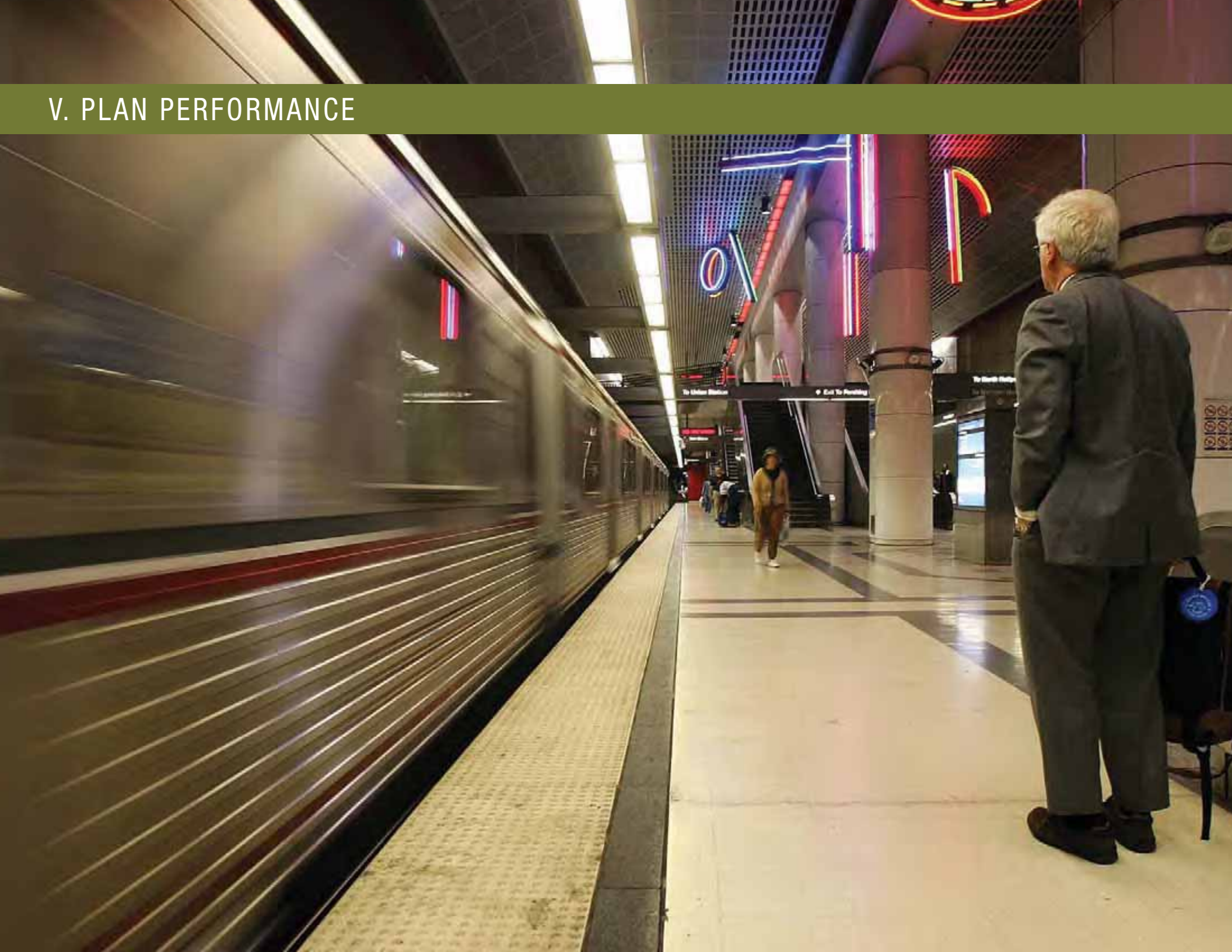
V. PLAN PERFORMANCE



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

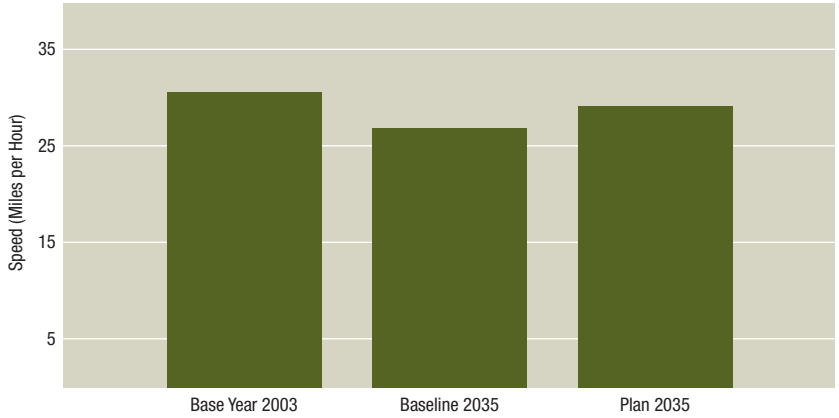


FIGURE 5.2 DAILY PERSON-HOURS OF DELAY

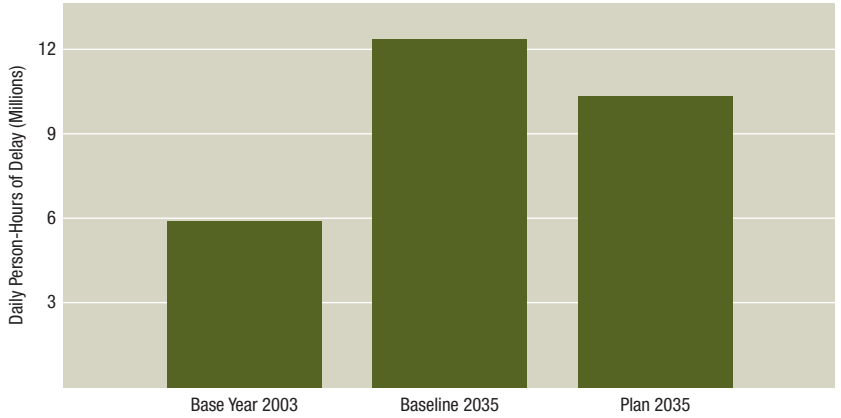


Figure 5.2 compares delay results and shows that the Plan reduces total daily person-hours of delay by 16 percent compared to the Baseline, but also represents an increase of 76 percent over Base Year conditions. This increase reflects the growth in the region and the resulting incremental travel.

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.

