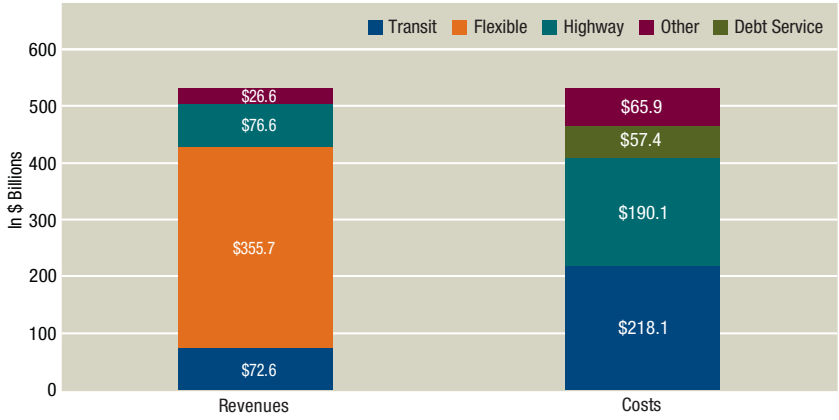
Note: Numbers may not add due to rounding.

FIGURE 4.13 2008 RTP EXPENDITURE SUMMARY
$531.5 BILLION (IN NOMINAL DOLLARS) FY2007-2036



As shown in Figure 4.14, transit and highway expenditures are roughly comparable at 41 and 36 percent, respectively, of the RTP costs for each category. About 12 percent of costs are attributable to an "other" category, reflecting proposed investments in HSRT systems as well as freight rail capacity and grade separation improvements. Consistent with historical practice, agencies in the region are expected to bond against future revenues to provide additional funding in the early years of the plan. As a result, debt service equal to historical payments and future bonding needs has been included as part of the RTP. Anticipated debt service payments make up 11 percent of total costs.

FIGURE 4.14 REVENUES COMPARED TO COSTS BY MODE



Note: Numbers may not add due to rounding

The following Table 4.4 provides details of the SCAG region's 2008 revenue forecast by source in five-year increments. This is followed by Table 4.5, which provides details of the region's expenditures by category in five-year increments.

TABLE 4.4 2008 REGIONAL TRANSPORTATION PLAN REVENUES (IN NOMINAL DOLLARS, BILLIONS)

	REVENUE SOURCES	FY2007-11	FY2012-16	FY2017-21	FY2022-26	FY2027-31	FY2032-36	TOTAL
LOCAL	Sales Tax	$14.3	$19.4	$26.0	$34.1	$44.8	$59.7	$198.3
	– County	10.7	14.4	19.3	25.1	32.8	43.3	145.6
	– Transportation Development Act	3.6	5.0	6.7	9.0	12.0	16.4	52.7
	Gas Tax (Subvention to Cities & Counties)	1.1	1.2	1.3	1.4	1.5	1.6	8.0
	Other Local Funds	2.5	4.5	3.2	4.6	3.5	1.6	20.0
	Transit Fares	3.1	4.5	5.7	7.3	9.3	11.3	41.2
	Tolls	0.3	0.4	0.4	0.5	0.6	0.8	3.0
	Mitigation Fees	1.3	1.7	2.3	2.3	3.4	5.0	15.9
	LOCAL TOTAL	$22.6	$31.7	$39.0	$50.3	$63.0	$79.8	$286.5
STATE	State Highway Operations and Protection Program (SHOPP)	5.3	5.3	5.7	5.7	5.7	5.7	33.3
	State Transportation Improvement Program (STIP)	2.9	2.2	2.4	2.5	2.7	3.1	15.9
	– Regional - RTIP	2.2	1.7	1.8	1.9	2.1	2.3	11.9
	– Interregional - ITIP	0.7	0.6	0.6	0.6	0.7	0.8	4.0
	Traffic Congestion Relief Program, Propositions 42 and 1A	2.0	1.8	2.0	2.3	2.8	3.4	14.3
	State Transit Assistance (STA)	0.8	1.0	1.3	1.6	2.0	2.4	9.1
	Proposition 1B	7.2	2.9	0.0	0.0	0.0	0.0	10.1
	Other (1)	0.1	0.1	0.1	0.1	0.1	0.2	0.7
	STATE TOTAL	$18.3	$13.3	$11.4	$12.2	$13.3	$14.7	$83.4
FEDERAL	Federal Transit	$2.9	$2.5	$2.9	$3.2	$3.3	$4.2	$19.0
	– Federal Transit Formula	1.9	2.0	2.3	2.7	3.1	3.8	15.8
	– Federal Transit Non-Formula	1.0	0.4	0.6	0.5	0.2	0.5	3.1
	Federal Highway & Other	$3.0	$3.1	$3.6	$3.5	$4.2	$5.1	$22.6
	– Congestion Mitigation and Air Quality	1.3	1.6	1.8	1.3	1.6	1.9	9.5
	– Surface Transportation Program (Regional)	1.1	1.3	1.5	1.9	2.2	2.7	10.6
	– Other (2)	0.7	0.2	0.3	0.3	0.4	0.6	2.5
	FEDERAL TOTAL	$5.9	$5.6	$6.5	$6.7	$7.5	$9.3	$41.6
INNOVATIVE FINANCING & NEW REVENUE SOURCES	Private Equity Participation	1.1	1.5	1.8	0.0	0.0	0.0	4.4
	TIFIA Loans	0.0	0.0	0.0	0.0	0.0	0.9	0.9
	Value Capture Strategies	1.0	1.4	1.4	0.0	0.0	0.0	3.7
	Highway Tolls (including bond proceeds)	0.1	2.3	4.8	3.1	3.8	7.8	22.0
	Port Container Fee (including railroad fee and bond proceeds)	4.0	9.4	7.8	6.3	6.3	7.7	41.5
	Riverside Co. Measure A - BANs	0.0	0.0	0.0	0.0	0.0	1.5	1.5
	Federal EPA Funding for clean freight rail technology	0.0	0.8	1.1	0.0	0.0	0.0	1.9
	Interest Earnings	0.0	0.3	0.1	0.0	0.0	0.0	0.4
	HSRT passenger user fee & private contribution	8.7	8.7	8.7	0.0	0.0	0.0	26.2
	Private Activity Bonds (included in container fee estimate)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	State and Federal Gas Excise Tax Adjustment	0.0	3.4	3.4	3.4	3.4	3.4	17.0
	Local Option Sales Tax Extension (Imperial County)	0.0	0.1	0.1	0.1	0.2	0.3	0.8
	Innovative Financing Total	$14.9	$27.9	$29.2	$13.0	$13.7	$21.5	$120.1
	REVENUE TOTAL	$61.7	$78.6	$86.1	$82.2	$97.5	$125.4	$531.5

Notes:
(1) Service Authority for Freeways and Expressways (SAFE), Freeway Service Patrol, Air Quality Vehicle Registration Fee (AB 2766), Environmental Enhancement and Mitigation.
(2) Includes other federal programs, such as Regional Transportation Enhancements, Highway Bridge Replacement and Rehabilitation, Homeland Security Grants, Bus Preferential Signal Systems, Highway Earmarks, local assistance, Hazard Elimination Safety, and Railroad/Highway Grade Crossing Protection (Section 130).
Numbers may not add due to rounding.

TABLE 4.5 2008 REGIONAL TRANSPORTATION PLAN EXPENDITURES (IN NOMINAL DOLLARS, BILLIONS)

RTP COSTS	FY2007-11	FY2012-16	FY2017-21	FY2022-26	FY2027-31	FY2032-36	TOTAL
Capital Projects:	**$42.5**	**$51.6**	**$52.5**	**$32.2**	**$38.4**	**$41.0**	**$258.1**
Arterials	3.9	3.8	3.3	3.6	3.7	6.5	24.8
Grade Separation	2.6	4.5	0.2	0.1	0.7	2.1	10.2
HOV	2.3	2.2	3.3	1.3	1.5	0.9	11.5
Mixed Flow	6.7	8.0	8.0	7.8	11.1	2.7	44.3
Toll Facilities	1.5	7.5	13.7	4.8	2.8	8.5	38.7
ITS	0.4	0.3	0.4	0.6	1.2	0.1	3.0
Transit	9.6	8.8	8.1	8.6	11.1	8.2	54.5
High Speed Regional Transport - Passenger	9.7	9.7	9.7	0.0	0.0	0.0	29.1
High Speed Regional Transport - Freight	2.0	2.3	2.4	3.2	3.6	4.4	17.9
Other (1)	4.0	4.4	3.4	2.1	2.7	7.5	24.1
Operations and Maintenance:	**$19.7**	**$24.8**	**$30.7**	**$37.5**	**$46.0**	**$57.2**	**$216.0**
Highway	5.5	6.4	7.3	7.6	8.1	8.5	43.5
Transit	13.1	17.2	22.1	28.5	36.5	47.1	164.4
Local Streets and Roads	1.2	1.2	1.3	1.4	1.5	1.6	8.1
Debt Service	**$2.7**	**$5.3**	**$8.4**	**$10.8**	**$12.6**	**$17.6**	**$57.4**
COST TOTAL	**$65.0**	**$81.7**	**$91.5**	**$80.5**	**$97.1**	**$115.7**	**$531.5**

Note:: (1) Includes: Rail Capacity Expansion, Truck Climbing, Non-Motorized, TDM and contingencies.
Numbers may not add due to rounding.

V. PLAN PERFORMANCE

This chapter summarizes how well the 2008 RTP performs in meeting its adopted goals and satisfying state and federal requirements. Table 5.1 summarizes goals and their related performance outcomes. One or more performance measures were developed for each of these outcomes to quantify the Plan's performance. These goals and outcomes were used successfully to develop the update to the 2004 RTP.

TABLE 5.1 2008 RTP GOALS AND RELATED PERFORMANCE OUTCOMES

RTP Goals	Mobility	Accessibility	Reliability	Productivity	Safety	Sustainability	Preservation	Cost-Effectiveness	Environmental	Environmental Justice
Maximize mobility and accessibility for all people and goods in the region	✓	✓						✓		✓
Ensure travel safety and reliability for all people and goods in the region	✓		✓		✓					
Preserve and ensure a sustainable regional transportation system						✓	✓			
Maximize the productivity of our transportation system	✓			✓						
Protect the environment, improve air quality and promote energy efficiency									✓	✓
Encourage land use and growth patterns that complement our transportation investments	✓	✓							✓	
Maximize the security of our transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies*										

* SCAG does not yet have an agreed-upon security performance measure; therefore it is not included in this table.

PLAN INVESTMENT PERFORMANCE

This section provides detailed information on each of the performance outcomes and related measures approved by the Regional Council in 2002. The basic concept for each criterion is to compare the performance of the Plan (2035) to both the Base Year (2003) and the Baseline scenario for 2035. The Plan is the selected strategy to guide the region's transportation planning over the next few decades. The Baseline represents "business as usual" and a future condition in which the Plan is not implemented. It assumes only the completion of projects currently under construction or right-of-way acquisition, projects that have completed the National Environmental Policy Act (NEPA) process, or projects that come from the first year of the previous RTP/RTIP. The data for the analysis is based on the SCAG Regional travel demand model results.

MOBILITY

The mobility performance outcome relies on two commonly used measures: speed and delay. Speed and delay were computed using SCAG's regional travel demand model. They are defined as follows:

- Speed is the average speed experienced by travelers regardless of mode in miles per hour (mph).
- Delay is the difference between the actual travel time and travel time that would be experienced if a person traveled at the legal speed limit. This measure is reported as person-hours of delay, which is presented here as a total delay and as delay per capita. The latter measure balances the results with the expected population growth during the Plan period (i.e., through 2035).

Figure 5.1 compares the speeds of the three scenarios. It shows that the Plan improves average daily speeds by eight percent compared to the 2035 Baseline and represents a less than 4-mile-per-hour decline over 2003 Base Year results.

FIGURE 5.1 AVERAGE DAILY SPEED

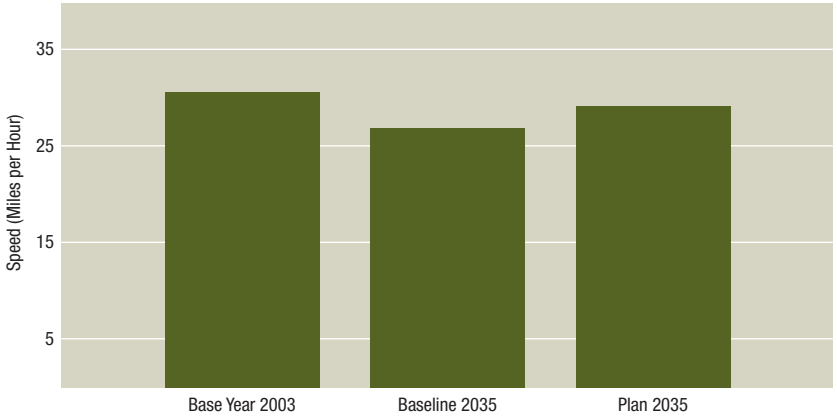


FIGURE 5.2 DAILY PERSON-HOURS OF DELAY

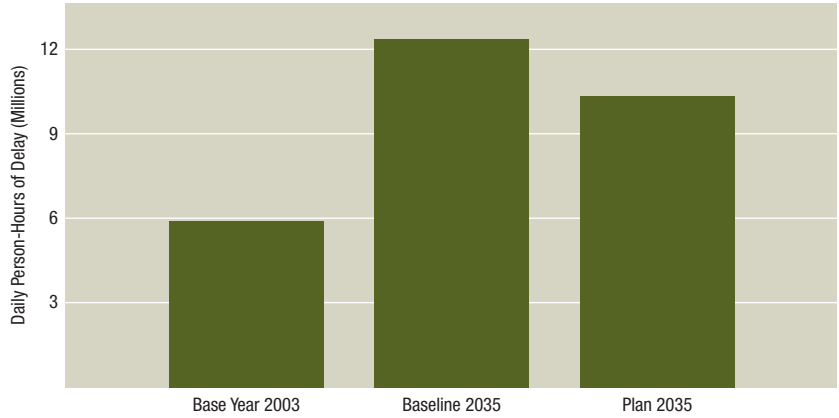


Figure 5.2 compares delay results and shows that the Plan reduces total daily person-hours of delay by 16 percent compared to the Baseline, but also represents an increase of 76 percent over Base Year conditions. This increase reflects the growth in the region and the resulting incremental travel.

Figure 5.3 compares average daily delay per capita, which is a measure that takes into account that there will be more people traveling on the Region's transportation system by 2035. The results tell a different story. Whereas total person delay for the Plan increases by 76 percent over Base Year conditions, each person in the region experiences only a 29 percent increase - less than six minutes per day on a per-capita basis.

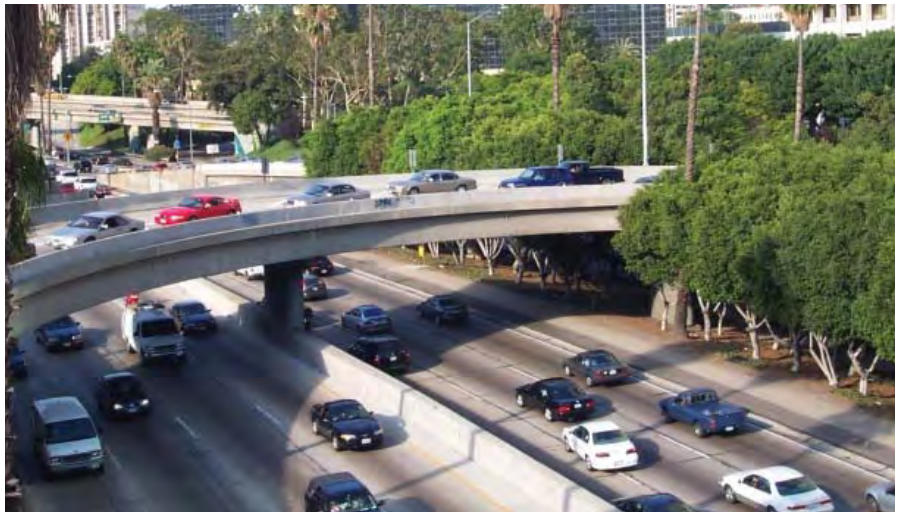


FIGURE 5.3 AVERAGE DAILY DELAY PER CAPITA

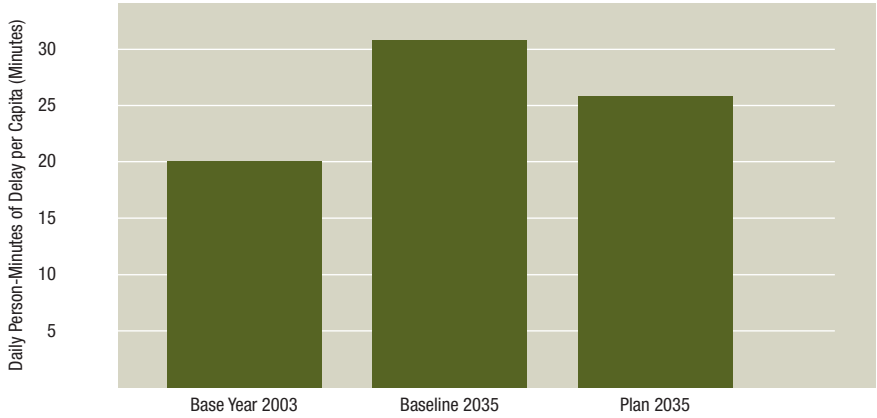
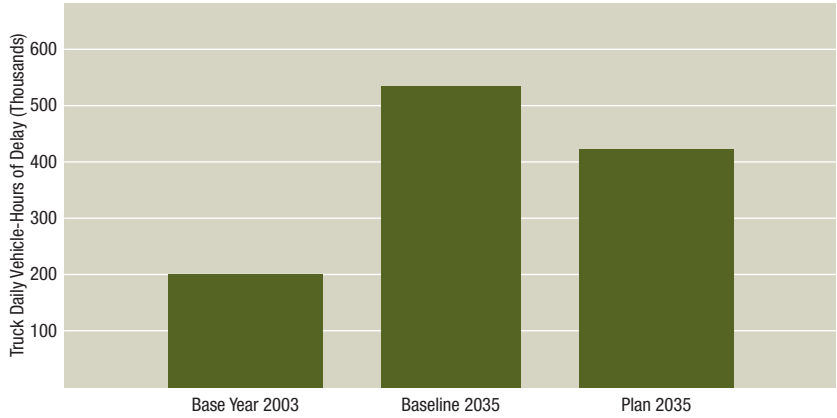


FIGURE 5.4 AVERAGE DAILY HEAVY-DUTY TRUCK DELAY



Finally, Figure 5.4 compares average daily Heavy Duty Truck delays, which shows an improvement of nearly 21 percent compared to the Baseline. This is an important statistic given the Plan's emphasis on the logistics industry and its importance to the regional economy.

Exhibits 5.1, 5.2, and 5.3 depict regional PM peak (3 p.m. to 7 p.m.) freeway speeds for Base Year 2003, Baseline in 2035, and Plan in 2035, respectively.

ACCESSIBILITY

Accessibility measures how well the transportation system provides people access to opportunities. Opportunities can include jobs, education, medical care, recreation, shopping, or other activities that help improve people's lives. For the 2008 RTP, accessibility is defined as the percentage of the population who can travel between work and home within 45 minutes during the peak period. Access to employment is used as a reasonable proxy for access to all opportunities, since work trips make up a large percentage of total trips during commute periods. For people traveling by automobiles, this is defined as those who travel during the afternoon commute period, and for transit users, both the AM and PM commute periods are included to facilitate the modeling of transit trips.