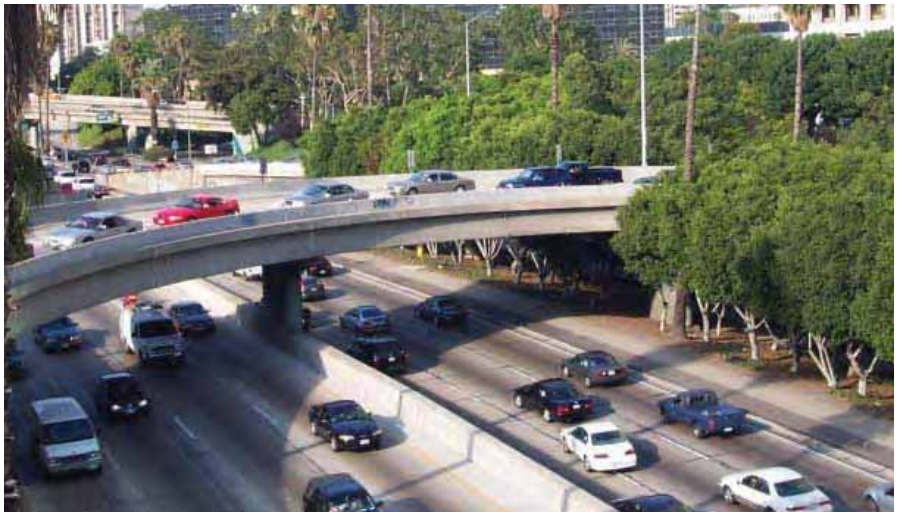


FIGURE 5.3 AVERAGE DAILY DELAY PER CAPITA

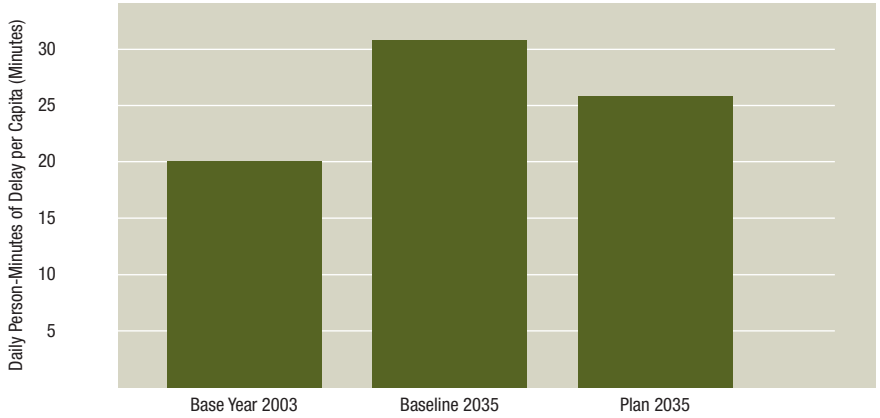
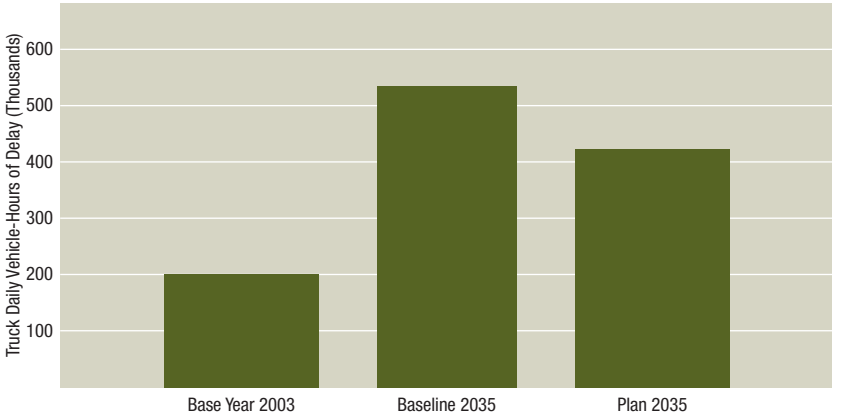


FIGURE 5.4 AVERAGE DAILY HEAVY-DUTY TRUCK DELAY



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.

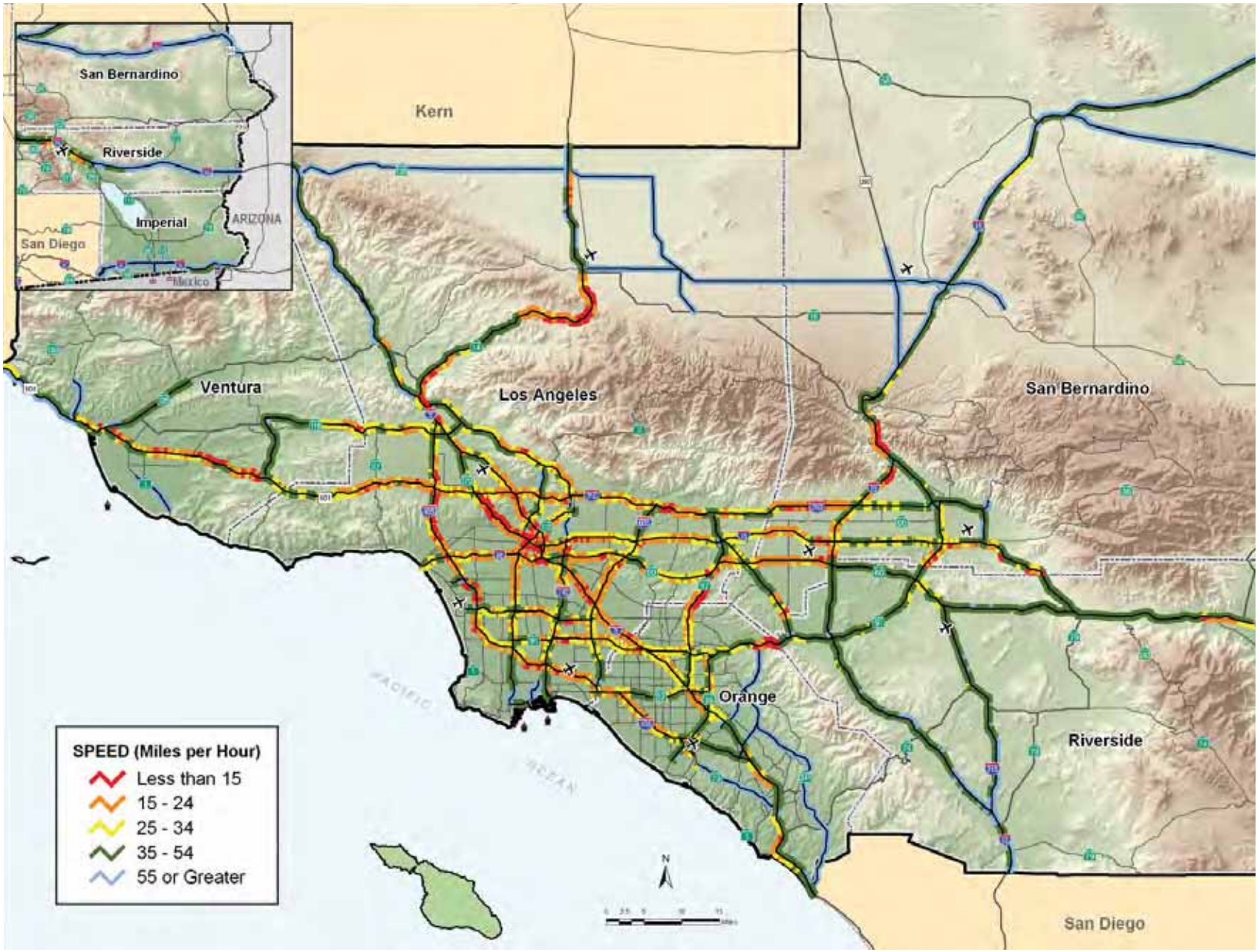
EXHIBIT 5.1 BASE YEAR 2003 FREEWAY SPEED I PM PEAK

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

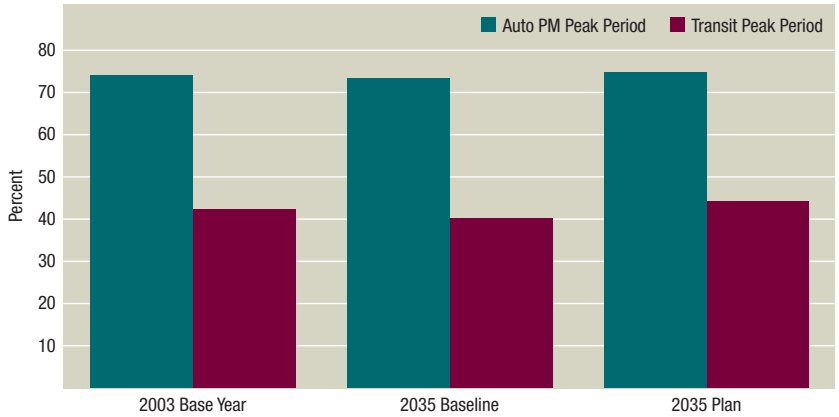
EXHIBIT 5.3 PLAN 2035 FREEWAY SPEED I PM PEAK



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

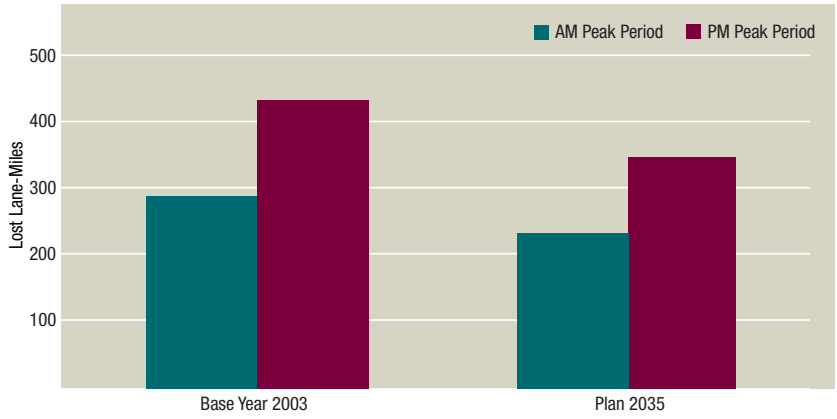
The productivity outcome reflects the degree to which the transportation system performs during peak demand