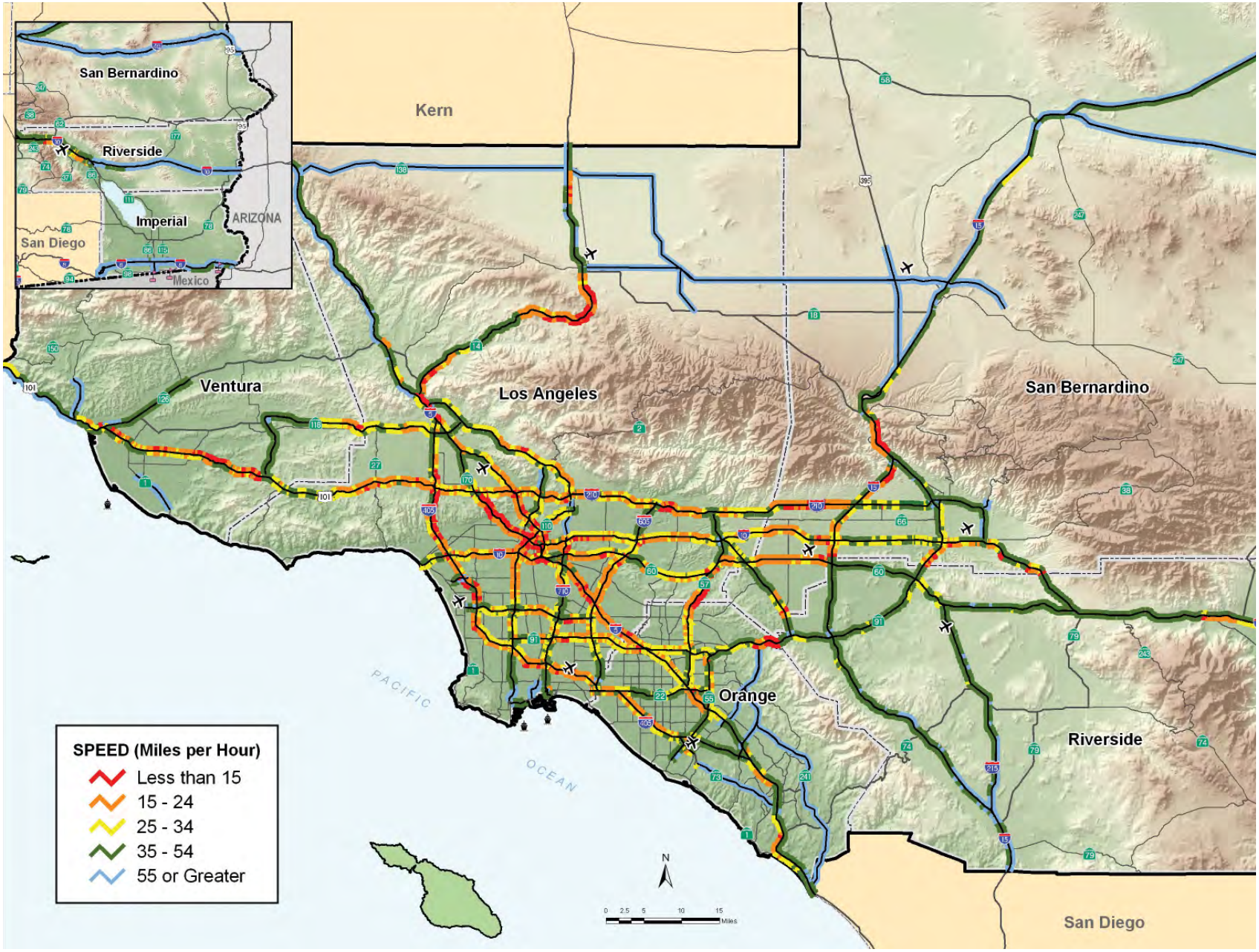
EXHIBIT 5.1 BASE YEAR 2003 FREEWAY SPEED I PM PEAK

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

EXHIBIT 5.2 BASELINE 2035 FREEWAY SPEED I PM PEAK

Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

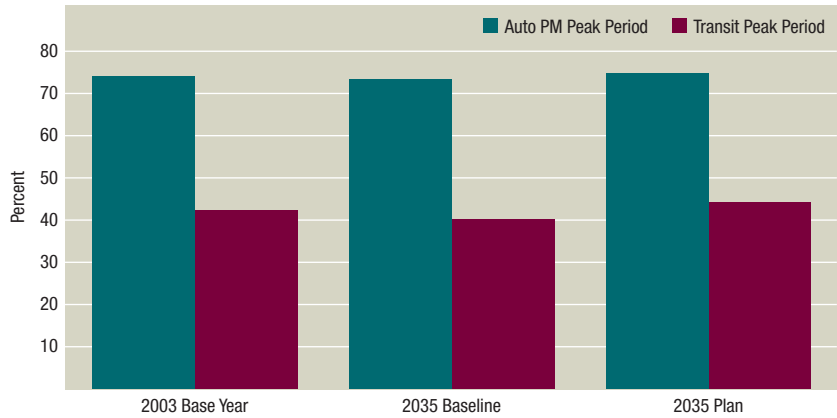
EXHIBIT 5.3 PLAN 2035 FREEWAY SPEED | PM PEAK



Source: Southern California Association of Governments, ESRI StreetMap USA, Teleatlas

Figure 5.5 compares the Plan to Base Year and Baseline, and presents the percent of work trips completed within 45 minutes for both automobiles and transit. The figure shows that automobile accessibility stays relatively constant over the 2035 Baseline period at around 77 percent, but the Plan improves automobile accessibility slightly to 79 percent. Transit accessibility is projected to decline from 43 percent currently to around 42 percent under the 2035 Baseline scenario. However, it will improve to 45 percent under the Plan.

FIGURE 5.5 AUTO AND TRANSIT ACCESSIBILITY



RELIABILITY

The reliability outcome reflects the degree to which travelers experience variations in their trip times from day to day. As such, it captures the relative predictability of the public's travel time. Unlike mobility (which measures how quickly the transportation system is moving people) and accessibility (which addresses how well the system provides access to opportunities, primarily jobs), reliability focuses on how much mobility and accessibility vary from day to day.

The reliability measure is calculated by using the statistical concept of standard deviation. The indicator is computed by dividing the standard deviation of travel time for a given trip by the average travel time of that trip, measured over many days and weeks. Table 5.2 shows how a traveler can use this indicator depending on the importance of arriving on time. For example, if a person's morning commute takes on average 26 minutes, but varies 15 percent from day to day, then he or she must plan the trip to account for additional time. Table 5.2 also shows that if this person wants to be 99 percent confident that he or she arrives on time, he or she must plan for 38 minutes of travel instead of 26.

TABLE 5.2 VARIABILITY OF TRAVEL TIME: HYPOTHETICAL ILLUSTRATION

Trip	Time Period	Average Travel Time	Variability of Travel Time	Travel Time Based on Level of Confidence of Arriving on Time		
				70%	95%	99%
Hypothetical Commute Trip	AM Peak	26 min.	15%	30 min.	34 min.	38 min.
	PM Peak	32 min.	25%	40 min.	48 min.	56 min.
	Off Peak	20 min.	10%	22 min.	24 min.	26 min.

This indicator is relatively new in transportation planning and operations, and exact models to compute and forecast it are not available. However, by using existing travel time data and research results, it is possible to estimate the Plan's impact on reliability. Table 5.3 presents these results, which reflect the benefits derived from the investments that help respond more quickly and effectively to traffic accidents or provide traveler information. These improvements are conservatively projected in the 10 percent range. However, it is critical to continue to monitor this measure and improve the tools to forecast the impacts of such investments in future SCAG planning cycles.

TABLE 5.3 ESTIMATED IMPROVEMENTS IN TRAVEL TIME RELIABILITY

Peak Period	Hour	Base Year 2005 Average Percent Variability of Travel Time	Plan 2035 Average Percent Variability of Travel Time
Morning Peak Period (6 am to 9 am)	6 am to 7 am	16%	14%
	7 am to 8 am	22%	20%
	8 am to 9 am	23%	21%
Afternoon Peak Period (3 pm to 7 pm)	3 pm to 4 pm	25%	23%
	4 pm to 5 pm	26%	23%
	5 pm to 6 pm	28%	25%
	6 pm to 7 pm	25%	23%

Source: Caltrans

PRODUCTIVITY

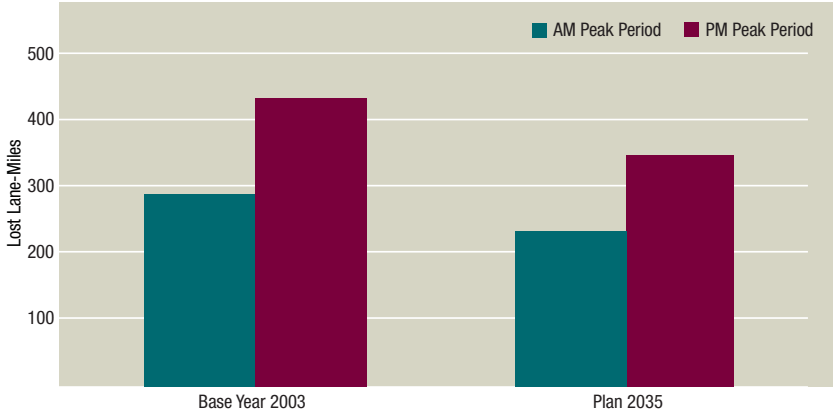
The productivity outcome reflects the degree to which the transportation system performs during peak demand conditions. It is a system efficiency measure. The productivity indicator is defined as the percent utilization during peak demand conditions.

As an example, freeways are typically designed to carry 2,000 vehicles per lane per hour. However, in many locations on the region's freeway system, vehicles weaving and merging in and out of traffic cause bottlenecks, which lead to significant reductions in capacity utilization. Again, using freeways as an example, the carrying capacity of a freeway lane can drop by as much as 50 percent, allowing only 1,000 vehicles per hour to pass. In effect, the system "loses" capacity, which can be estimated in terms of lost lane-miles.

Figure 5.6 summarizes the current estimate for productivity losses on the region's freeway system and the expected improvements due to Plan investments. Maximizing the system's productivity is a critical goal of this RTP, and the overall system management approach aims to recapture lost productivity. The incremental investment of over $2 billion to implement advanced operational strategies on our freeways and arterials is projected to recapture 20 percent of the lost productivity. These projections are based on recent studies indicating that investments in ramp metering, arterial signal coordination, traveler information, and incident management can achieve such improvements.

The Plan improves productivity by committing to investments in state highway operations discussed in Chapter IV. Transit productivity will also improve through increased ridership, which maximizes the number of seats occupied during peak demand conditions.

FIGURE 5.6 HIGHWAY SYSTEM PRODUCTIVITY (LOST LANE-MILES)



SAFETY

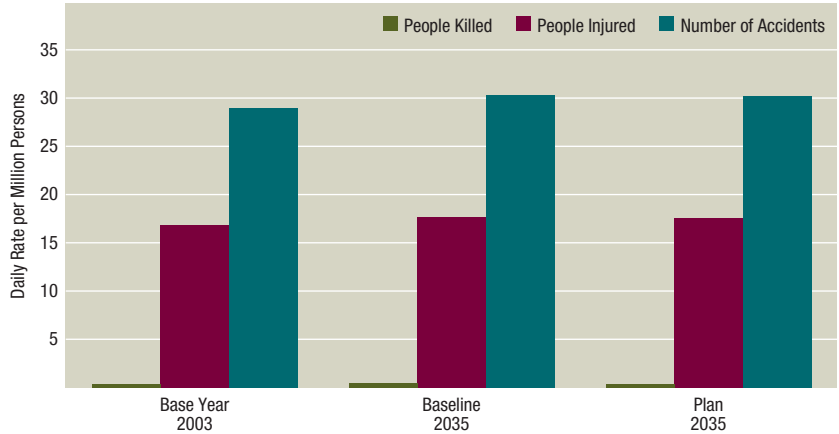
Improving safety by minimizing accidents is a critical outcome of the RTP. The safety indicators used to measure and track safety-related performance are:

- Fatalities per million persons
- Injuries per million persons
- Property damage accidents per million persons

State and regional transportation agencies dedicate funds to projects that specifically address safety deficiencies. However, it is not possible to predict the reduction in accident rates resulting from these investments. Hence, the safety results presented here are estimated based on current accident rate trends for the different modes applied to projected levels of system use by mode. They represent a conservative estimate for safety benefits.

Figure 5.7 compares safety indicators for the Base Year, Baseline, and Plan scenarios. The overall improvement is estimated based on overall accident rates by mode (e.g., auto, bus, and rail) and facility (e.g., freeways and principal arterials).

FIGURE 5.7 ACCIDENT RATES



SUSTAINABILITY

A transportation system is sustainable if it maintains its overall performance over time with the same costs for its users. Sustainability, therefore, reflects how our decisions today affect future generations. The indicator for sustainability is the total inflation-adjusted cost per capita to maintain overall system performance at current conditions.

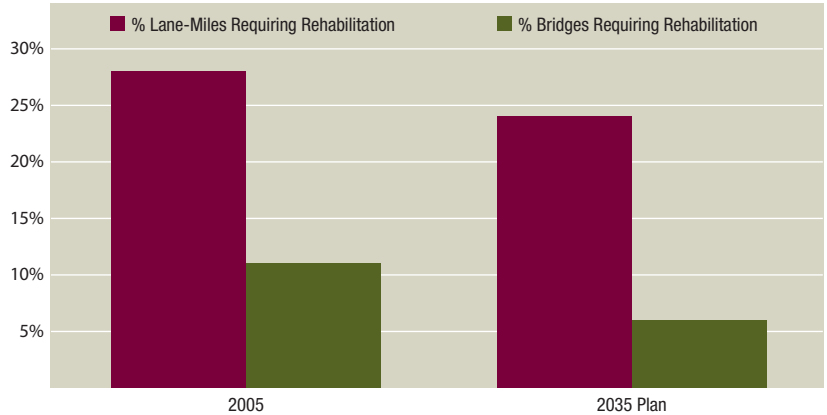
The performance measures presented in this chapter show that the planned transportation system in 2035 will perform better in some cases (e.g., safety, preservation) and worse in others (e.g., delay per capita) compared to today. Moreover, the overall cost of the Plan represents a significant increase in nominal costs based on increased taxes to fund additional regional projects discussed in Chapter III as well as incremental preservation and operations investments.

PRESERVATION

The preservation outcome reflects how well the region is taking care of its multimodal transportation infrastructure. As discussed in Chapter II of this document, deferred maintenance investments end up costing much more in the future as the conditions of our assets (e.g., pavement) deteriorate.

Figure 5.8 shows the benefits of the additional expenditures dedicated in this RTP over and beyond the historical trends. As of 2005, 28 and 11 percent of the SCAG Region's roadways and bridges required rehabilitation, which are more intensive and expensive projects. As a result of the incremental investments, these percentages are projected to fall to 24 percent for roadways and 6 percent for bridges. Similar improvements are expected for regional arterials as well.

FIGURE 5.8 PRESERVATION IMPROVEMENTS



COST-EFFECTIVENESS

Cost-effectiveness reflects the degree to which transportation expenditures in the Plan yield benefits that the transportation users experience. It attempts to measure how much "bang for the buck" is received from the Plan. The indicator for cost-effectiveness is the benefit-cost ratio. Benefits are divided into several categories as follows:

- Delay savings
- Safety improvements
- Air quality improvements
- Reductions in vehicle operating costs

For each of these categories, models are used to estimate the benefits of the Plan compared to Baseline. The benefits are converted into dollars, added together, and divided by the total incremental costs of the Plan's transportation improvements. Table 5.4 summarizes the results of the benefit-cost analysis.

TABLE 5.4 SCAG REGIONAL PERFORMANCE ANALYSIS BENEFIT/COST RESULTS

Project	Value of $1 Invested
2008 RTP	$2.21

SCAG's 2008 RTP provides a $2.21 return for every dollar invested. For this analysis, all benefits and costs are expressed in year 2007 dollars. Benefits are estimated through the year 2035. The user benefits are estimated using methodologies consistent with the Cal B/C model adjusted to incorporate SCAG's regional travel demand model output. Costs include incremental public expenditures over the RTP time period.

While $2.21 return on every dollar invested is an excellent return on investment, it is lower than the $3.08 reported in the 2004 RTP. Several factors influence this outcome. First, project costs have skyrocketed over the past several years, negatively impacting the rate of return. Second, this Plan proposes significant investment increases in strategies that do not easily translate into readily quantifiable benefits based on currently available tools, namely SCAG's transportation demand model. Such investment categories include system preservation, system operation and management, and investments that are not captured in SCAG's demand model, such as rail improvements associated with goods movement.

Transportation Conformity Analysis

Transportation conformity is required under the federal Clean Air Act (CAA) to ensure that federally supported highway and transit project activities conform to the purpose of the State Implementation Plan (SIP).[1] Conformity to the purpose of the SIP means that transportation activities will not cause new

[1] To comply with the CAA in achieving the NAAQS, the ARB develops SIPs for federal non-attainment and maintenance areas. In California, SIP development is a joint effort of the local air agencies and ARB working with federal, state, and local agencies (including the MPOs). Local Air Quality Management Plans (AQMPs) are prepared in response to federal and state requirements.

air quality violations, worsen existing violations, or delay timely attainment of the relevant National Ambient Air Quality Standards (NAAQS). Conformity applies to areas that are designated non-attainment, and those re-designated to attainment after 1990 ("maintenance areas") for the following transportation-related criteria pollutants: ozone, particulate matter (PM2.5 and PM10), carbon monoxide (CO), and nitrogen dioxide (NO2).

NON-ATTAINMENT/MAINTENANCE AREAS

The boundaries of the federal non-attainment/maintenance areas in the SCAG Region are:

- Ventura County portion of the South Central Coast Air Basin (SCCAB) — The entire county is a non-attainment area for ozone.
- South Coast Air Basin (SCAB) — The entire basin is a non-attainment or maintenance area for NO2, CO, PM10, PM2.5, and ozone.
- Western MDAB (Antelope Valley portion of Los Angeles County and San Bernardino County portion of MDAB excluding Searles Valley) — This is a non-attainment area for ozone.
- San Bernardino County portion of MDAB.
  - Searles Valley (situated in the NW part of the county) is a non-attainment area for PM10.
  - San Bernardino County (excluding the Searles Valley area) portion of MDAB is a non-attainment area for PM10.
- Riverside County portion of Salton Sea Air Basin (SSAB) — The entire Riverside County portion of SSAB (Coachella Valley) is a non-attainment area for PM10 and ozone.
- Imperial County portion of SSAB - The entire Imperial County portion of SSAB is designated as a non-attainment area for ozone and PM10.

CONFORMITY TESTS

The 2008 RTP must pass the following tests and analyses to meet the requirements for a positive conformity finding:

- Regional Emission Analysis
- Timely Implementation of Transportation Control Measures (TCMs) Analysis
- Financial Constraint Analysis
- Interagency Consultation and Public Involvement Analysis

REGIONAL EMISSIONS ANALYSIS

Regional emissions analyses, by non-attainment area and by pollutant, compare on-road emissions to the applicable on-road emissions budgets in the SIPs for the SCAG Region. The applicable emissions budgets are those found to be adequate for conformity determination by the U.S. EPA. In the absence of applicable emissions budgets, the regional emission tests for conformity finding are based on either a build/no-build or less-than-Base-Year scenario.