conditions. It is a system efficiency measure. The productivity indicator is defined as the percent utilization during peak demand conditions.

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

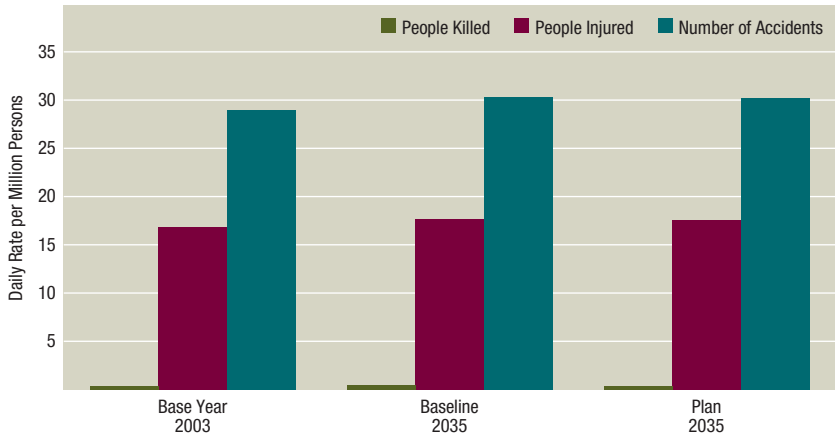
Improving safety by minimizing accidents is a critical outcome of the RTP. The safety indicators used to measure and track safety-related performance are:

- 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.

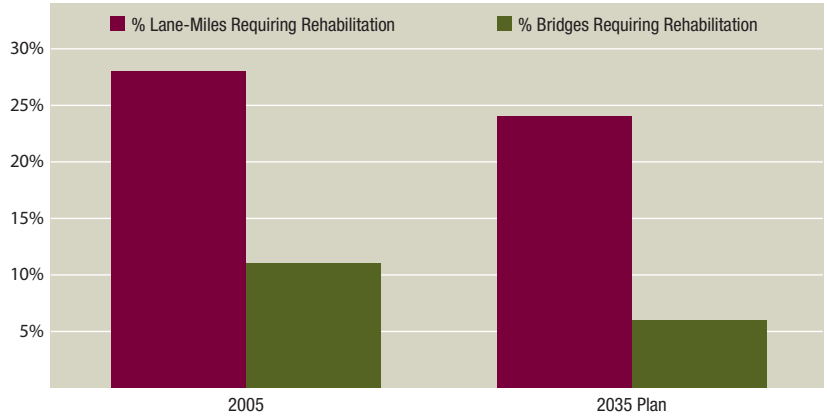
The performance measures presented in this chapter show that the planned transportation system in 2035 will perform better in some cases (e.g., safety, preservation) and worse in others (e.g., delay per capita) compared to today. Moreover, the overall cost of the Plan represents a significant increase 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 nonattainment 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

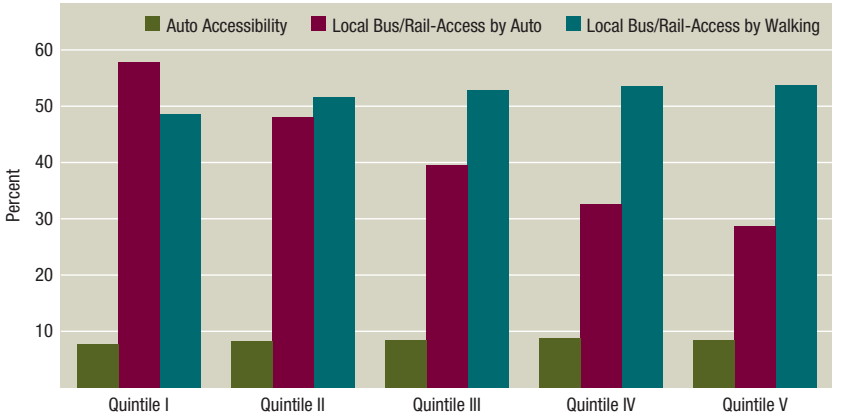
Accessibility is a foundation for social and economic interactions. As an indicator, accessibility is measured by the spatial distribution of potential destinations; the ease of reaching each destination; and the magnitude, quality and character of the activities at the destination sites. Travel costs 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)

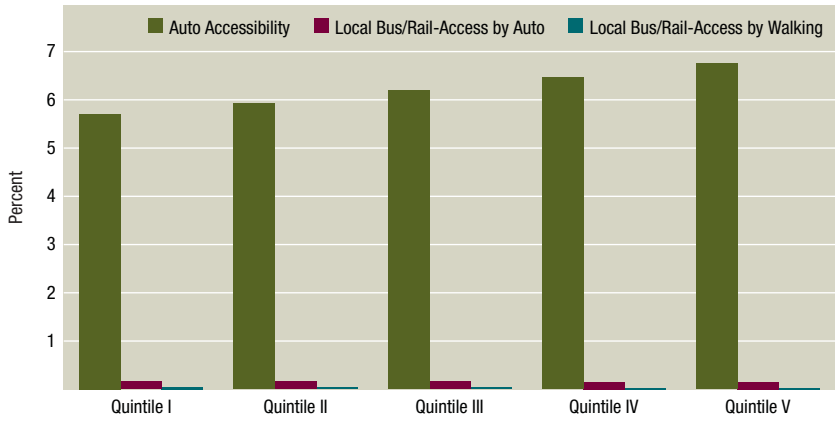


Figure 5.10: Park Accessibility by Travel Mode and Income Category shows the access to parks in the Baseline scenario. Park accessibility by transit is much lower than that by automobile for all income groups. However, Quintiles IV and V will have moderately higher access to parks in the region via automobile.