Due to recent litigation relative to U.S. EPA's Eight-Hour Ozone Phase 2 Rule, EPA has instructed ARB to revise the established method of demonstrating Reasonable Further Progress (RFP) in ozone non-attainment areas that utilize reductions from other areas to demonstrate attainment (e.g., upwind areas). In the SCAG Region, these areas are the Ventura County portion of the SCCAB, the Western MDAB, and the Coachella Valley portion of the SSAB. Therefore, at this time, there are no AQMPs or SIPs and, thus, no 8-hour ozone transportation emission budgets for these areas. SCAG has worked closely with the ARB and EPA to resolve this issue. As agreed upon by ARB and EPA, ARB has adopted Early Progress Plans (i.e., emissions inventories and transportation emission budgets) for areas that need upwind reductions to show RFP. The Early Progress Plans establish the transportation emission budgets while EPA decides how to respond to the RFP issue raised by the litigation. EPA found these emission budgets adequate in April 2008.

In addition, EPA's review of the South Coast ozone and PM2.5 emission budgets raised concerns such that the ARB was required to revise and resubmit the emission budgets to EPA. This requirement dictated that SCAG make appropriate revisions to the conformity analysis to reflect the new emission budgets and rerelease the Draft Conformity Report. SCAG staff worked closely with the federal reviewing agencies regarding the emission budget adequacy and conformity approval review process timeline. From these efforts, all agencies confirmed they will expedite their respective reviews to allow for approval of SCAG's conformity finding before the current (2004) RTP conformity finding expires on June 7, 2008.

TIMELY IMPLEMENTATION OF TCMS ANALYSIS

This conformity test requires Transportation Control Measures (TCM) projects subject to reporting be fully funded and on schedule. In the SCAG Region, there are two areas for which SIPs contain TCMs: the ozone AQMPs/SIPs for the SCAB, and for the Ventura County portion of SCCAB. SCAG works with the CTCs to ensure TCMs are on schedule or that steps are being taken to overcome obstacles.

FINANCIAL CONSTRAINT ANALYSIS

The 2008 RTP is financially constrained and is financed by federal, state, local and private sources. Detailed information on the financial analysis is included in Chapter IV.

INTERAGENCY CONSULTATION AND PUBLIC INVOLVEMENT

Throughout its development, the 2008 RTP has been discussed at meetings of various policy committees, working groups (including the Transportation Conformity Working Group), task forces, and technical advisory committees. SCAG's Transportation Conformity Working Group has served as a forum for interagency consultation, and additionally, there were many ad hoc meetings held between the involved agencies for this purpose. SCAG's RTP public outreach effort is documented in a separate Public Participation report. Continued interagency consultation and public involvement will occur throughout the public review process.

CONFORMITY FINDING

The conformity analysis indicates a positive conformity finding for the 2008 RTP. The detailed transportation conformity analyses for the 2008 RTP are included in the 2008 RTP Conformity Report.

Environmental Justice

The environmental justice movement stems from Title VI of the Civil Rights Act of 1964. This title declares it to be the policy of the United States that discrimination on the grounds of race, color, or national origin shall not occur in connection with programs and activities receiving federal financial assistance,

and authorizes and directs the appropriate federal departments and agencies to take action to carry out this policy. Title VI of the Civil Rights Act of 1964 provides a significant means by which the public can seek greater accountability from transportation agencies. Title VI bars intentional discrimination, but also unjustified disparate impact discrimination.[2]

SCAG'S ENVIRONMENTAL JUSTICE POLICY & PROGRAM

Environmental Justice is an integral part of the planning process, which must be considered in all phases of planning. SCAG's environmental justice program includes two main elements: public outreach and technical analysis.

ENVIRONMENTAL JUSTICE PUBLIC OUTREACH

Public outreach efforts are intended to ensure that all members of the public have an opportunity to participate meaningfully in the planning process. SCAG's public outreach efforts include the following:

- Compliance Procedure for Environmental Justice in the Transportation Planning Process — In October 2000, SCAG released the Compliance Procedure for Environmental Justice in the Transportation Planning Process, which provided a detailed description of SCAG's public outreach activities. Since its publication, SCAG staff has utilized this guidance document to ensure that it 1) includes traditionally unrepresented groups early and throughout the planning process; 2) carefully examines performance measures to determine any inequities of the RTP on any group; 3) and follows the self-evaluation procedure for public outreach and environmental justice analysis programs.
- Public Workshops — SCAG holds workshops throughout the planning process and targets minority and low-income communities throughout the region. Follow-up workshops are held with groups that want to stay involved throughout the planning cycle.
- Presentations — SCAG conducts presentations upon request to a variety of groups. These include Chambers of Commerce, community-based organizations, nonprofit groups, etc. Generally, these presentations provide an overview of SCAG and its function as an MPO.
- Website Dissemination — SCAG utilizes its website to provide information on the RTP. SCAG works to ensure that the information available is timely, easy to understand and accessible, and that the website is compliant with the 1990 Americans with Disabilities Act. SCAG's RTP and the EJ program have individual webpages dedicated to each.[3]
- Documentation — Following each contact with the public, every comment and concern is recorded in writing regardless of source. Each comment is logged, categorized, and submitted to SCAG planning staff for review and consideration.

TECHNICAL ANALYSIS

The goal of the 2008 RTP environmental justice analysis is to ensure that when transportation decisions are made, low-income and minority communities have ample opportunity to participate in the decision-making process and receive an equitable distribution of benefits and not a disproportionate share of burdens.[4]

Identifying Demographic Groups

Executive Order 12898 and the DOT and FHWA Orders on Environmental Justice define "minority" as persons belonging to any of the following groups, as well as "other" categories that are based on self-identification of individuals in the U.S. Census[5]: Black, Hispanic, Asian, American Indian and Alaskan Native, and Native Hawaiian or Other Pacific Islander. SCAG bases its analyses on the latest census data for ethnic/racial groups in the SCAG Region, by census tract and by transportation analysis zone (TAZ).

[2] CommunityLink 21, Regional Transportation Plan: Equity and Accessibility Performance Indicators http://www.fhwa.dot.gov/environment/ejustice/case/case4.htm

[3] RTP Website:http://scag.ca.gov/rtp2008/
EJ Website: http://scag.ca.gov/environment/ej.htm

[4] Caltrans. Desktop Guide: Environmental Justice in Transportation Planning Investments. January 2003.

[5] http://www.fhwa.dot.gov/environment/ej2000.htm

Identifying low-income and minority populations is necessary both for conducting effective public participation and for assessing the distribution of benefits and burdens of transportation plans and projects. For the purposes of this analysis, SCAG focused on all low-income groups and minority populations. The minority population in the SCAG Region comprises over 70 percent of the population. The predominant minority groups are Hispanics and Asian/Pacific Islanders, which combine to account for 66 percent of the total minority population within the SCAG Region. Poverty level is a federally established income guideline used to define persons who are economically disadvantaged, as defined by the U.S. Department of Health & Human Services guidelines.[6] The poverty level applicable to the SCAG Region is chosen on the basis of regional average household size for the census year. For example, for a regional mean of 2.98 persons—rounded to 3—per household, the threshold would consist of the sum of the value for the first person plus two additional people. The household counts in each income range are then used to determine the number and percentage of households in each census tract below the poverty level. In 2007, a family of three earning less than $17,170 was classified as living in poverty.

In addition to complying with federal guidance, SCAG also conducts income equity analyses based on five income quintiles. A quintile, by definition, is a category into which 20 percent of the ranked population falls. For each new analysis, SCAG defines regional income quintiles based on the most recent census data on household income. Once the income quintiles are established, the incidence of benefits and costs can be estimated and compared across these income categories. Table 5.5 lists the demographic categories used in SCAG's EJ analysis.

TABLE 5.5 DEMOGRAPHIC CATEGORIES USED IN SCAG ENVIRONMENTAL JUSTICE ANALYSIS

Ethnic/Racial/Other Categories (persons)	Income Categories (households)
White (Non-Hispanic)	Below Poverty Level
African-American	100%–150% of Poverty Level
American Indian	150%–200% of Poverty Level
Asian/Pacific Islander	Income Quintile 1 (lowest)
Hispanic (Latino)	Income Quintile 2
Other	Income Quintile 3
Disabled/Mobility Limited	Income Quintile 4
Age 65 and Above	Income Quintile 5

The 2008 RTP Plan versus Baseline

The comparison of the Plan versus Baseline is the primary focus of the environmental justice analysis for the 2008 Regional Transportation Plan. The basic concept is to compare the performance of the Plan (2035) to the Baseline scenario for 2035. For the purposes of this analysis, the Plan represents the selected strategy to guide the Region's transportation planning over the next three decades and Baseline is defined as the set of all projects and investments currently underway or for which funds are already committed. Baseline represents "business as usual" and assumes current land use trends and the completion of projects currently under construction or with funding available for construction over the next few years. The data for the analysis is based on the SCAG Regional travel demand model results.

[6] White House Council on Environmental Quality (CEQ). Environmental Justice Guidance Under the National Environmental Policy Act, December 1997.

Performance Measures

In the development of the Plan, SCAG utilized a number of performance measures designed to assess the overall equity.

- Accessibility (Employment Services and Parks)
- Distribution of Plan Expenditures (Investments)
- Taxes Paid
- Auto Travel Time Savings
- Auto Travel Distance Reductions
- Environmental Impact Analyses (Air Emissions and Noise)

These performance measures were intended to evaluate how low-income and minority communities fared under RTP investments. The performance measures and the results of the analysis are described in detail below.

ACCESSIBILITY TO EMPLOYMENT SERVICES

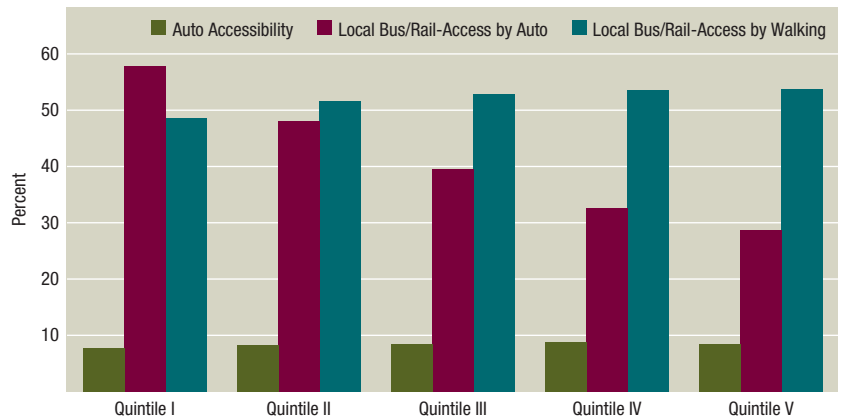
Accessibility is a foundation for social and economic interactions. As an indicator, accessibility is measured by the spatial distribution of potential destinations; the ease of reaching each destination; and the magnitude, quality and character of the activities at the destination sites. Travel costs are central: The lower the costs of travel, in terms of time and money, the more places that can be reached within a certain budget and, thus, the greater the accessibility. Destination choice is equally crucial: The more destinations and the more varied the destinations, the higher the level of accessibility.[7]

Employment accessibility evaluates how well the transportation system is providing access to jobs for underrepresented populations. In this analysis, employment accessibility is defined as the percentage of total employment opportunities that can be reached within 30 minutes during the PM peak period.

[7] CommunityLink 21, Regional Transportation Plan: Equity and Accessibility Performance Indicators: http://www.fhwa.dot.gov/environment/ejustice/case/case4.htm

Figure 5.9: Comparison of Employment Accessibility Improvements by Travel Mode and Income Category shows the percentage improvement between the Plan versus Baseline. It is projected that low-income communities in the region will have better access to employment via local bus and rail compared to higher-income groups. This can be attributed to the number of system expansion projects proposed in the 2008 RTP, which includes a number of commuter/light/heavy rail improvements and bus rapid transit expansion projects. Additionally, improvements in accessibility via automobile are expected to be lower than improvements via transit for any quintile group. The results indicate that on a regional scale, no disproportionate impacts are anticipated between income groups as a result of the Plan.

FIGURE 5.9 COMPARISON OF EMPLOYMENT ACCESSIBILITY IMPROVEMENTS BY TRAVEL MODE AND INCOME CATEGORY (PLAN VS. BASELINE, 2035)



ACCESSIBILITY TO PARKS

Numerous national parks, state parks, and local parks are all found within the SCAG Region. However, not all neighborhoods and people have equal access to these public resources. For the purposes of this analysis, three types of

parks were considered: 1) local parks; 2) state parks; and 3) national parks. The acreage of each park type in all TAZs was identified. Similar to the method in measuring job accessibility, park accessibility is defined as the percentage of park acreage reachable within a 30-minute off-peak travel time period via 1) automobile; 2) local bus/urban rail via automobile; and 3) local bus/urban rail via walking. Without a weekend regional transportation model system, the existing typical weekday model was utilized for the analysis. Because visits to parks are, by nature, leisure trips, off-peak travel time is used instead of peak travel time. For transit travel time, both the waiting time and the on-board time are included.

FIGURE 5.10 PARK ACCESSIBILITY BY TRAVEL MODE AND INCOME CATEGORY (BASELINE 2035)

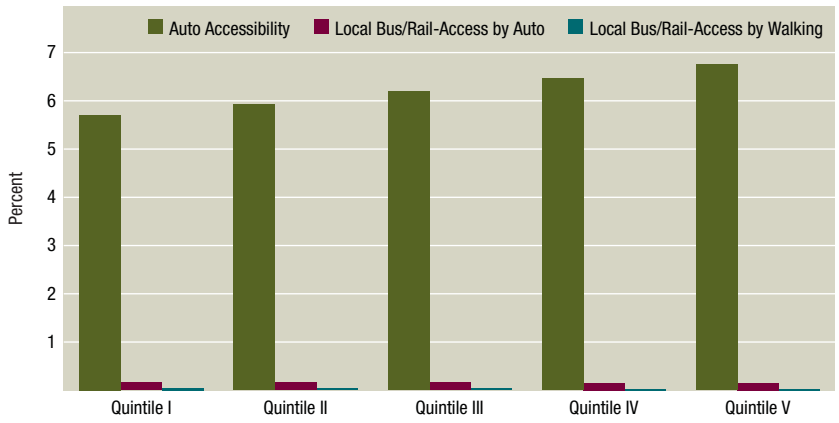


Figure 5.10: Park Accessibility by Travel Mode and Income Category shows the access to parks in the Baseline scenario. Park accessibility by transit is much lower than that by automobile for all income groups. However, Quintiles IV and V will have moderately higher access to parks in the region via automobile.

FIGURE 5.11 NATIONAL PARK ACCESSIBILITY BY TRAVEL MODE AND INCOME CATEGORY (BASELINE 2035)

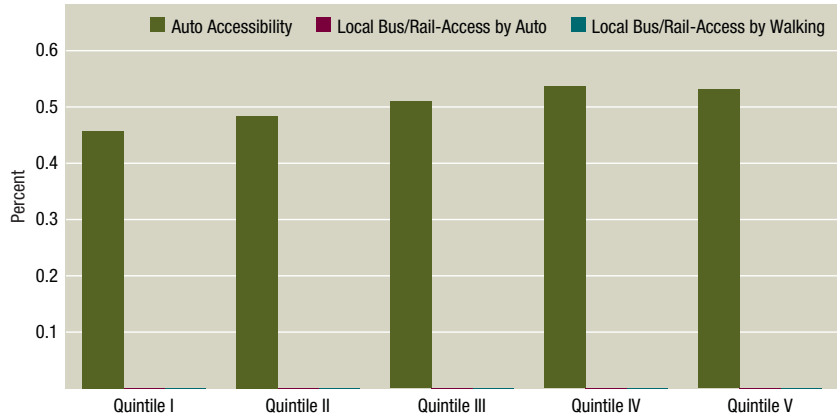
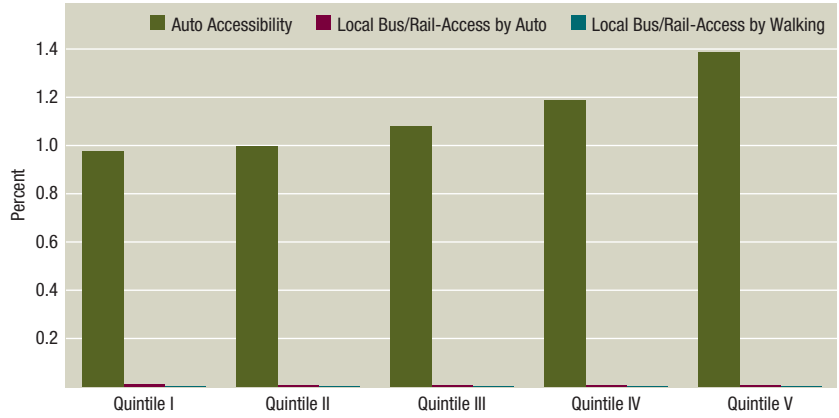


FIGURE 5.12 STATE PARK ACCESSIBILITY BY TRAVEL MODE AND INCOME CATEGORY (BASELINE 2035)

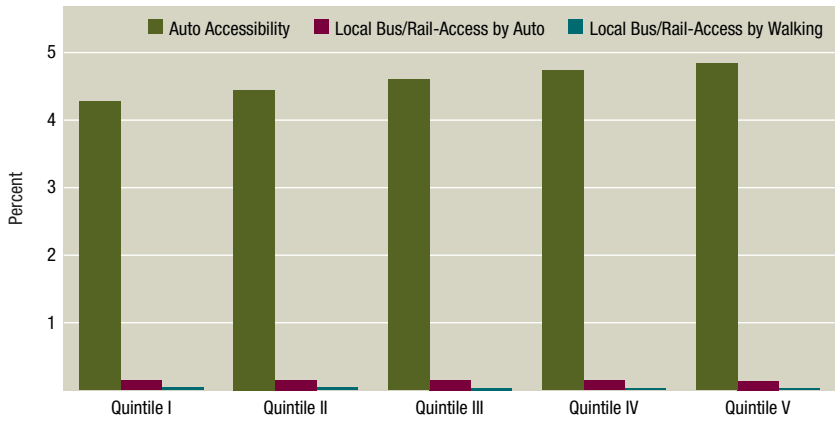


Research has found a complete lack of public transportation services into national parks,[8] but this also appears true for state parks. There is almost no

[8] Frescas, Ron, Chris Martin, and Christine Steenken. Public Transportation to Local National Forests. April 15, 2004.

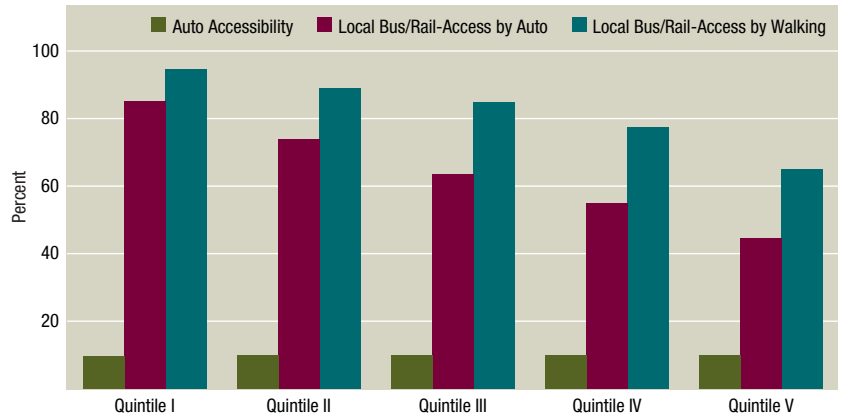
access to national parks and very limited access to state parks by transit across all income groups in the Baseline scenario (see Figure 5.11: National Park Accessibility by Travel Mode and Income Category, and Figure 5.12: State Park Accessibility by Travel Mode and Income Category).