FIGURE 5.11 NATIONAL PARK ACCESSIBILITY BY TRAVEL MODE AND INCOME CATEGORY (BASELINE 2035)

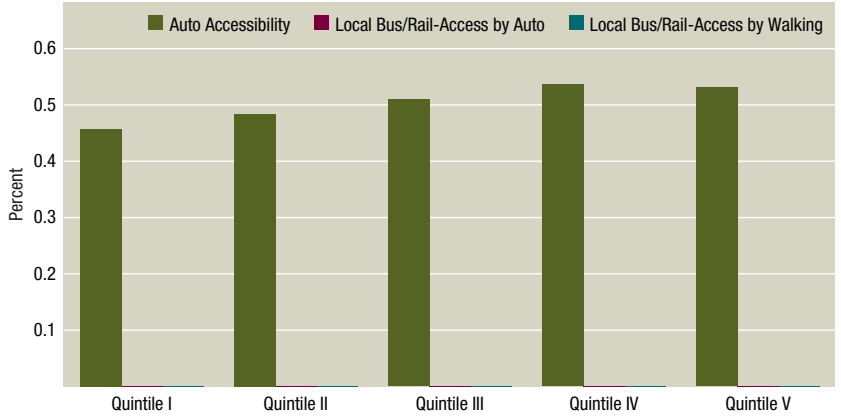
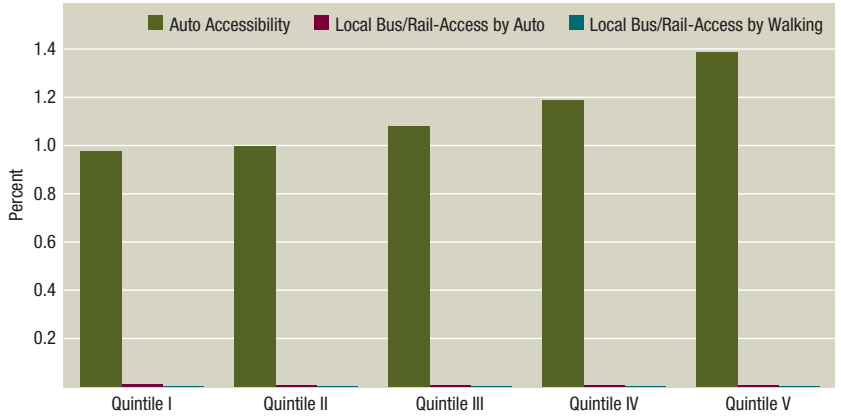


FIGURE 5.12 STATE PARK ACCESSIBILITY BY TRAVEL MODE AND INCOME CATEGORY (BASELINE 2035)

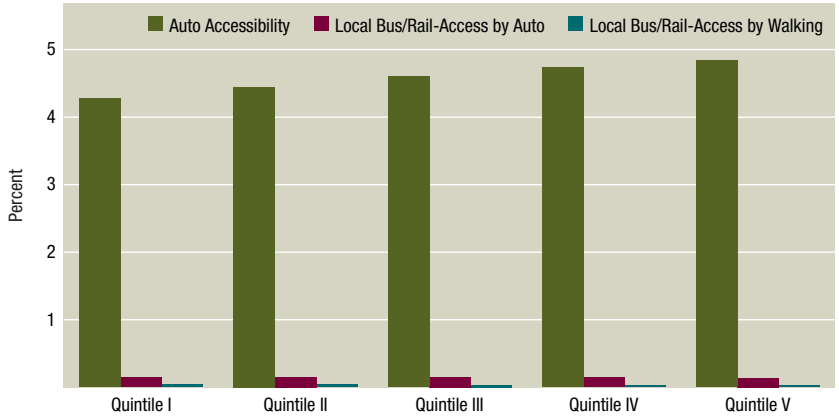


Research has found a complete lack of public transportation services into national parks,[8] but this also appears true for state parks. There is almost no

[8] Frescas, Ron, Chris Martin, and Christine Steenken. Public Transportation to Local National Forests. April 15, 2004.