FIGURE 5.13 LOCAL PARK ACCESSIBILITY BY TRAVEL MODE AND INCOME CATEGORY (BASELINE 2035)



The analysis also concluded that local parks are mostly accessible via the automobile. Figure 5.13: Local Park Accessibility by Travel Mode and Income Category reveals that there is limited transit service that accommodates local parks and, regionwide, there is a marginal difference in accessibility between all income groups.

FIGURE 5.14 COMPARISON OF PARK ACCESSIBILITY IMPROVEMENTS BY TRAVEL MODE AND INCOME CATEGORY (PLAN VS. BASELINE, 2035)



As shown in Figure 5.14: Comparison of Park Accessibility Improvements by Travel Mode and Income Category, park accessibility for all income groups by three travel modes is expected to improve under the Plan scenario.

FIGURE 5.15 COMPARISON OF PARK ACCESSIBILITY IMPROVEMENTS BY PARK TYPE AND TRAVEL MODE (PLAN VS. BASELINE, 2035)

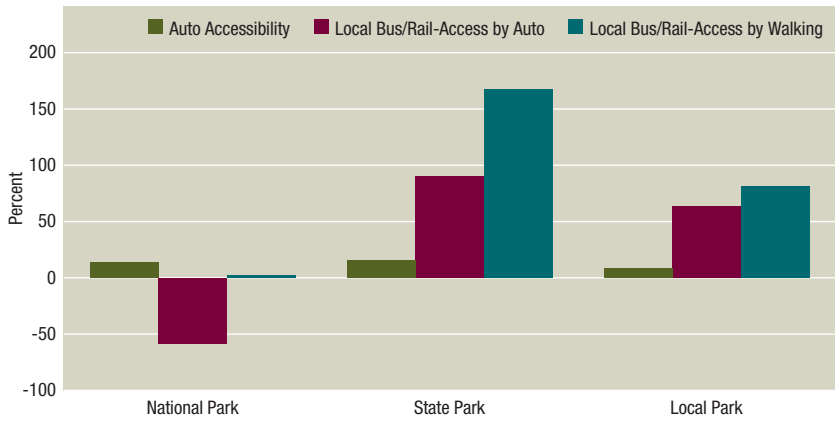


Figure 5.15: Comparison of Park Accessibility Improvements by Park Type and Travel Mode displays the improvement of park accessibility by park type: national park, state park and local parks. The results reveal that there will be significant improvements in accessibility to both state and local parks by all three travel modes. However, the accessibility to the national parks shows minor improvement, and even decreases for the mode of local bus/rail-access by auto.

PLAN EXPENDITURES/INVESTMENTS

SCAG reports expenditure distribution in several ways. First, SCAG estimates the share of total RTP expenditures allocated to each category of household income. This is done by totaling expenditures on each type of mode (bus, HOV lanes, commuter/high-speed rail, highways/arterials, and light/heavy rail). These expenditures are then allocated to income categories based on each income group's tendency to use these modes.[9]

SCAG analyzed the distribution of Plan expenditures based on mode usage information by income quintile. As illustrated in Figure 5.16: Distribution of Plan Expenditures by Income Category, approximately 28 percent of Plan investments will be invested in modes predominantly used by the lowest quintile group, while 16 percent will be invested in modes used by the highest-income category (Quintile V). A total of 68 percent of transportation investments would go to modes likeliest to be used by the lower-three-income households in the 2008 RTP.

FIGURE 5.16 DISTRIBUTION OF PLAN EXPENDITURES BY INCOME CATEGORY

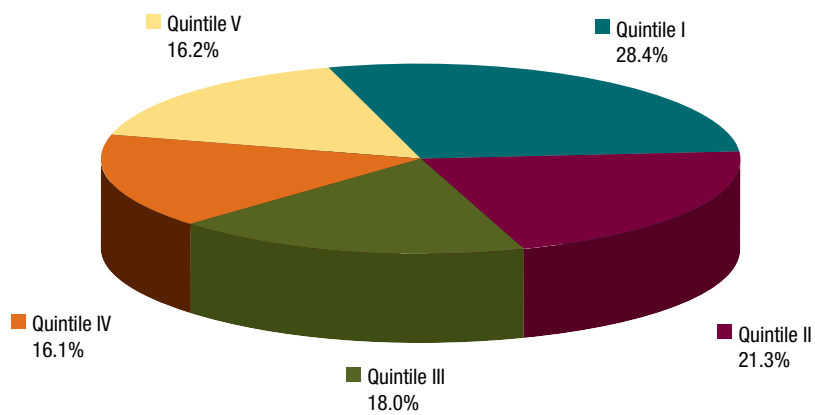


Figure 5.17: Distribution of Plan Expenditures by Ethnic/Racial Category evaluates the allocation of transportation investments in modes used by various ethnic/racial categories. The current analysis reveals that under the 2008 RTP, Plan investments will be distributed more equitably on the basis of system usage by ethnic/racial groups.

[9] Caltrans. Desktop Guide: Environmental Justice in Transportation Planning Investments. January 2003.

FIGURE 5.17 DISTRIBUTION OF PLAN EXPENDITURES BY ETHNIC/RACIAL CATEGORY

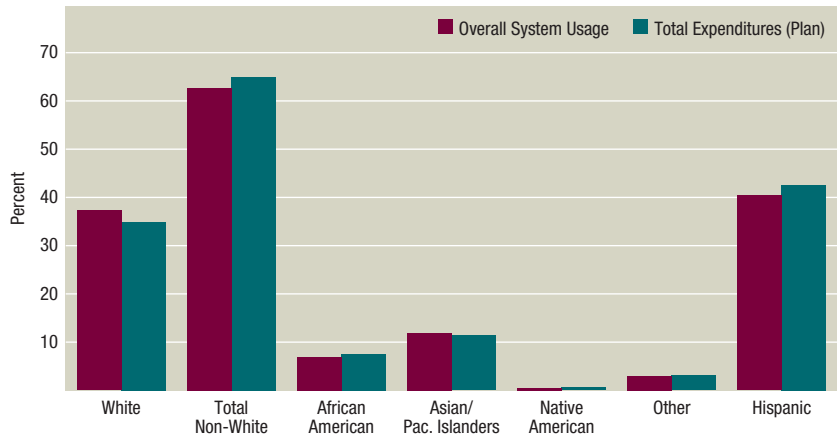
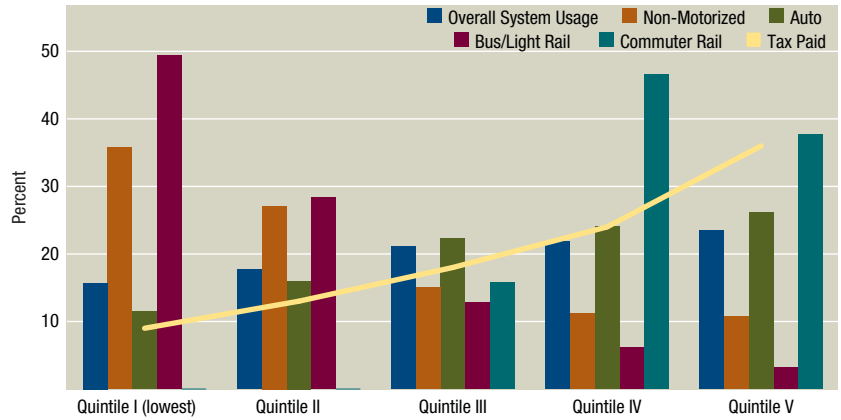


FIGURE 5.18 SHARE OF TAXES PAID BY INCOME CATEGORY*



** The contents in this chart use both work and non-work trips; rail capacity uses only work trip data.*

** Share of Tax Paid includes sales and gasoline taxes.*

TAXES PAID

The 2008 RTP environmental justice analysis performed a comparative analysis of the amount of taxes (sales, gasoline, and income) paid by five income groups. Figure 5.18: Share of Taxes Paid by Income Category, indicates that tax burdens are expected to fall heavily on higher-income groups. The lower-income groups (Quintile I and Quintile II), which use bus and light rail as their primary modes of travel, are anticipated to pay 22 percent of taxes.

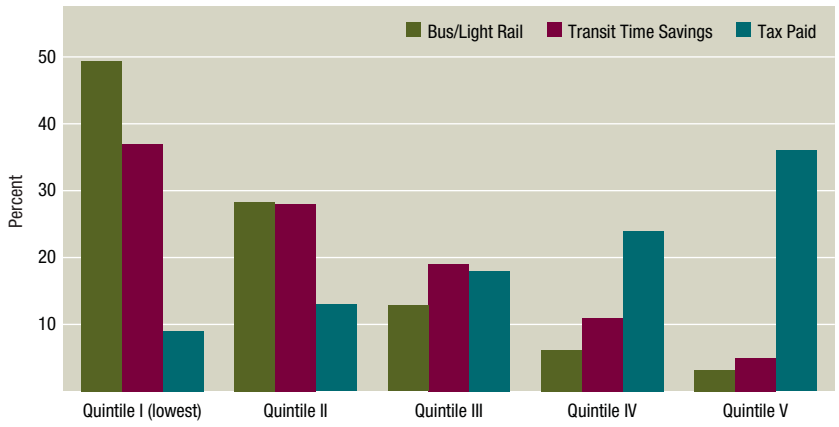
DISTRIBUTION OF TRAVEL TIME SAVINGS

This analysis involved measuring the average travel time for both work trips and non-work trips. SCAG assesses the distribution of travel time savings that are expected to result from the Plan's implementation. SCAG conducted this analysis for transit (i.e. bus and light rail) and automobile. These travel time savings were reported as a proportion of the total travel time savings for each mode.

Figure 5.19: Share of Transit System Usage, Transit Travel Time Savings, and Taxes Paid, shows the results for low-cost transit modes, such as local bus and light rail, for the five income groups. According to the 2008 RTP analysis, the two lowest-income quintiles will pay just over 20 percent of total taxes collected in the region, but will enjoy 65 percent of the transit time savings. The two highest-income quintiles share of taxes (60 percent) will exceed the benefits they receive in local transit time savings (16 percent) and account for only 9 percent of total bus and light rail usage. The findings indicate that

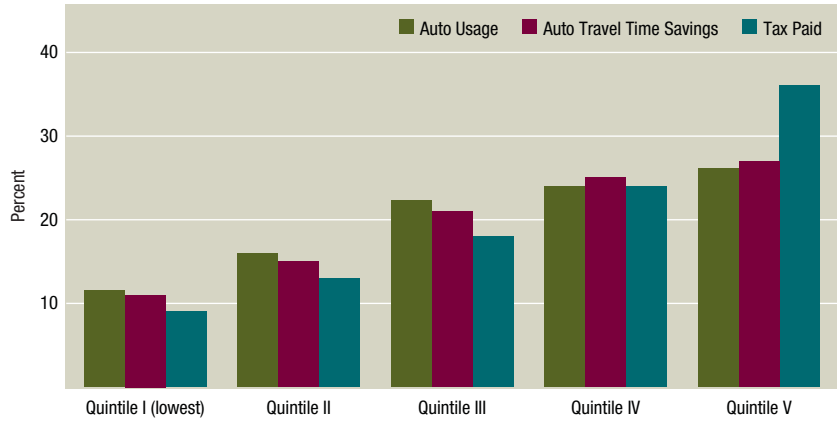
transit travel times for lower-income groups for both work and non-work trips are expected to decrease due to the number of new bus and rail improvements proposed in the 2008 RTP.

FIGURE 5.19 SHARE OF TRANSIT SYSTEM USAGE, TRANSIT TRAVEL TIME SAVINGS, AND TAXES PAID



Results are also shown for trips made by automobile. Figure 5.20: Share of Auto Usage, Auto Travel Time Savings, and Taxes Paid, illustrates that the share of benefits is proportionate to the share of taxes paid. Higher-income groups are anticipated to have the most benefit in auto travel time savings, but will also incur the highest taxes. This can be attributed to the fact that higher-income groups (Quintiles IV and V) have higher access to private automobiles and will use this as their primary mode of travel. However, that benefit comes at a steep price, as the two highest-income quintiles pay for 60 percent of total taxes.

FIGURE 5.20 SHARE OF AUTO USAGE, AUTO TRAVEL TIME SAVINGS, AND TAXES PAID

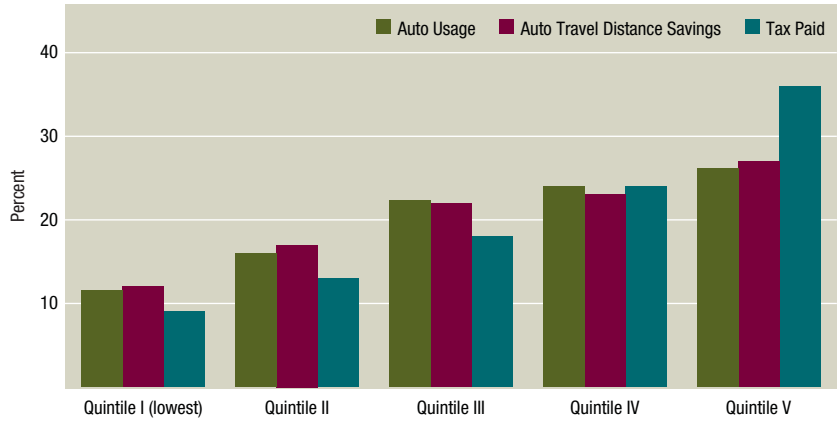


TRAVEL DISTANCE REDUCTIONS

Another way of estimating benefits is to calculate savings in terms of person-miles traveled (PMT). These results indicate that the share of auto travel distance savings, like that for time savings, generally resembles the share of usage and taxes paid.

The underlying assumption for Figure 5.21: Share of Auto Usage, Auto Travel Distance Savings and Taxes Paid, is that the share of auto travel distance savings is generally proportionate to the share of taxes paid and transportation system usage between all income groups. The taxes paid by the highest,income group (36 percent) are anticipated to exceed their share of benefits (27 percent). The lowest,quintile group is expected to have the least amount of benefits, accounting for 12 percent of auto usage and travel distance savings. They will also pay the least amount of taxes at 9 percent. Higher,income groups are anticipated to have the most benefits because their primary mode of travel will be the automobile.

FIGURE 5.21 SHARE OF AUTO USAGE, AUTO TRAVEL DISTANCE SAVINGS AND TAXES PAID



ENVIRONMENTAL IMPACTS

Transportation projects can have both a positive or negative impact on the environment. On the one hand, investments can cause travelers to shift to less-polluting modes (e.g., bus, train, carpooling, or commuter rail). On the other hand, investments that increase traffic on a particular facility usually degrade air quality in the immediate vicinity of that facility.[10]

Air Pollutant Emissions

Minorities and low-income groups may be particularly vulnerable to the effects of air pollution. SCAG's analysis is based on emissions estimates for pollutants that have localized health effects: carbon monoxide (CO) and particulate matter (PM). Analysis was also conducted for PM exhaust emissions from heavy-duty vehicles, an indicator for diesel toxic air contaminants. The results were computed based on the average emissions at the TAZ level and weighted according to the population of each ethnic or income group in that TAZ. This analysis focuses on air emissions and noise impacts generated from aviation and highway activity.

It is important to note that total emissions of all pollutants in the region will decrease compared to existing conditions with or without the Plan, due to the combination of measures being taken to meet air quality standards. Since the Plan must demonstrate conformity with regional air quality management plans that call for reductions in emissions of air pollutants, the Plan itself will likewise result in reductions of pollutant emissions. This is generally because the Plan investments will alleviate roadway congestion and provide a greater range of alternatives to the use of a car. The following analysis, however, is based on a comparison of Plan to Baseline conditions, rather than a comparison of Plan to current conditions.

Since ambient pollutant concentration levels that are directly linked to localized emissions could not be easily estimated, the geographic emissions distribution analysis presented here focuses on pollutants that tend to have localized effects which are generally proportionate to emissions—carbon monoxide (CO) and fine particulate matter (PM10). The analysis does not cover pollutants that do not have localized effects proportionate to emissions, but are regionally distributed as a result of chemical interactions, photochemical reactions and meteorology (VOC, NOx, and SOx).

In addition, this methodology assumes that all residents in a given TAZ are equally exposed. Generally, both CO and PM10 tend to impact those located closest to the source of emissions. Thus, in a TAZ containing a roadway, those closest to the roadway would experience greater emissions and potential health impacts than those located further away. This differential as it might exist within TAZs is not addressed by this analysis; only differences between the aggregate demographic totals of different TAZs are addressed. Notwithstanding these assumptions, the methodology presents a reasonable gross measure of air quality impacts of mobile sources in the region.

[10] Caltrans. Desktop Guide: Environmental Justice in Transportation Planning Investments. January 2003.

FIGURE 5.22 DECREASE IN AIR POLLUTANT EMISSIONS BY INCOME CATEGORY (PLAN VS. BASELINE, 2035)

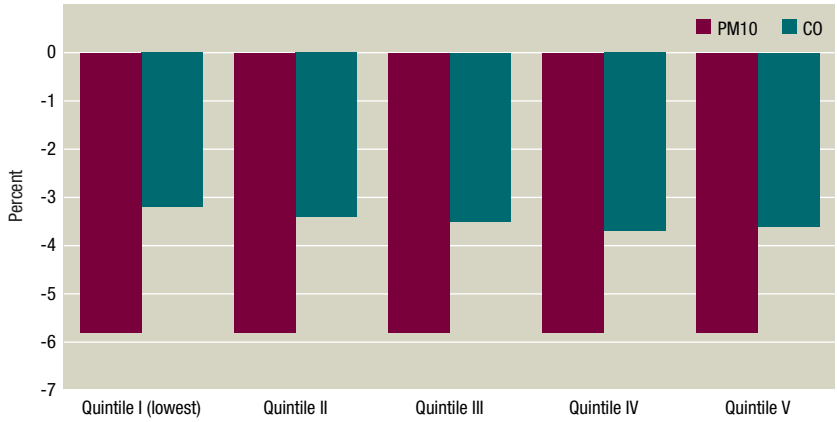
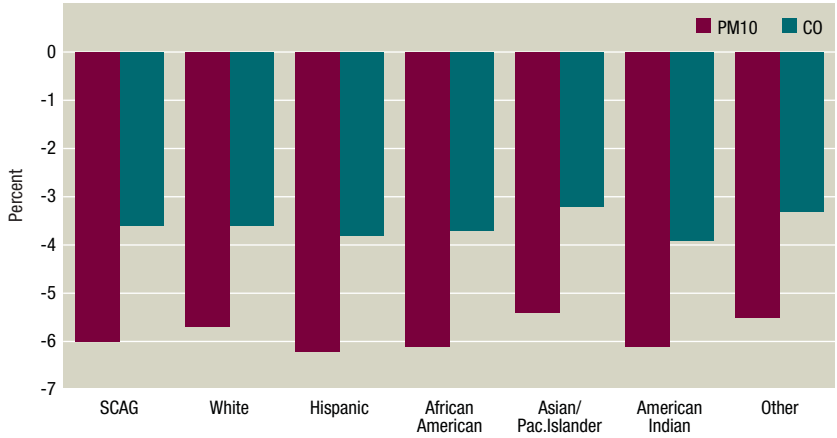


FIGURE 5.23 DECREASE IN AIR POLLUTANT EMISSIONS BY ETHNIC/ RACIAL CATEGORY (PLAN VS. BASELINE, 2035)



Overall, the region as a whole will generally experience an improvement in air quality via reductions in transportation-related emissions. As illustrated by Figure 5.22: Decrease in Air Pollutant Emissions by Income Category, and Figure 5.23: Decrease in Air Pollutant Emissions by Ethnic/Racial Category, on a regional scale, all income and ethnic groups will experience reductions in PM10 and CO under the Plan.

Aviation Noise Impacts

The SCAG Region supports the nation's largest regional airport system in terms of number of airports and aircraft operations, operating in a very complex airspace environment. One significant challenge is striking a balance between aviation capacity needs of Southern California with local quality-of-life constraints for the affected populations.

Projected noise impacts from aircraft operations at the region's airports in 2035 were modeled for inclusion in the PEIR for the RTP. For each airport, modeling produced a contour or isoline for the 65 dB Community Noise Equivalent Level (CNEL), a measure of noise that takes into account both the number and the timing of flights, as well as the mix of aircraft types. The Federal Aviation Administration (FAA) considers residences to be an "incompatible land use" with noise at or above 65dB this CNEL level.

To identify potentially impacted populations, the anticipated population within the 65 dB CNEL contour was calculated by the following steps:

1. Calculating the percentage of TAZs that would lie within a 65 dB CNEL contour
2. Assigning the SCAG projected population to the TAZ
3. Applying the demographic breakdown of the TAZ as a whole to the population within the 65 dB CNEL contour

For the purposes of this study, Aviation Noise Areas are defined as areas that are adversely affected by aircraft and airport noise. Figure 5.24: Distribution of Households in Aviation Noise Areas by Income Category, demonstrates that there is a marginal disproportionate impact between each income group in the 2008 RTP, which is similar to the findings in the 2004 RTP. The disparity between the lowest and highest quintile groups is approximately 7 percent. Each income quintile (by definition) contains 20 percent of the region's

households in 2035. Under the 2008 RTP, the lowest-income group (Quintile 1) will represent 23 percent of the households impacted by noise above the 65 dB CNEL.

FIGURE 5.24 DISTRIBUTION OF HOUSEHOLDS IN AVIATION NOISE AREAS BY INCOME CATEGORY (PLAN VS. BASELINE, 2035)

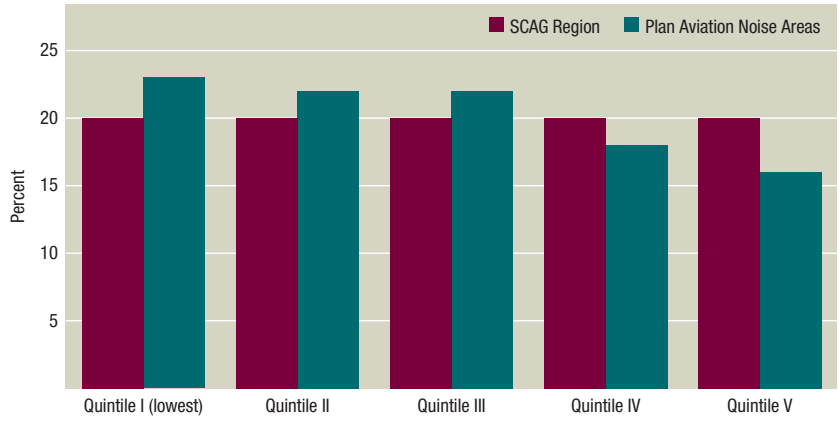


FIGURE 5.25 DISTRIBUTION OF HOUSEHOLDS IN AVIATION NOISE AREAS BY ETHNIC/RACIAL CATEGORY (PLAN VS. BASELINE, 2035)

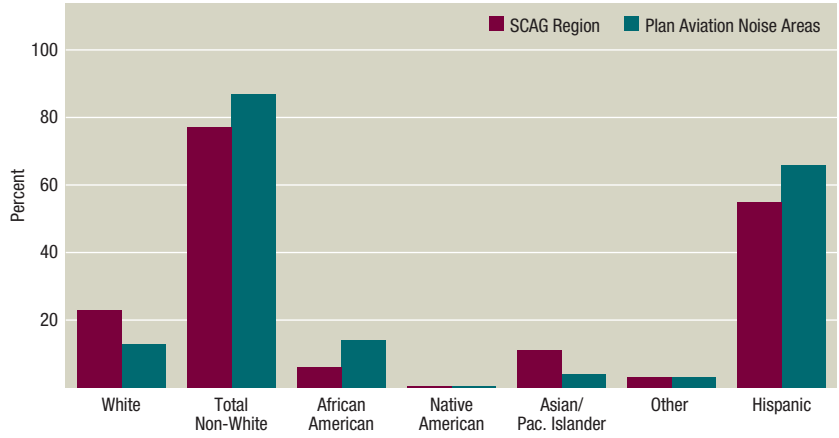


Figure 5.25: Distribution of Households in Aviation Noise Areas by Ethnic/Racial Category, indicates that the 2008 RTP is projected to have a disproportionate aviation noise impact on minority groups. Although non-whites will comprise 77 percent of the region's population in 2035, they will make up 87 percent of those affected by the 65 dB CNEL contour. In particular, 66 percent of the impacted population will be Hispanics, which is a 20 percent increase from the 2004 RTP.

Although the gap between the income groups is projected to be a marginal difference, the environmental justice analysis results demonstrate that lower-income and minority residents still bear a disproportionate burden from aviation noise pollution with the 2008 RTP.

Highway Noise Impacts

Noise associated with highway traffic depends on a number of factors that include traffic volumes, vehicle speed, vehicle fleet mix (cars, trucks), as well as the location of the highway with respect to sensitive receptors. According to Federal Highway Administration (FHWA) guidance, noise impacts occur when noise levels increase substantially when compared to existing noise levels. For the purposes of this analysis, noise increases of 3 dB along highways, where noise levels are currently, or would be in the future above 66 dB, are considered to be significant, regardless of adjacent land use.

The demographic characteristics of each impacted TAZ portion were aggregated and compared with the regional demographics to determine if there would be any disproportionate impacts to any of the demographic groups identified. This approach identified a marginal disproportionate impact between each income group (see Figure 5.26: Distribution of Households in Highway Noise Areas by Income Category). The lowest-income group will account for 22 percent of the affected population in 2035. There is a 6 percent difference between the lowest- and the highest-income quintiles.

FIGURE 5.26 DISTRIBUTION OF HOUSEHOLDS IN HIGHWAY NOISE AREAS BY INCOME CATEGORY (PLAN VS. BASELINE, 2035)

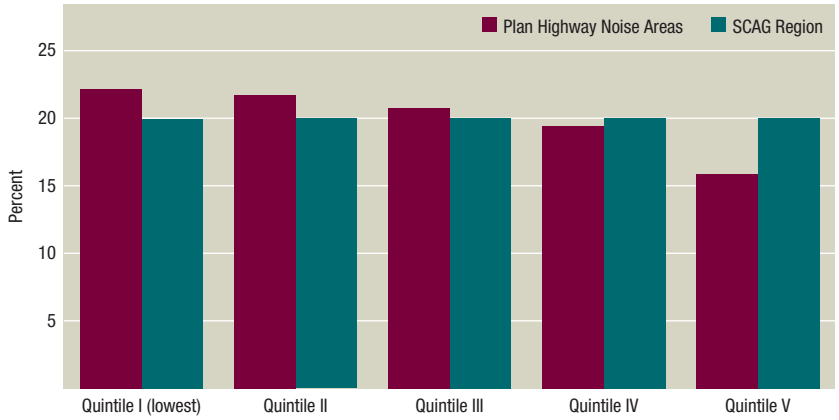
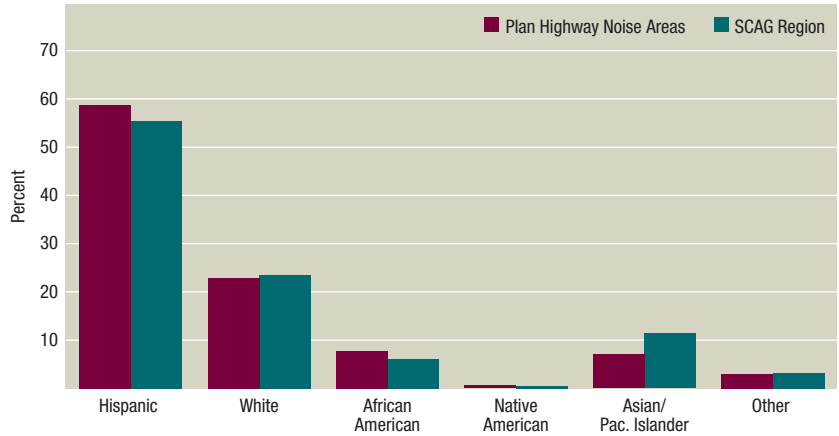


FIGURE 5.27 DISTRIBUTION OF HOUSEHOLDS IN HIGHWAY NOISE AREAS BY ETHNIC/RACIAL CATEGORY (PLAN VS. BASELINE, 2035)



The 2008 RTP also found that minority populations were primarily affected by highway noise impacts. Figure 5.27: Distribution of Households in Highway Noise Areas by Ethnic/Racial Category, indicates that minority populations, specifically Hispanics, would be disproportionately impacted by highway noise. Approximately 59 percent of Hispanics would be residing in highway noise areas by 2035.

The identification of these disparate highway noise impacts at the regional level can be attributed to the issue of incompatible land use, where high-polluting transportation projects, such as freeway construction, airport expansions, or rail extension projects, are located in minority-populated neighborhoods. Corridor-level analysis should be conducted for proposed projects in areas where burdens are concentrated. In addition, the 2008 RTP proposes mitigating these impacts to the extent possible, for example, by requiring new soundwalls where freeway expansions are proposed. Furthermore, the RTP also proposes grade crossings, new technologies, and other clean technologies for goods movement corridors.

NEW SOCIAL EQUITY ELEMENTS

In addition to the performance measures analyzed above, the 2008 RTP environmental justice analysis has undertaken new components. Summarized below are the new initiatives that have either directly or indirectly resulted from the previous environmental justice discussions and comments received.

- Accessibility: In the 2004 RTP environmental justice analysis, SCAG analyzed the percentage of jobs accessible within 45 minutes. The 2008 RTP analysis instead used 30 minutes to calculate accessibility. SCAG determined that the 30-minute travel-time criterion was more indicative of accessibility to the locations of employment services.
- Trips: In the 2008 RTP, both work and non-work trips were analyzed. Previous RTP environmental justice analysis included only work trips. In this analysis, both work and non-work trips were calculated for each TAZ. Incorporating non-work trips into the analysis provides a more accurate determination of allocation of benefits and burdens for each of the performance measures.
- Access to Parks: In response to the comments on the draft 2008 RTP Environmental Justice analysis, SCAG conducted additional and new analysis on accessibility to parks from the perspective of the long-range regional transportation plan.
- County Data: In response to the comments received on the draft 2008 RTP Environmental Justice analysis, SCAG prepared additional and new analysis on a countywide level. This information is included as supplementary information. (See Environmental Justice Report, pages 26 through 28.)

CONCLUSION

The 2008 RTP seeks to identify and address Title VI of the Civil Rights Act and any environmental justice implications of the planning processes and investment decisions. It is critical for SCAG and policy-makers alike to ensure that their transportation programs, policies, and activities serve all segments of the region without generating disproportionately strong and adverse effects.

Economic Impact Analysis

DECLINE IN EMPLOYMENT GROWTH RATE

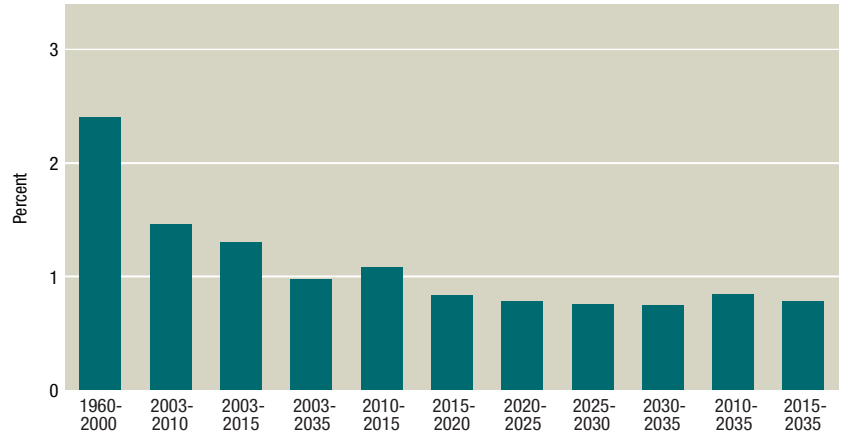
As revealed in current and previous RTP growth forecasts, the region's employment growth will slow down considerably after 2010, compared with historical trends. This sharp and unprecedented decline in job growth as well as underlying changes in the makeup of the labor force in the region are due primarily to a large number of "Baby Boomers" starting to reach the age of retirement. The share of total population and households of elderly and retired persons in the region is projected to double from today. These households are more likely to be headed by minorities (i.e., non-Hispanic White householders).

Unlike the 1960–2000 period, the region will not have a large labor force to support a relatively small retired population. Instead, the region will experience a situation in which a smaller labor force made up of minority households will be supporting a relatively large retired population made up of non-minority households. Increased by immigration, these minority households will be larger, consist of multiple generations, and be headed by younger individuals in the workforce. The size of our labor force as well as employment growth will be sensitive to these changes in demographics.

During the 2003–2035 forecast period, employment growth will be constrained by the size of the anticipated labor force. A major challenge for the region will be to prepare and match younger workers with future jobs. Matching needed skills and education levels with new and especially better-paying future jobs will affect migration trends and immigration levels. These impacts will be felt the most after 2010. During the last 40 years (1960–2000), while the region expanded its job base at an annual compound growth rate of 2.4 percent, the region's job growth rate is now projected to be only 0.84 percent during the 25-year period between 2010 and 2035 (Figure 5.28).

This is about one-third of what was achieved in prior decades. The projected employment growth trends after 2010 suggest an imbalance between the size of the labor force, the retired population that employed workers must support, and the amount of job growth that can be achieved. As a result, the regional economy is expected to face tremendous downward pressure and may not be able to produce the jobs, wealth, and prosperity that it did in prior decades. The economic health of the region is tied to job growth, particularly the creation of high-paying jobs that match the skills and education level of the region's future workforce made up primarily of households headed by minority populations.

FIGURE 5.28 HISTORICAL AND PROJECTED SCAG REGION EMPLOYMENT GROWTH RATES



PUBLIC- AND PRIVATE-SECTOR INVESTMENTS

The 2008 RTP proposes investing $234 billion in 2007 constant dollars (or $412 billion) from public funding sources between 2007 and 2035. In addition, consistent with strategies laid out in previous SCAG RTPs, the 2008 RTP continues to emphasize using innovative financing tools, such as user-based fees and direct investment from the private sector to address challenges limiting transportation revenue growth, constraining transportation investments, and enlarging gaps in unmet transportation demand. The innovative funding revenues which are deemed reasonably available for the 2008 RTP planning horizon are projected to be around $75.6 billion in 2007 constant dollars (or $125 billion in nominal dollars)[11] between 2007 and 2035.

The economic impacts from private-sector-funded projects are different from those funded by tax dollars. Since transportation projects funded by retail sales and gasoline tax revenues are simply extensions of past economic trends, most of their economic impacts are reflected either in the existing employ-

[11] Including additional gas tax and sales tax of $12 billion in 2007 constant dollars

ment base, or in the baseline employment growth forecast. However, enabling private sector engagement in transportation investments through innovative financial arrangements will generate and create new economic activities not experienced before and not captured by past historical trends. As a result, private-sector investments in transportation infrastructure will work to boost regional economic and job growth above the Baseline growth forecast (Economic Impact Analyses for the 1998, 2001, and 2004 RTPs).

The impacts of the RTP expenditures were estimated using the economic input/output model (IMPLAN) and are presented in Table 5.6. The implementation of public-sector-funded infrastructure projects recommended in the 2008 RTP is projected to account for almost 120,000 jobs annually, while projects proposed in the RTP funded through innovative financing would create a net additional 32,800 jobs annually during the planning period.

TABLE 5.6 AVERAGE ANNUAL ECONOMIC IMPACTS FOR 2008 RTP (DIRECT, INDIRECT AND INDUCED IMPACTS)

	Average Annual Investment (Millions $2007)	Employment (No. of Jobs)	Output (Millions $2007)	Income (Millions $2007)
Public Sector	$8,540	119,600	$15,300	$4,200
Private Sector	$2,700	32,800	$4,890	$1,220

Source: Draft 2008 RTP & SCAG Input-Output Model

VI. IMPLEMENTATION AND MONITORING

Caltrans photo © Thomas Ritter

This section discusses how SCAG, as the MPO for the six-county region, monitors the implementation of the 2008 RTP and monitors its progress in achieving its stated goals and system performance.

As discussed in Chapter II, the 2008 RTP comes at a time of great challenges. SCAG and its partners believe they have addressed these challenges from a planning perspective. However, as with any plan, its success or failure depends on the execution.

SCAG intends to continue its longstanding role as the monitoring agency for Plan implementation in all its facets.

Implementing the RTP

REGIONAL TRANSPORTATION IMPROVEMENT PROGRAM (RTIP)

The RTIP is the tool for the Metropolitan Planning Organizations (MPOs) to monitor and implement their RTP. The RTIP is updated every two years, the most recent being in 2006.

The RTIP provides a listing of projects proposed for implementation in the Region during the six-year period covered by the document. The RTIP projects are described in detail, including the funding amounts allocated by source and fiscal year. RTIP projects are categorized according to the transportation system to which they apply: state highways, local highways, or transit.

The passage of SAFETEA-LU in 2005 has created additional requirements for the RTP and RTIP, including an expanded public participation plan with expanded consultation requirements, the use of visualization techniques, publication of an annual list of obligated projects and the requirement that all regionally significant projects be listed individually.

One of the first steps in RTP implementation is that during each RTIP development cycle, SCAG provides the county transportation commissions (CTCs) and Imperial Valley Association of Governments (IVAG) with RTIP Guidelines. The RTIP Guidelines are used by the counties in the development of their county transportation improvement programs (TIPs). These Guidelines are consistent with SAFETEA-LU and the Metropolitan Transportation Programming final rule: 23 CFR Parts 450 and 500, and 49 CFR Part 613.

The RTP non-motorized, rideshare, ITS, and TDM investments were developed in consultation with the county transportation commissions and the IVAG. These investments are annualized in the RTIP Guidelines in order to provide the county transportation commissions and IVAG with average yearly investments. The investments are reflected in the RTIP Guidelines by category in order to facilitate monitoring and ensure RTP implementation.

The RTIP Guidelines also contain the RTP constrained project listing. The counties need to program these projects for initiation within an appropriate time frame to ensure that they become operational during the time frame indicated in the RTP.

The projects identified within the RTP and RTIP must be financially constrained. The RTIP Guidelines provide the RTP funding forecasts for the programming years associated with the RTIP cycle under development. The CTCs and IVAG should program within the RTP forecasts. If a county programs more in project costs than can be accommodated by the RTP financial forecasts, then appropriate justification must accompany the county TIP documentation and be accepted by SCAG prior to TIP approval.