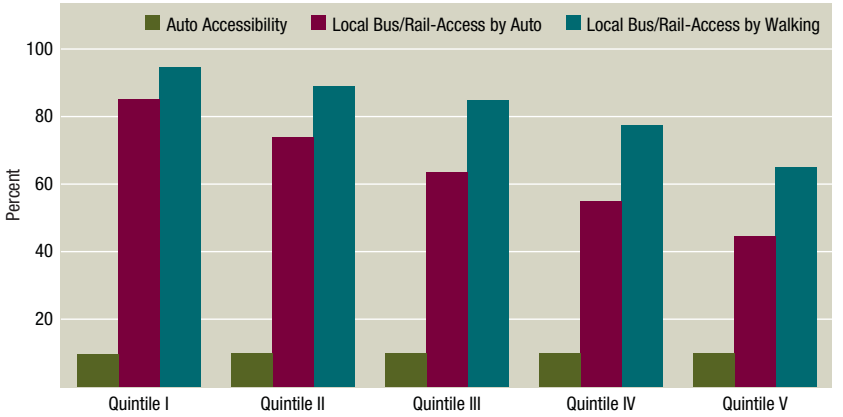
access to national parks and very limited access to state parks by transit across all income groups in the Baseline scenario (see Figure 5.11: National Park Accessibility by Travel Mode and Income Category, and Figure 5.12: State Park Accessibility by Travel Mode and Income Category).

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)

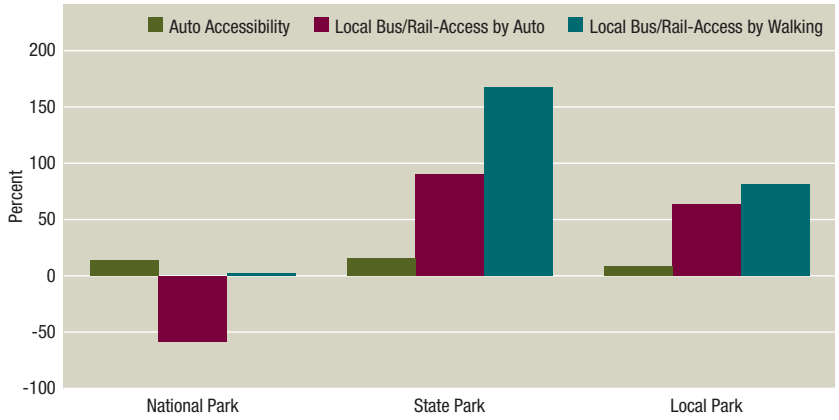


Figure 5.15: Comparison of Park Accessibility Improvements by Park Type and Travel Mode displays the improvement of park accessibility by park type: national park, state park and local parks. The results reveal that there will be significant improvements in accessibility to both state and local parks 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]

[9] Caltrans. Desktop Guide: Environmental Justice in Transportation Planning Investments. January 2003.

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

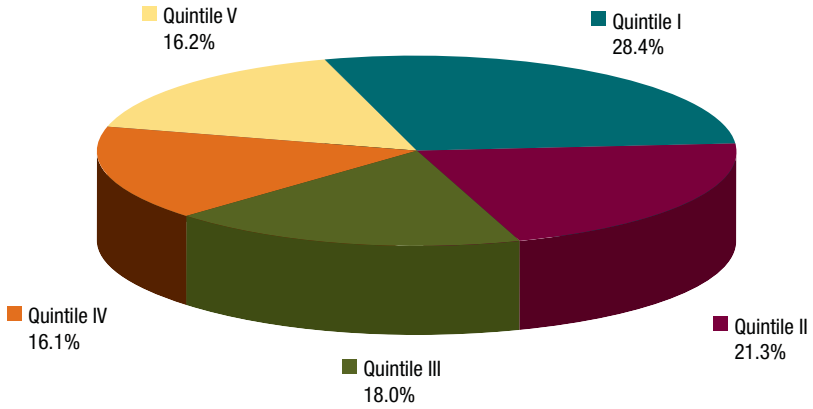


Figure 5.17: Distribution of Plan Expenditures by Ethnic/Racial Category evaluates the allocation of transportation investments in modes used by various ethnic/racial categories. The current analysis reveals that under the 2008 RTP, Plan investments will be distributed more equitably on the basis of system usage by ethnic/racial groups.