CONGESTION MANAGEMENT PROCESS

The Congestion Management Process as implemented in the SCAG region provides for a comprehensive and integrated transportation planning process that links together the RTP, RTIP, and county-level Congestion Management Programs.

BACKGROUND

The United States Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) requires the development, establish-

ment and implementation of a Congestion Management Process which is fully integrated into the regional planning process.

The Federal Highway Administration defines the congestion management process as a "systematic approach required in transportation management areas (TMAs) that provides for effective management and operation, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities eligible for funding under Title 23 U.S.C. and Title 49 U.S.C., through the use of operational management strategies."

SCAG's Congestion Management Process is a comprehensive strategy designed to relieve traffic congestion and maintain high levels of service on roadways within the Southern California region. SCAG has facilitated efforts by counties and subregions to develop County-level Congestion Management Programs (CMPs) in cooperation with regional and subregional transportation providers, local governments, Caltrans, and the South Coast Air Quality Management District.

In the SCAG region, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties are contained within Transportation Management Areas (TMAs). The Federal Highway Administration (FHWA) defines TMAs as the following:

1. All urbanized areas over 200,000 in population, and any other area that requests such designation
2. An urbanized area with a population over 200,000 (as determined by the latest decennial census) or other area when TMA designation is requested by the governor and the MPO (or affected local officials), and officially designated by the administrators of the FHWA and the FTA. The TMA designation applies to the entire metropolitan planning area(s) (23CFR500)

The County Transportation Commission in each county also functions as a Congestion Management Agency (CMA) under California regulations. To meet the federal Congestion Management Process requirements, SCAG and the county CMAs have come together to develop a Congestion Management Process for the region. Under California law, the Congestion Management Programs (CMPs) are prepared and maintained by the respective CMAs:

- The Los Angeles County Metropolitan Transportation Authority (LACMTA)
- The Orange County Transportation Authority (OCTA)
- The Riverside County Transportation Commission (RCTC)
- The San Bernardino Associated Governments (SANBAG)
- The Ventura County Transportation Commission (VCTC)

With the exception of small portions of Riverside and San Bernardino Counties, all counties within the TMA are designated as ozone non-attainment areas. SCAB covers the urbanized portions of Los Angeles, Orange, Riverside, and San Bernardino Counties.

Federal funds may not be programmed in the carbon monoxide and ozone non-attainment areas of the Transportation Management Areas (TMAs) for any project that will result in a significant increase in single-occupant vehicle (SOV) capacity unless that project is addressed through a CMP.

The CMPs work in collaboration with the AQMP in several areas, but most significantly through the TCMs. Most TCM projects identified in the RTIP are designed to help relieve congestion at the local level. Thus, implementation of the AQMP helps local governments tackle congestion, which, in turn, reduces emissions from idling vehicles or the number of vehicles traveling on congested roadways, and also helps maintain service level standards. At the same time, the CMP process provides local governments with a mechanism to contribute to the regional effort toward attaining the NAAQS.

REGIONAL CONGESTION MANAGEMENT ELEMENTS

In compliance with the sections of the Metropolitan Planning Regulations [23 U.S.C. 134 and 49 U.S.C. 5303- 5305], SCAG's Congestion Management Process comprises the following Regional Congestion Management Elements:

- The Regional Transportation Plan (RTP)
- The counties' Congestion Management Programs (CMPs)
- The Regional Transportation Improvement Program (RTIP)

The functionality of each element is described in the following sections.

Regional Transportation Plan (RTP)

SCAG's RTP establishes overall long-term mobility policies for the movement of people and goods, including congestion relief strategies for all regionally significant facilities and activities (projects and programs).

Congestion Management Program (CMP)

There are five CMAs in the SCAG region and each develops a CMP for their respective county. The degree of urbanization varies from one county to another and consequently the magnitude of congestion will also vary. The CMPs' efforts have been brought together on a regionwide basis and integrated into the SCAG regional planning process.

SCAG's Regional Council and the Regional Transportation Agencies Coalition ensure consistency between the county CMPs and SCAG's RTP and RTIP, through project implementation.

In 1995, SCAG and the CMAs developed the following criteria to ensure consistency and compatibility between the regional transportation planning process and the county congestion management process:

- CMP consistency with the current RTP
- Interregional (inter-county) coordination between the CMPs' goals and objectives
- Consistency between countywide model/database and SCAG's model/database
- All regionally significant CMP projects are to be modeled and incorporated into SCAG's Regional Transportation Modeling System (network)

The purpose of these criteria is to hold each county CMP responsible for the goals and objectives of SCAG's RTP. Compliance with the above criteria is essential, particularly for CMP projects that are going to be programmed into the SCAG RTIP.

TABLE 6.1 CMPS IN THE SCAG REGION

County	Congestion Management Agency (CMA)	Congestion Management Program
Los Angeles	Los Angeles County Metropolitan Transportation Authority (LACMTA)	2004 Congestion Management Program for Los Angeles County (Updated Statement of Conformity issued in 2007)
Orange	Orange County Transportation Authority (OCTA)	2007 Orange County Congestion Management Program (November 2007)
Riverside	Riverside County Transportation Commission (RCTC)	2006 Riverside County Congestion Management Program
San Bernardino	San Bernardino Associated Governments (SANBAG)	2005 Congestion Management Program for San Bernardino County
Ventura	Ventura County Transportation Commission (VCTC)	2005 Ventura County Congestion Management Program

All county CMPs share the same goal of reducing congestion and applying congestion relief strategies. However, there are different priorities in the selection of related strategies based on the needs of each county. Therefore, each county CMP differs in form and local procedure. By state statute, all CMPs must perform the same functions outlined below and must be consistent with the federal requirements.

Highway Performance - Each CMA monitors the performance of an identified highway system. This allows each county to track how their systems, and their individual components, are performing in comparison to established standards, and how performance changes take place over time.

MultiModal Performance - In addition to highway performance, each CMP contains an element to evaluate the performance of other transportation modes, including transit.

Transportation Demand Management (TDM) - Each CMP contains a TDM component geared to reducing travel demand and promoting alternative transportation methods.

Land-Use Programs and Analysis - Each CMP incorporates a program to analyze the impacts of local land-use decisions on the regional transportation system.

Capital Improvement Program (CIP) - Using data and performance measures developed through the activities identified above, each CMP develops a CIP. This becomes the first step in developing the County TIP. Under state law, projects funded through the Regional Transportation Improvement Program (RTIP) must first be contained in the CMP.

Deficiency Plan – Despite the above-stated efforts, when unacceptable levels of congestion occur, the respective CMP contains a set of "deficiency plan"

provisions to address the problems. Deficiency plans may be developed for specific problem areas or on a countywide-system basis. Projects implemented through the deficiency plan must, by statute, include both mobility and air quality benefits. In many cases, the deficiency plan captures the benefits of the transportation projects beyond the SCAG RTIP such as non-federally funded/non-regionally significant projects.

Information on the CMP activities and resulting data are updated on a biennial basis by each CMA and supplied to SCAG and the respective air quality management district.

Regional Transportation Improvement Program (RTIP)

All federally funded congestion relief strategies (projects and programs) are programmed into the RTIP in the SCAG region. Under state law, the CMP projects must be incorporated into the RTIP in order to receive federal and state funds. Under federal law, the RTIP must be updated every four years for funding. Note that the CMP documents list additional projects which are 100% locally funded and not regionally significant, such as the transportation demand management (TDM) and bike lane projects, as these also cumulatively help mitigate congestion.

In non-attainment and maintenance areas, the RTIP projects as a whole, including congestion relief projects, must fulfill the Transportation Conformity requirements. In project-level analysis, the projects requiring federal action (funding or approval) are subject to Environmental Impact Study (EIS) through the National Environmental Policy Act (NEPA). This is an evaluation and analysis of the alternatives. The selected alternative will then be incorporated into the RTP and RTIP for implementation.

Regionally Significant Transportation Investment Studies

Within the context of regional transportation planning, the first step toward strategy or program development is the Regionally Significant Transportation

Investment Study (RSTIS), or a corridor feasibility study of alternatives including a National Environmental Policy Act (NEPA) "purpose and need" statement and preliminary environmental documentation.

SCAG, in cooperation with other stakeholders, will approve the initiation and scope of an RSTIS. Before a project may be included in the RTIP for construction, the project must be one of the alternatives in a completed RSTIS, and must have a completed project initiation document and cleared environmental documents.

Regionally significant alternatives must be evaluated by the RTP performance measures in order to be considered for incorporation in the RTP. RSTIS analyses are currently being performed for corridors in the region, including the South Orange County Major Investment Study and the Orange County/Los Angeles Intercounty Transportation Study. The 2008 RTP includes alternative modes and technologies (intelligent transportation vehicle and highway systems), general alignment, number of lanes, the degree of demand manage-

ment and operating characteristics. Furthermore, an RSTIS is required to evaluate the effectiveness and cost-effectiveness of alternatives in attaining local, regional, state and national goals and objectives. This analysis considers the direct and indirect costs (of capital, operating and maintenance, and rights-of-way) of alternatives; benefits or impacts of mobility improvements; air quality requirements; social, economic and environmental impacts, including environmental justice; safety, operating efficiencies; financing (federal, state and private sources); energy consumption; and public outreach. The results of the RSTIS help shape decisions by SCAG, in cooperation with participating public and private organizations, on the design and scope of the investment for the RTP. The preferred alternative of an RSTIS must meet the performance and financial criteria established by the RTP, and it must be approved by the Regional Council before being included in the RTP and RTIP.

An RSTIS is eligible for funds authorized under Sections 8, 9 and 26 of the Federal Transit Act, state planning funds, as well as planning and capital funds appropriated under Title 23, United States Code.

RSTIS or other analyses are appropriate when regionally significant investments in the RTP have not developed sufficient environmental analysis, design concept and scope (mode and alignment not fully determined). In cases requiring further analysis, the RTP may stipulate either a set of assumptions concerning the proposed improvement or a no-build condition pending the completion of a corridor or sub-area analysis. In either case, the RTP provides enough detail to provide a plan conformity determination.

Monitoring Our Progress

As the designated MPO for the six-county region, SCAG monitors transportation plans, projects and programs for consistency with regional plans. SCAG also monitors the performance of the transportation system. This performance monitoring is especially important to the planning process for future RTPs. It is impossible to solve our regional transportation problems unless we are able to identify and measure them effectively.

SCAG prepares the RTP using performance-based measures that help public officials to better analyze transportation options and trade-offs and make informed decisions. By examining the performance of existing systems over time, SCAG monitors trends and identifies regional transportation needs that may be considered in the RTP. Performance measurements help clarify the link between transportation decisions and eventual outcomes, thereby improving the discussion of planning options and communication with the public. This also helps determine which improvements provide the best opportunities for maximizing the system's performance within the defined constraints.

SCAG has developed performance measures (see Chapters I and V) for the regional transportation system. New tools are also being developed that will help SCAG monitor system performance over time. The Freeway Performance Measurement System (PeMS), developed by UC Berkeley, Caltrans, and the California Partners for Advanced Transit and Highways (PATH), has the ability to measure freeway speeds, delay, and reliability for the regional freeway system. SCAG monitors a number of performance measures through a benchmarking process in the annual State of the Region report.

Transportation planning for the region requires continually improved information on the condition and utilization of the transportation system. Special reports are required periodically from SCAG to show the condition of the highway infrastructure and to monitor the region's overall traffic. The Highway Performance Monitoring System (HPMS) is a federally mandated program designed by the Federal Highway Administration (FHWA) to assess the performance of the nation's highway system. Under the Clean Air Act, SCAG is also required to report periodically on vehicle miles traveled in each air basin to determine whether traffic growth is consistent with the projections on which the State Implementation Plans (SIPs) are based.

The HPMS is one of the components of an Internet-based transportation system currently under development, the Regional Transportation Monitoring Information System (RTMIS). RTMIS is the source for real-time and historical transportation data collected from different local and regional transportation agencies as well as from private data sources. Based on a GIS mapping system, RTMS will be the main monitoring system for collection and distribution of highway and transit data, local and regional traffic information and activities, as well as hosting the subregional transportation monitoring programs.

The following sections outline several of the significant tools used by SCAG to monitor regional progress in advancing the 2008 RTP.

RTIP DATABASE MANAGEMENT

To manage the RTIP process efficiently, SCAG has developed a web-based RTIP database. The new RTIP database serves as a listing for projects in the RTIP, as well as a mechanism for monitoring implementation of these projects. The new database includes a mapping component that allows the CTCs to view all the RTIP projects that have been modeled. The new database will play a pivotal role in the creation of an audit trail for programmed projects. Moreover, it will also make it easier to submit the draft and final RTIP lists to Caltrans and the California Transportation Commission for their review and approval. The CTCs, Imperial Valley Association of Governments and SCAG staff are responsible for inputting this data into the RTIP database. Once the SCAG Regional Council has approved the RTIP, the data is then transmitted to Caltrans for incorporation into the statewide database, or California Transportation Improvement Program System (CTIPS).

CONFORMITY

In federally designated non-attainment or maintenance areas, specific monitoring procedures and tests for conformity are required under the federal Transportation Conformity Rule. At the time of conformity determination, the RTIP must be consistent with the RTP. At any given time, there is only one federally approved and conforming RTP and RTIP in place as the operating documents. During project implementation, sponsor agencies must implement only those projects that are consistent with the conforming RTIP and RTP. The project design concept and scope also must be consistent with those reflected in the conforming RTIP.

SCAG must be informed of any projects that are regionally significant and modeled, regardless of their funding sources. Project sponsors must also inform SCAG (as the region's MPO) of any delay in implementing any TCM projects that are included in an approved SIP. In association with the CTCs and the TCWG, SCAG must report on the timely implementation of TCMs. The Timely Implementation Report is provided in the 2008 RTP Conformity Report. If a project cannot be implemented, the sponsor agency must officially substitute or replace the affected TCM project.

Additionally, SCAG monitors legal, legislative, and election processes that may impact the transportation conformity requirements, the implementation of any TCM or regionally significant projects. SCAG informs the sponsor agency of required actions to address any changes that may have been made.

SCAG's TCWG and Modeling Task Force are two official forums used for interagency consultation. There may be additional ad hoc forums, if needed, to facilitate the required course of action.

HIGHWAY PERFORMANCE MONITORING SYSTEM (HPMS)

HPMS is used as a transportation monitoring and management tool to determine the allocation of federal aid funds, to assist in setting policies and to forecast future transportation needs as it analyzes the transportation systems' length, condition and performance. Additionally, HPMS is used to provide data to the Environmental Protection Agency (EPA) to assist in monitoring air quality conformity, and its data is used in support of the Biennial Report to Congress on the Status of the Nation's Highways. In California, Caltrans implements the program annually. SCAG's responsibility is to assist Caltrans in collecting data from local jurisdictions, and in the distribution, collection and administration of all HPMS survey packages in the six-county region.

VMT, EMISSION AND CONGESTION REPORT

Six years after the enactment of the Clean Air Act Amendments of 1990, any state that contains serious and worse ozone non-attainment areas, or moderate and/or serious carbon monoxide non-attainment areas, is required to demonstrate whether current aggregate VMT, aggregate vehicle emissions, congestion levels and other relevant parameters are consistent with those used for the area's demonstration of attainment. As the region's MPO, SCAG is responsible for forecasting and tracking VMT, emissions and congestion, and submitting these reports to the ARB. VMT reports for ozone non-attainment areas are submitted every three years.

TRANSIT SYSTEM PERFORMANCE ASSESSMENT

Implementation of the RTP requires changes in the operating practices of transit agencies and the integration of the three tiers of transit into a single functioning system. The process of integration is the responsibility of the operators. SCAG will be evaluating the performance of selected operators to provide feedback and to transfer applicable lessons to other operators in the region. The application of advanced transportation technologies applied to the scheduling and routing of transit will be evaluated.

INTERGOVERNMENTAL REVIEW

Under federal law, SCAG is designated as the Regional Clearinghouse for review of all submitted plans, plan changes, projects and programs for consistency with adopted regional plans and policies. Regionally significant transportation projects reviewed for consistency with regional plans are defined as: construction or expansion of freeways; state highways; principal arterials; routes that provide primary access to major activity centers, such as amusement parks, regional shopping centers, military bases, airports and ports; goods movement routes, including both truck routes and rail lines; intermodal transfer facilities, such as transit centers, rail stations, airports and ports; and fixed transit routes, such as light and heavy rail and commuter rail. Any project involving transportation improvements is reviewed to determine whether such improvements are included in the RTIP.

THE STATE OF THE REGION

SCAG develops and publishes the annual State of the Region Report, which monitors the primary economic and transportation trends in Southern California and compares them to other major metropolitan regions in the country. The report helps to set goals for future RTP updates and provides indicators of regional progress from previous RTPs.

Each report presents the major socioeconomic trends in the region, including population, employment, wages, and ethnic composition. It then presents a Report Card for a number of critical indicators, including air quality, modal share, transit ridership, congestion, and income based upon the actual trend and comparison results. The latest update of the Report will be released by the Regional Council in December 2007 and can be accessed via the SCAG website.

OTHER RELATED EFFORTS

There are other efforts that SCAG partner agencies undertake that provide assistance with the overall monitoring of the RTP implementation. Data collected through these efforts can be used by agencies to make more informed decisions. These efforts include:

Caltrans Highway Congestion Monitoring Program (HICOMP) – Caltrans compiles congestion information in an annual report that illustrates the trends in congestion in each Caltrans District. The report includes congestion magnitude, extent, and duration for the peak travel periods.

Caltrans State Highway Operations and Protection Program (SHOPP) 10-Year Plan – Caltrans updates their 10-year SHOPP Plan periodically, focusing on pavement conditions, safety, and operations. The Plan includes the programmed portion of the SHOPP as well as planned investments over a ten-year horizon.

County-Level Congestion Management Program (CMP) Monitoring – County Transportation Commissions monitor cities' performances regarding service levels on CMP systems and opportunities to mitigate the impacts of new development on the transportation system.

County Long-Range Plans – Several County Transportation Commissions have developed 20-year Long-Range Plans that serve as input to the subsequent RTP update. These plans are the blueprints for investments and expected performance for the county.

Transit Operator Short-Range Transit Plans – Transit operators also develop and publish short-range transit plans that define strategies and actions over the short term.

Transit Operators' Performance Reports – Transit operators compile various performance data and submit their reports to the Federal Transit Administration (FTA) annually. The FTA then compiles all the data provided by transit operators and stores them in the National Transit Database (NTD). The NTD provides a wealth of data that can be used to compare trends over time and among operators throughout the United States.

Transit Operators' Triennial Audits – Transit operators undergo an audit every three years to ensure that they comply with state and federal regulations. The audit findings and recommendations are published and reviewed by Caltrans and other agencies.

Regionally Significant Transportation Improvement Studies (RSTIS) (formerly Major Investment Studies) Project sponsors develop these studies. SCAG monitors and assists the projects to ensure communication between the sponsors and SCAG, and to assure compliance with the RTP.

VII. FUTURE CONNECTIONS: THE STRATEGIC PLAN

The RTP strategies discussed in Chapter III represent the region's collective vision for addressing our transportation needs within the constraints of committed, available, or reasonably available revenue sources. Despite the substantial commitments contained in the RTP, this level of investment does not meet the overall needs identified through the RTP development process. If we truly want to address the needs set forth in this RTP, then we must look toward additional strategies and investments to get us there. Often this will entail controversial and difficult choices that will push the envelope and test the boundaries of what is politically acceptable. For now, these elements are contained in the Strategic Plan with the recognition that they merit further study and that, over time and with further consensus building, these programs and policies may move forward into the constrained RTP.

This chapter provides a brief illustrative overview of the additional strategies and investments that the region would pursue if additional funding were to become available, and after further consensus building to solidify commitment around specific projects and policies. It is envisioned that future updates or amendments to the RTP would draw from the projects contained in the Strategic Plan; exceptions would be handled on a case-by-case basis. While there is no funding strategy attached to the Strategic Plan, this chapter discusses additional potential funding sources that merit further study and evaluation.

Unfunded System Preservation and Operations Needs

Beyond the investments proposed in the 2008 RTP, there is a shortfall of $24 billion in highway system preservation, and a shortfall of $8 billion in arterial and transit system preservation, through 2035. With the recognition that the costs of deferred maintenance could grow exponentially over time, investment in preservation should be given priority for new funding sources beyond those identified in the 2008 RTP.

Additionally, SCAG identified a shortfall of approximately $6.7 billion in highway operations needs, and $1.3 billion in regionally significant arterial and transit operations needs, through 2035. SCAG, Caltrans, and our transportation planning partners will continue to evaluate corridor-level performance, develop corridor system management plans, and incorporate the resulting recommendations into future Plans and Programs.

Unfunded Capital Improvements

There are approximately $273 billion in additional capital investment needs above what are identified in the financially constrained RTP. These projects address important transportation corridor needs in the region, but still face significant challenges in terms of local consensus on a preferred strategy, funding priority, or both, before potential inclusion in the RTP. For example, the proposed Orangeline project faces significant challenges in terms of right-of-way availability, funding commitment, and stakeholder consensus. In recognition of the regional benefits the project may provide, it is being included in the Strategic Plan until such issues have been resolved.

Regionally significant major corridor improvements in the Strategic Plan are identified in Table 7.1. A more complete list is contained in the RTP Project List report available at www.scag.ca.gov/rtp2008.

Strategic Finance

Recognizing that new sources of revenue over and above those already identified in the RTP are required to help fund these unmet needs, SCAG will initiate a comprehensive study of congestion pricing strategies over the next year. A regionwide congestion pricing strategy can be structured to help the region meet its transportation demand management and air quality goals while providing a reliable and dedicated revenue source. The pricing mechanism could allow users of the transportation system to know the true cost of their travel, resulting in informed decision-making and more efficient use of the system. Potential pricing strategies can include a regional vehicle-miles-traveled fee

and/or a regional high-occupancy toll lane network. While promising, these strategies still face a number of significant hurdles—there is currently no legislative authority to implement such strategies, and there is no regional entity that exists to administer or implement such a comprehensive program. SCAG's study will attempt to address some of these hurdles by evaluating the feasibility of these strategies and coalescing regional consensus for potential input into the next update of the RTP.

In addition to SCAG's regional congestion pricing initiative, a number of local efforts to study additional transportation revenues are underway or may be in the near future. The Los Angeles County Metropolitan Transportation Authority (MTA) is evaluating the feasibility of a Congestion Mitigation Fee as part of a proposed restructuring of its Congestion Management Program (CMP). If enacted, the fee would be imposed on new development and would generate new revenue to assist MTA in addressing congestion caused by growth. In 2004, the voters in Ventura County were asked to approve a local sales tax measure for transportation. While the voters did not approve the sales tax increase, it remains a popular option for the region's counties to generate a significant amount of revenues dedicated to transportation. All of the other counties in the SCAG region have a local sales tax measure dedicated to transportation.

TABLE 7.1 MAJOR STRATEGIC PLAN PROJECTS

Strategic Plan Project Description
• Dedicated Lanes for Clean-Technology Trucks on an East-West Corridor connecting the Ports of LA/LB to and through the Inland Empire (I-710 to I-15)
• Dedicated Lanes for Clean-Technology Trucks on I-15 (East-West Corridor to Barstow)
• US-101 HOT Lanes (SR-23 to SR-134/SR-170)
• CETAP Riverside County to Orange County (Corridor B from I-15/Mid-County Pkwy to SR-133/SR-241)
• Purple Line Extension to Century City and Santa Monica
• Gold Line Extension to Ontario Airport
• Metrolink and LOSSAN Strategic Plans
• Santa Paula Branch Line
• High-Speed Regional Transport - system extensions to Palmdale, Victorville, Coachella Valley, Imperial, Orange County, San Diego
• High-Speed Regional Transport - California High-Speed Rail Authority (serving the SCAG region beyond the Union Station-Anaheim segment in the financially constrained RTP)
• High-Speed Regional Transport - California-Nevada Maglev - Ontario Airport to Nevada State Line
• Orangeline High-Speed Transit (Orange County - Union Station - Santa Clarita - Palmdale)

Corridor Preservation

For those corridor projects identified in the Strategic Plan, right-of-way preservation should be undertaken to begin laying the groundwork for advancing these long-range improvements. The SCAG Region is pursuing an innovative, environmentally sensitive approach to considering future development and transportation projects. This approach envisions that transportation options

will be developed with consideration for environmentally sensitive land uses and habitat issues as part of the planning and design criteria. It would involve early and active involvement by all stakeholders at the local, state, and federal levels.

This approach draws on the Community and Environmental Transportation Acceptability Process (CETAP) undertaken in Riverside County, which serves as a template for other agencies and jurisdictions seeking to preserve rights-of-way for long-range transportation needs. The four CETAP corridors, two intra-county corridors—the Mid-County Parkway and the Winchester-Temecula Corridor—and two inter-county corridors—the Riverside County-Orange County Corridor (Corridor A) and the Moreno Valley-San Bernardino Corridor—are included in the financially constrained RTP.

As Riverside County has shown, it is important to identify and preserve transportation corridors needed to expand or enhance transportation for future generations. Local governments will find it difficult to obtain optimal locations for these corridors unless efforts to preserve them are made early. The American Association of State Highway and Transportation Officials (AASHTO) Report on Corridor Preservation states that early efforts provide the following benefits:

- prevent inconsistent development
- minimize or avoid environmental, social and economic impacts
- prevent the loss of desirable corridor locations
- allow for the orderly assessment of impacts
- permit orderly project development, and
- reduce costs

Planners and policy-makers should start preparing strategies for preserving corridors now to prevent losing rights-of-way needed for transportation beyond the year 2035. Rights-of-way preservation is a reasonable concern, particularly in areas where development may block a long-range corridor. More opportunities to capitalize on preservation are available in less-urban areas,

where local governments have an opportunity to obtain available land for new transportation facilities.

The first step in this kind of planning is to identify potential long-range corridors and determine if there is a need to preserve them. This will require intergovernmental coordination and should include a funding component. Next, criteria to evaluate and prioritize the selected corridors must be developed. Once a corridor is selected, environmental studies will be needed. Traditional preservation techniques include purchasing land or using government statutes to place a corridor alignment on a general plan land-use map. Other state and federal funds can be used to assist in acquiring land for long-range corridors.

AASHTO American Association of State Highway and Transportation Officials – A nonprofit, nonpartisan association representing highway and transportation departments in the 50 states, the District of Columbia and Puerto Rico.

AB 32 Assembly Bill 32 – Signed into law on September 26, 2006, it requires that the state's global warming emissions be reduced to 1990 levels by 2020. This reduction will be accomplished through an enforceable statewide cap on global warming emissions that will be phased in starting in 2012. In order to effectively implement the cap, AB 32 directs the California Air Resources Board (CARB) to develop appropriate regulations and establish a mandatory reporting system to track and monitor global warming emissions levels.

AB 169 Assembly Bill 169 – Provides for the sixteen federally recognized tribes in the SCAG Region to join the SCAG Joint Powers Authority (JPA) to participate in the Southern California Association of Governments by voting at the SCAG General Assembly.

ACE Alameda Corridor East – A 35-mile corridor extending through the San Gabriel Valley between East Los Angeles and Pomona and connecting the Alameda Corridor to the transcontinental railroad network.

ADA Americans with Disabilities Act of 1990 – Guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, state and local government services, and telecommunications. It prescribes federal transportation requirements for transportation providers.

AJR Assembly Joint Resolution No. 40 – Introduced on August 23, 2007, the Resolution calls upon the governor to declare a state of emergency in respect to the air quality health crisis in the South Coast Air Quality Basin related to emissions of PM2.5, and to direct steps necessary to address the emergency.

ANCA Federal Airport Noise and Capacity Act of 1990 – Establishes a national aviation noise policy that reviews airport noise and access restrictions on operations for Stage 2 and Stage 3 aircraft.

Antelope Valley AQMD Antelope Valley Air Quality Management District – The air pollution control agency for the portion of Los Angeles County north of the San Gabriel Mountains.

AQMP Air Quality Management Plan – Regional plan for air quality improvement in compliance with federal and state requirements.

ARB Air Resources Board – Refer to CARB, California Air Resources Board.

ATIS Advanced Traveler Information Systems – Technology used to provide travelers with information, both pre-trip and in-vehicle, so they can better utilize the transportation system.

ATMS Advanced Transportation Management Systems – Technology used to improve the operations of the transportation network.

AVO Average Vehicle Occupancy – Calculated by dividing the total number of travelers by the total number of vehicles.

Base Year The year 2003, used in the RTP performance analysis as a reference point for current conditions.

Baseline Future scenario which includes only those projects that are: existing, undergoing right-of-way acquisition or construction, come from the first year of the previous RTP or RTIP, or have completed the NEPA process. The Baseline is based upon the adopted 2006 RTIP. The Baseline functions as the "No Project" alternative used in the RTP Program EIR.

BLS Bureau of Labor Statistics – The principal fact-finding agency for the federal government in the broad field of labor economics and statistics.

BNSF Burlington Northern and Santa Fe Railway Company.

BRT Bus Rapid Transit – Bus transit service that seeks to reduce travel time through measures such as traffic signal priority, automatic vehicle location, dedicated bus lanes, limited-stop service, and faster fare collection policies.

BTA Bicycle Transportation Account – Provides state funds for city and county projects that improve safety and convenience for bicycle commuters.

CAA Clean Air Act (CAA) – 1970 federal act that authorized EPA to establish air quality standards to limit levels of pollutants in the air. EPA has promulgated such standards (or NAAQS) for six criteria pollutants: sulfur dioxide (SO2), nitrogen dioxide (NO2), carbon monoxide (CO), ozone, lead, and particulate matter (PM10). All areas of the United States must maintain ambient levels of these pollutants below the ceilings established by the NAAQS; any area that does not meet these standards is a "non-attainment" area. States must develop SIPs to explain how they will comply with the CAA. The act was amended in 1977 and again in 1990.

CAFR Comprehensive Annual Financial Report – Official annual financial report that encompasses all funds and financial components associated with any given organization.

Cal B/C Model California Life-Cycle Benefit/Cost Analysis Model (Cal-B/C) – Was developed for the California Department of Transportation (Caltrans) as a tool for benefit-cost analysis of highway and transit projects. It is an Excel (spreadsheet) application structured to analyze several types of transportation improvement projects in a corridor where there already exists a highway facility or a transit service (the base case).

Caltrans California Department of Transportation – State agency responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries.

CARB California Air Resources Board – State agency responsible for attaining and maintaining healthy air quality through setting and enforcing emissions standards, conducting research, monitoring air quality, providing education and outreach, and overseeing/assisting local air quality districts.

Catalytic Demand Additional aviation demand that is created by companies that locate in the proximity of expanding airports with developable land around them, to reduce airport ground access time and costs for their employees and clients. Catalytic demand is greatest for large hub airports, particularly international airports.

CEHD Community, Economic and Human Development Committee – A SCAG committee that studies the problems, programs and other matters which pertain to the regional issues of community, economic and human development and growth. This committee reviews projects, plans and programs of regional significance for consistency and conformity with applicable regional plans.

CEQA California Environmental Quality Act – State law providing certain environmental protections that apply to all transportation projects funded with state funds.

CETAP Community Environmental and Transportation Acceptability Process – Part of the Riverside County Integrated Project that is examining where to locate possible major new multimodal transportation facilities to serve the current and future transportation needs of Western Riverside County, while minimizing impacts on communities and the environment.

CHSR California High-Speed Rail Authority – Agency responsible for planning, designing, constructing and operating a state-of-the-art high-speed train system in California.

CIP Capital Improvement Program – Long-range strategic plan that identifies capital projects; provides a planning schedule and financing options.

CMAQ Congestion Mitigation and Air Quality Program – Federal program initiated by ISTEA to provide funding for surface transportation and other related projects that contribute to air quality improvements and reduce congestion.

CMIA Corridor Mobility Improvement Account – These funds would be allocated by the California Transportation Commission to highly congested travel corridors in the state. Projects in this category must be a high priority; be able to start construction by 2012; improve mobility in a highly congested corridor by improving travel times and reducing vehicle hours of delay; connect the State Highway System; and improve access to jobs, housing, markets and commerce.

CMP Congestion Management Program – Established by Proposition 111 in 1990, requires each county to develop and adopt a CMP that includes highway and roadway system monitoring, multimodal system performance analysis, transportation demand management program, land-use analysis program and local conformance.

CNSSTC California-Nevada Super Speed Train Commission – Public-private Partnership developed to promote a high-speed link between California and Nevada.

CO Carbon monoxide – A colorless, odorless, poisonous gas formed when carbon in fuels is not burned completely. It is a byproduct of highway vehicle exhaust, which contributes about 60 percent of all CO emissions nationwide.

COG Council of Governments – Under state law, a single or multicounty council created by a joint powers agreement.

COMPASS/Growth Visioning A planning process guided by input from the public and initiated by SCAG to develop a regional strategy for addressing future growth in Southern California.

Congestion Management Process Congestion Management Process – Systematic approach required in transportation management areas (TMAs) that provides for effective management and operation, based on a cooperatively developed and implemented metropolitan-wide strategy, of new and existing transportation facilities eligible for funding under title 23 U.S.C. and title 49 U.S.C., through the use of operational management strategies.

Congestion Pricing User fee imposed on vehicles during peak demand periods on congested roadways.

Constant Dollars Dollars expended/received in a specific year adjusted for inflation/deflation relative to another time period.

Corridor In planning, a broad geographical band that follows a general directional flow or connects major sources of trips. It may contain a number of streets and highways, and transit lines and routes.

CTC California Transportation Commission – A nine-member board appointed by the governor to oversee and administer state and federal transportation funds and provide oversight on project delivery.

CTIPS California Transportation Improvement Program System – A project programming database system used to efficiently and effectively develop and manage various transportation programming documents as required under state and federal law.

CTP California Transportation Plan – A statewide, long-range transportation policy plan that provides for the movement of people, goods, services, and information. The CTP offers a blueprint to guide future transportation decisions and investments that will ensure California's ability to compete globally, provide safe and effective mobility for all persons, better link transportation and land-use decisions, improve air quality, and reduce petroleum energy consumption.

CVO Commercial Vehicle Operations – Management of commercial vehicle activities through ITS.

Deficiency Plan Set of provisions contained in a Congestion Management Plan to address congestion, when unacceptable levels of congestion occur. Projects implemented through the Deficiency Plan must, by statute, have both mobility and air quality benefits.

DTIM Direct Travel Impact Model – A vehicle emissions forecasting model.

EDF Environmental Defense Fund – A national nonprofit organization that seeks to protect the environmental rights of all people, including future generations.

EIR Environmental Impact Report – An informational document, required under CEQA, which will inform public agency decision-makers and the public generally of the significant environmental effects of a project, possible ways to minimize significant effects, and reasonable alternatives to the project.

EIS Environmental Impact Statement (federal) – National Environmental Policy Act (NEPA) requirement for assessing the environmental impacts of federal actions that may have a significant impact on the human environment.

EMFAC Emission Factor – Model that estimates on-road motor vehicle emission rates for current year as well as backcasted and forecasted inventories.

EPA Environmental Protection Agency – Federal agency established to develop and enforce regulations that implement environmental laws enacted by Congress to protect human health and safeguard the natural environment.

FAA Federal Aviation Administration – Federal agency responsible for issuing and enforcing safety regulations and minimum standards, managing air space and air traffic, and building and maintaining air navigation facilities.

FHWA Federal Highway Administration – Federal agency responsible for administering the Federal-Aid Highway Program, which provides federal financial assistance to the states to construct and improve the National Highway System, urban and rural roads, and bridges.

Financially Constrained Expenditures are said to be financially constrained if they are within limits of anticipated revenues.

FRA Federal Railroad Administration – Federal agency created to promulgate and enforce rail safety regulations, administer railroad assistance programs, conduct research and development in support of improved railroad safety and national rail transportation policy, and consolidate government support of rail transportation activities.

FTA Federal Transit Administration – The federal agency responsible for administering federal transit funds and assisting in the planning and establishment of areawide urban mass transportation systems. As opposed to FHWA funding, most FTA funds are allocated directly to local agencies, rather than Caltrans.

FTIP Federal Transportation Improvement Program – A three-year list of all transportation projects proposed for federal transportation funding within the planning area of an MPO. (Note: The FTIP is locally referred to as the 2006 RTIP.)

FY Fiscal Year – The twelve-month period on which the budget is planned. The state fiscal year begins July 1 and ends June 30 of the following year. The federal fiscal year begins October 1 and ends September 30 of the following year.

GAO Government Accountability Office – Congressional agency responsible for examining matters related to the receipt and payment of public funds.

GARVEE Grant Anticipation Revenue Vehicles – A debt financing instrument authorized to receive federal reimbursement of debt service and related financing costs under Section 122 of Title 23, United States Code. GARVEEs can be issued by a state, a political subdivision of a state, or a public authority.

GHG Greenhouse Gases – Components of the atmosphere that contribute to the greenhouse effect. The principal greenhouse gases that enter the atmosphere because of human activities are carbon dioxide, methane, nitrous oxide, and fluorinated gases.

GIS Geographic Information System – Powerful mapping software that links information about where things are with information about what things are like. GIS allows users to examine relationships between features distributed unevenly over space, seeking patterns that may not be apparent without using advanced techniques of query, selection, analysis, and display.

GNP Gross National Product – An estimate of the total value of goods and services produced in any specified country in a given year. GNP can be measured as a total amount or an amount per capita.

Grade Crossing A crossing or intersection of highways, railroad tracks, other guideways, or pedestrian walks, or combinations of these at the same level or grade.

HCP Habitat Conservation Plan – Established under Section 10 of the Endangered Species Act to allow development to proceed while protecting endangered species.

HDT Heavy-Duty Truck – Truck with a gross vehicle weight of 8,500 pounds or more.

HICOMP Highway Congestion Monitoring Program (Caltrans) – A report that measures the congestion that occurs on urban area freeways in California.

Home-based work trips Trips that go between home and work, either directly or with an intermediate stop. Home-based work trips include telecommuting, working at home and non-motorized transportation work trips.

HOT Lane High-Occupancy Toll Lane – An HOV lane that single-occupant drivers can pay to drive in.

HOV Lane High-Occupancy Vehicle Lane – A lane restricted to vehicles with two (and in some cases three) or more occupants to encourage carpooling. Vehicles include automobiles, vans, buses and taxis.

HPMS Highway Performance Monitoring System – A federally mandated program designed by FHWA to assess the performance of the nation's highway system.

HSRT High-Speed Regional Transport – Transportation system that operates at very high speeds on an exclusive right-of-way.

HUD U.S. Department of Housing and Urban Development – Federal agency charged with increasing homeownership, supporting community development, and increasing access to affordable housing free from discrimination.

ICAPCD Imperial County Air Pollution Control District – Local air pollution control agency mandated by state and federal regulations to implement and enforce air pollution rules and regulations.

IGR Intergovernmental Review Process – The review of documents by several governmental agencies to ensure consistency of regionally significant local plans, projects, and programs with SCAG's adopted regional plans.

Infrastructure The basic facilities, equipment, services and installations needed for the growth and functioning of a community.

IOS Initial Operating Segment.

ISTEA Intermodal Surface Transportation Efficiency Act – Signed into federal law on December 18, 1991, it provided authorization for highways, highway safety and mass transportation for FYs 1991–1997 and served as the legislative vehicle for defining federal surface transportation policy.

ITIP Interregional Transportation Improvement Program – The portion of the STIP that includes projects selected by Caltrans (25 percent of STIP funds).

ITS Intelligent Transportation Systems – Systems that use modern detection, communications and computing technology to collect data on system operations and performance, communicate that information to system managers and users, and use that information to manage and adjust the transportation system to respond to changing operating conditions, congestion or accidents. ITS technology can be applied to arterials, freeways, transit, trucks and private vehicles. ITS include Advanced Traveler Information Systems (ATIS), Advanced Public Transit Systems (APTS), Advanced Traffic Management Systems (ATMS), Advanced Vehicle Control Systems (AVCS) and Commercial Vehicle Operations (CVO).

IVAG Imperial Valley Association of Governments – Council of Governments for Imperial County. IVAG is responsible for short-range transportation planning, including all projects utilizing federal and state highway and transit funds.

JPA Joint Powers Authority – Two or more agencies that enter into a cooperative agreement to jointly wield powers that are common to them. JPAs are a vehicle for the cooperative use of existing governmental powers to finance and provide infrastructure and/or services in a cost-efficient manner.

LACMTA Los Angeles County Metropolitan Transportation Authority, more commonly referred to as the MTA – Agency responsible for planning and funding countywide transportation improvements, administering the county's transportation sales tax revenues, and operating bus and rail transit service.

LAUPT Los Angeles Union Passenger Terminal, also known as Union Station.

LAWA Los Angeles World Airports – Aviation authority of the City of Los Angeles. LAWA owns and operates Los Angeles International (LAX), Ontario International, Van Nuys, and Palmdale Airports.

LCVs Longer-Combination Vehicles – Includes tractor-trailer combinations with two or more trailers that weigh more than 80,000 pounds.

LEM Location Efficient Mortgage – Allows people to qualify for larger loan amounts if they choose a home in a densely populated community that is well served by public transit, and where destinations are located close together so that they can also walk and bike instead of driving everywhere.

Livable Communities Any location in which people choose may be viewed as "livable." However, communities that contain a healthy mix of homes, shops, work places, schools, parks, and civic institutions coupled with a variety of transportation choices, give residents greater access to life's daily essentials and offer higher quality of life to a wider range of residents.

LRT Light Rail Transit – A mode of transit that operates on steel rails and obtains its power from overhead electrical wires. LRT may operate in single or multiple cars on separate rights-of-way or in mixed traffic.

LTF Local Transportation Fund – A fund which receives TDA revenues.

MAGLEV Magnetic Levitation high-speed transportation system.

MAP Million Annual Passengers – Used to quantify airport activity.

Market Incentives Measures designed to encourage certain actions or behaviors. These include inducements for the use of carpools, buses and other HOVs in place of single-occupant automobile travel. Examples include HOV lanes, preferential parking, and financial incentives.

MDAB Mojave Desert Air Basin – Area defined by state law as comprising the desert portions of Los Angeles, Kern, Riverside, and San Bernardino Counties.

MDAQMD Mojave Desert Air Quality Management District – Local air agency mandated by state and federal regulations to implement and enforce air pollution rules and regulations; encompasses the desert portion of San Bernardino County from the summit of the Cajon Pass north to the Inyo County line, as well as the Palo Verde Valley portion of Riverside County.

Measure A Revenues generated from Riverside County's local half-cent sales tax.

Measure I Revenues generated from San Bernardino County's local half-cent sales tax.

Metrolink Regional commuter rail system connecting Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties and operated by SCRRA.

MIS Major Investment Study – The preliminary study, including preliminary environmental documentation, for choosing alternative transportation projects for federal transportation funding. An MIS is a requirement, which is conducted cooperatively by the study sponsor and the MPO.

Mixed Flow Traffic movement having autos, trucks, buses and motorcycles sharing traffic lanes.

Mode A particular form of travel (e.g., walking, traveling by automobile, traveling by bus or traveling by train).

Mode Split The proportion of total person trips using various specified modes of transportation.

Model A mathematical description of a real-life situation that uses data on past and present conditions to make a projection.

MPO Metropolitan Planning Organization – A federally required planning body responsible for transportation planning and project selection in a region.

MTS Metropolitan Transportation System – Regional network of roadways and transit corridors.

Multimodal A mixture of the several modes of transportation, such as transit, highways, non-motorized, etc.

NAAQS National Ambient Air Quality Standards – Targets established by the U.S. Environmental Protection Agency (EPA) for the maximum contribution of a specific pollutant in the air.

NAFTA North American Free Trade Agreement – An agreement between the governments of Canada, Mexico, and the United States to eliminate barriers to trade and facilitate the cross-border movement of goods and services.

NCCP Natural Communities Conservation Plan – Program under the Department of Fish and Game that uses a broad-based ecosystem approach toward planning for the protection of plants, animals and their habitats, while allowing compatible and appropriate economic activity.

NEPA National Environmental Protection Act – Federal environmental law that applies to all projects funded with federal funds or requiring review by a federal agency.

NIMS National Incident Management System – Nationwide template that enables all government, private-sector and non-governmental organizations to work together during a domestic incident.

Nominal dollars Actual dollars expended/received in a specific year without adjustments for inflation/deflation.

NOx Nitrogen oxides – A group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. NOx are a major component of ozone and smog, and they are one of six principal air pollutants tracked by the EPA.

NTD National Transit Database – The Federal Transit Administration's (FTA) national database for transit statistics.

O&M Operations and Maintenance – The range of activities and services provided by the transportation system and the upkeep and preservation of the existing system.

OCTA Orange County Transportation Authority – Agency responsible for planning and funding countywide transportation improvements, administering the county's transportation sales tax revenues, and operating bus transit service.

OLDA Orangeline Development Authority – Joint exercise of powers authority developed by the cities located along the Orangeline corridor.

OnTrac Orange-North America Trade Rail Access Corridor – Formed in April of 2000 to build and support the Orangethorpe Avenue Grade Separation and Trade Corridor project, a 5-mile-long railroad-lowering project that will completely grade separate 11 rail crossings in the cities of Placentia and Anaheim.

OWP Overall Work Program – SCAG develops an OWP annually, describing proposed transportation planning activities for the upcoming fiscal year, including those required by federal and state law.

PATH Partners for Advanced Transit and Highways – Joint venture of Caltrans which includes the University of California, and other public and private academic institutions and industries.

PEIR Program Environmental Impact Report – Environmental review process used to evaluate the potential environmental effects of large-scale plans or programs.

PeMS Freeway Performance Measurement System – A service provided by the University of California, Berkeley, to collect historical and real-time freeway data from freeways in the state of California in order to compute freeway performance measures.

Person Trip A trip made by a person by any mode or combination of modes for any purpose.

PM10 Particulate Matter – A mixture of solid particles and liquid droplets found in the air, 10 micrometers or less in size (a micrometer is one-millionth of a meter). These coarse particles are generally emitted from sources such as vehicles traveling on unpaved roads, materials handling, and crushing and grinding operations, as well as windblown dust.

PM2.5 Particulate Matter – A mixture of solid particles and liquid droplets found in the air, 2.5 micrometers or less in size (a micrometer is one-millionth of a meter). These fine particles result from fuel combustion from motor vehicles, power generation, and industrial facilities, as well as from residential fireplaces and wood stoves.

PMD LA/Palmdale Regional Airport – Regional airport located in Palmdale.

PPP Public-Private Partnership – Contractual agreements formed between a public agency and private sector entity that allow for greater private sector participation in the delivery of transportation projects.

PRC Peer Review Committee – An "informal" committee of technical experts usually organized and invited to review and comment on various technical issues and processes used in the planning process.

Proposition 1A Passed by voters in 2006, Proposition 1A protects transportation funding for traffic congestion relief projects, safety improvements, and local streets and roads. It also prohibits the state sales tax on motor vehicle fuels from being used for any purpose other than transportation improvements, and authorizes loans of these funds only in the case of severe state fiscal hardship.

Proposition 1B Highway Safety, Traffic Reduction, Air Quality, and Port Security State of California – Passed in November 2006, Proposition 1B provides $19.9 billion to fund state and local transportation improvement projects to relieve congestion, improve movement of goods, improve air quality, and enhance safety and security of the transportation system.

Proposition 42 As of March 2002, placed in the State Constitution those provisions of current law requiring the use of state gasoline sales tax revenues for state and local transportation purposes.

Proposition A Revenues generated from Los Angeles County's local half-cent sales tax. Los Angeles County has two permanent local sales taxes (Propositions C and A).

Proposition C Revenues generated from Los Angeles County's local half-cent sales tax. Los Angeles County has two permanent local sales taxes (Propositions C and A).

PSR Project Study Report – Defines and justifies the project's scope, cost, and schedule. PSRs are prepared for state highway projects and PSR equivalents are prepared for projects not on the State Highway System. Under state law, a PSR or PSR equivalent is required for STIP programming.

PTA Public Transportation Account – The major state transportation account for mass transportation purposes. Revenues include a portion of the sales tax on gasoline and diesel fuels.

PUC Public Utilities Commission – Regulates privately owned telecommunications, electric, natural gas, water, railroad, rail transit, and passenger transportation companies.

Railroad Siding A short stretch of railroad track used to store rolling stock or enable trains on the same line to pass; also called sidetrack.

RC Regional Council – Conducts the affairs of SCAG; implements the General Assembly's policy decisions; acts upon policy recommendations from SCAG policy committees and external agencies; appoints committees to study specific problems; and amends, decreases or increases the proposed budget to be reported to the General Assembly.

RCP Regional Comprehensive Plan (RCP) – Developed by SCAG, the RCP is a vision of how Southern California can balance resource conservation, economic vitality, and quality of life. It will serve as a blueprint to approach growth and infrastructure challenges in an integrated and comprehensive way.

RCTC Riverside County Transportation Commission – Agency responsible for planning and funding countywide transportation improvements and administering the county's transportation sales tax revenues.

RHNA Regional Housing Needs Assessment – Quantifies the need for housing within each jurisdiction of the SCAG Region based on population growth projections. Communities then address this need through the process of completing the housing elements of their general plans.

Robust Flight Portfolio Providing a range of flight offerings in different haul length categories including short-haul, medium-haul, long-haul and international flights.

ROG Reactive organic gas – Organic compounds assumed to be reactive at urban/regional scales. Those organic compounds that are regulated because they lead to ozone formation.

RSTIS Regionally Significant Transportation Investment Study – Involves identifying all reasonable transportation options, their costs, and their environmental impacts. RSTIS projects are generally highway or transit improvements that have a significant impact on the capacity, traffic flow, level of service or mode share at the transportation corridor or sub-area level.

RSTP Regional Surface Transportation Program – Established by the California state statute utilizing federal Surface Transportation Program funds. Approximately 76 percent of the state's RSTP funds must be obligated on projects located within the 11 urbanized areas of California with populations of 200,000 or more.

RTIP Regional Transportation Improvement Program – Refers to the share of capital outlay improvement funds controlled by regional agencies (75 percent of STIP funds). (Note: The FTIP is locally referred to as the 2006 RTIP.)

RTMS Regional Transportation Monitoring System – Internet-based transportation monitoring system. The RTMS will be the source for real-time and historical transportation data collected from local, regional and private data sources.

RTP Regional Transportation Plan (RTP) – Federally required 20-year plan prepared by metropolitan planning organizations and updated every four years. Includes projections of population growth and travel demand, along with a specific list of proposed projects to be funded.

RTSS Regional Transit Security Strategy – Strategy for the region with specific goals and objectives related to the prevention, detection, response and recovery of transit security issues.

SAFETEA-LU Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users – Signed into law by President Bush on August 10, 2005, it authorized the federal surface transportation programs for highways, highway safety, and transit for the 5-year period of 2005-2009.

SANBAG San Bernardino Associated Governments – The council of governments and transportation planning agency for San Bernardino County. SANBAG is responsible for cooperative regional planning and developing an efficient multimodal transportation system countywide.

SANDAG San Diego Association of Governments.

SB 45 Senate Bill 45 (Chapter 622, Statutes of 1997, Kopp) – Established the current STIP process and shifted control of decision-making from the state to the regional level.

SB 79 Senate Bill 79 Transportation Trailer Bill – Provides transportation funds on an ongoing basis to help the General Fund beyond Fiscal Year 2008

SB 974 Senate Bill 974 – Introduced by Senator Alan Lowenthal, SB 974 would impose a $30 fee on each shipping container processed at the Ports of Los Angeles, Long Beach, and Oakland for congestion management and air quality improvements related to ports.

SBD San Bernardino International Airport – International airport located in San Bernardino.

SCAB South Coast Air Basin – Comprises the non–Antelope Valley portion of Los Angeles County, Orange County, Riverside County, and the non-desert portion of San Bernardino County.

SCAG Southern California Association of Governments – The metropolitan planning organization (MPO) for six counties including Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial.

SCAQMD South Coast Air Quality Management District – The air pollution control agency for Orange County and major portions of Los Angeles, San Bernardino and Riverside Counties in Southern California.

SCCAB South Central Coast Air Basin – Comprises San Luis Obispo, Santa Barbara, and Ventura Counties.

SCRIFA Southern California Railroad Infrastructure Financing Authority.

SED Socioeconomic Data – Population, employment and housing forecast.

SHA State Highway Account – The major state transportation account for highway purposes. Revenues include the state excise taxes on gasoline and diesel fuel and truck weight fees.

SHOPP State Highway Operation and Protection Program – A four-year capital improvement program for rehabilitation, safety, and operational improvements on state highways.

SIP State Implementation Plan – State air quality plan to ensure compliance with state and federal air quality standards. In order to be eligible for federal funding, projects must demonstrate conformity with the SIP.

SOV Single–Occupant Vehicle – Privately operated vehicle that contains only one driver or occupant.

SOX Sulfur oxide – Any of several compounds of sulfur and oxygen, formed from burning fuels such as coal and oil.

SSAB Salton Sea Air Basin – Comprises the Coachella Valley portion of Riverside County and all of Imperial County.

STA State Transit Assistance – State funding program for mass transit operations and capital projects. Current law requires that STA receive 50 percent of PTA revenues.

STIP State Transportation Improvement Program – A four-year capital outlay plan that includes the cost and schedule estimates for all transportation projects funded with any amount of state funds. The STIP is approved and adopted by the CTC and is the combined result of the ITIP and the RTIP.

STP Surface Transportation Program – Provides flexible funding that may be used by states and localities for projects on any federal-aid highway, bridge projects on any public road, transit capital projects, and intracity and intercity bus terminals and facilities. A portion of funds reserved for rural areas may be spent on rural minor collectors.

TAC Technical Advisory Committee – A SCAG committee that provides ideas and feedback on the technical integrity of the Regional Transportation Plan.

TANN Traveler Advisory News Network – Provides real-time traffic and transportation information content to communications service providers and consumer media channels both nationally and internationally.

TAZ Traffic Analysis Zone – Zone system used in travel demand forecasting.

TCC Transportation and Communications Committee (SCAG) – Committee used to study problems, programs and other matters related to regional issues of mobility, air quality, transportation control measures and communications.

TCM Transportation Control Measure – A project or program that is designed to reduce emissions or concentrations of air pollutants from transportation sources. TCMs are referenced in the state Implementation Plan (SIP) for the applicable air basin and have priority for programming and implementation ahead of non-TCMs.

TCRP Traffic Congestion Relief Program – Enacted by state legislation in 2000 to provide additional funding for transportation over a six-year period (later extended to eight years). The program is funded by a combination of General Fund revenues (one-time) and ongoing revenues from the state sales tax on gasoline. In March 2002 voters passed Proposition 42, which permanently dedicated gasoline sales tax revenues to transportation purposes.

TCWG Transportation Conformity Working Group – Forum used to support interagency coordination to help improve air quality and maintain transportation conformity.

TDA Transportation Development Act – State law enacted in 1971 that provided a 0.25 percent sales tax on all retail sales in each county for transit, bicycle, and pedestrian purposes. In non-urban areas, funds may be used for streets and roads under certain conditions.

TDM Transportation Demand Management – Strategies that result in more efficient use of transportation resources, such as ridesharing, telecommuting, park-and-ride programs, pedestrian improvements, and alternative work schedules.

TEA-21 Transportation Equity Act for the 21st Century – The predecessor to SAFETEA-LU, it was signed into federal law on June 9, 1998. TEA-21 authorized the federal surface transportation programs for highways, highway safety, and transit for the six-year period 1998–2003. TEA-21 builds upon the initiatives established in ISTEA.

TEU Twenty-foot Equivalent Unit, a measure of shipping container capacity.

TIFIA Transportation Infrastructure Finance and Innovation Act of 1998 – Established a new federal credit program under which the US DOT may provide three forms of credit assistance—secured (direct) loans, loan guarantees, and standby lines of credit—for surface transportation projects of national or regional significance. The program's fundamental goal is to leverage federal funds by attracting substantial private and other non-federal co-investment in critical improvements to the nation's surface transportation system. Sponsors may include state departments of transportation, transit operators, special authorities, local governments, and private entities.

TOD Transit-Oriented Development – A planning strategy that explicitly links land-use and transportation by focusing mixed housing, employment and commercial growth around bus and rail stations (usually within ½ mile). TODs can reduce the number and length of vehicle trips by encouraging more bicycle/pedestrian and transit use, and can support transit investments by creating the density around stations to boost ridership.

TP&D Transportation Planning and Development Account – A state transit trust fund that is the funding source for the STA program.

Trantrak RTIP database management system.

TSWG Transportation Security Working Group – Advises the operating organizations on transportation safety matters associated with the transfer or shipment of hazardous materials.

TUMF Transportation Uniform Mitigation Fee – Ordinance enacted by the Riverside County Board of Supervisors and cities to impose a fee on new development to fund related transportation improvements.

UP Union Pacific Railroad.

US DOT U.S. Department of Transportation – Federal agency responsible for the development of transportation policies and programs that contribute to providing fast, safe, efficient, and convenient transportation at the lowest cost consistent with those and other national objectives, including the efficient use and conservation of the resources of the United States. US DOT is comprised of ten operating administrations, including FHWA, FTA, FAA, and FRA.

VCTC Ventura County Transportation Commission – Agency responsible for planning and funding countywide transportation improvements.

Vehicle Hours of Delay The travel time spent on the highway due to congestion. Delay is estimated as the difference between vehicle hours traveled at a specified free–flow speed and vehicle hours traveled at a congested speed.

VHDD Vehicle Hours of Daily Delay – Hours of delay attributed to congestion for vehicles each day.

VMT Vehicle Miles Traveled – On highways, a measurement of the total miles traveled by all vehicles in the area for a specified time period. It is calculated by the number of vehicles times the miles traveled in a given area or on a given highway during the time period. In transit, the number of vehicle miles operated on a given route or line or network during a specified time period.

VOC Volatile Organic Compounds – Organic gases emitted from a variety of sources, including motor vehicles, chemical plants, refineries, factories, consumer and commercial products, and other industrial sources. Ozone, the main component of smog, is formed from the reaction of VOCs and NOx in the presence of heat and sunlight.

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