FIGURE 5.17 DISTRIBUTION OF PLAN EXPENDITURES BY ETHNIC/RACIAL CATEGORY

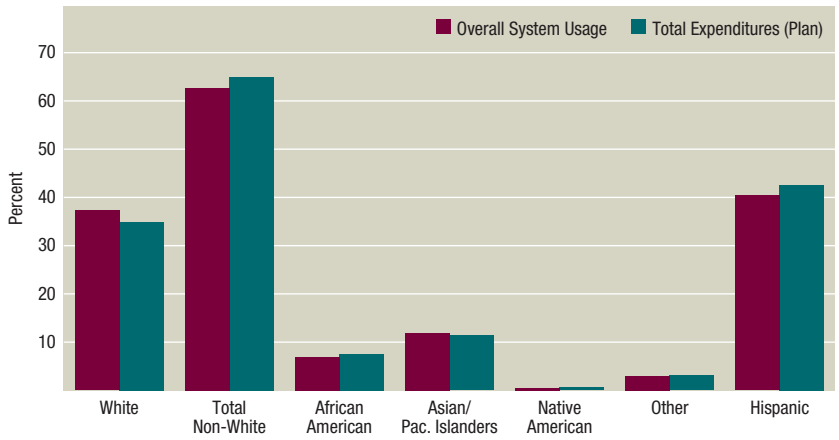
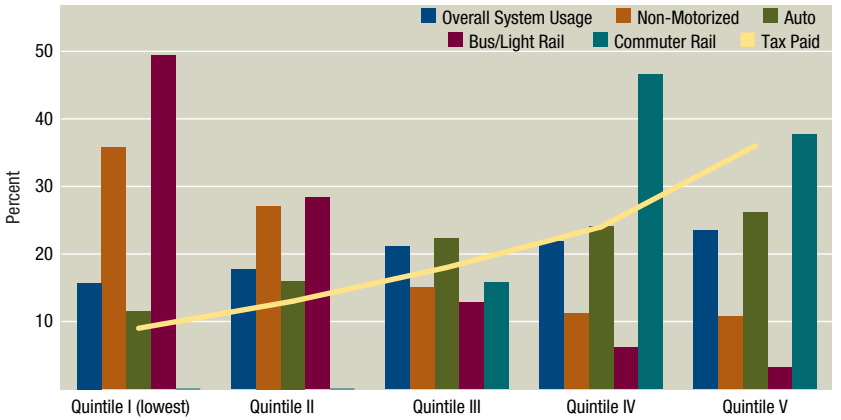


FIGURE 5.18 SHARE OF TAXES PAID BY INCOME CATEGORY*



** 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.

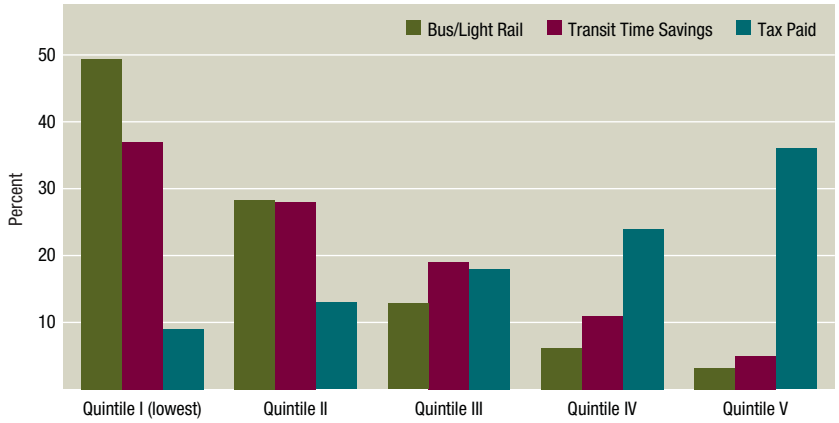
DISTRIBUTION OF TRAVEL TIME SAVINGS

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

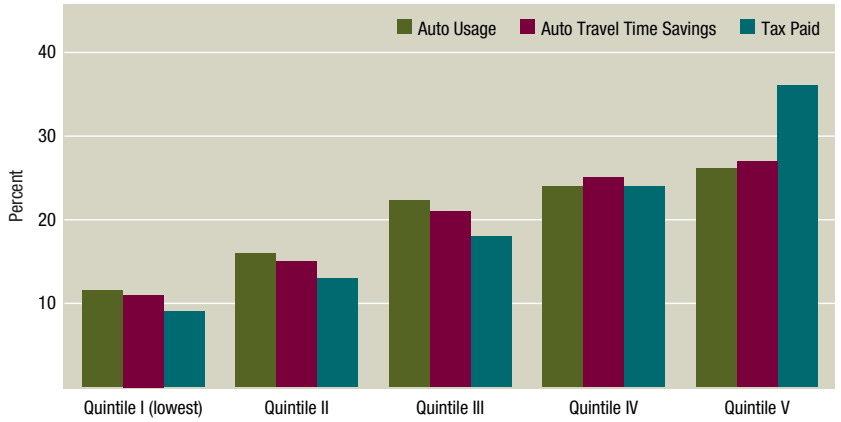
transit travel times for lower-income groups for both work and non-work trips are expected to decrease due to the number of new bus and rail improvements proposed in the 2008 RTP.

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

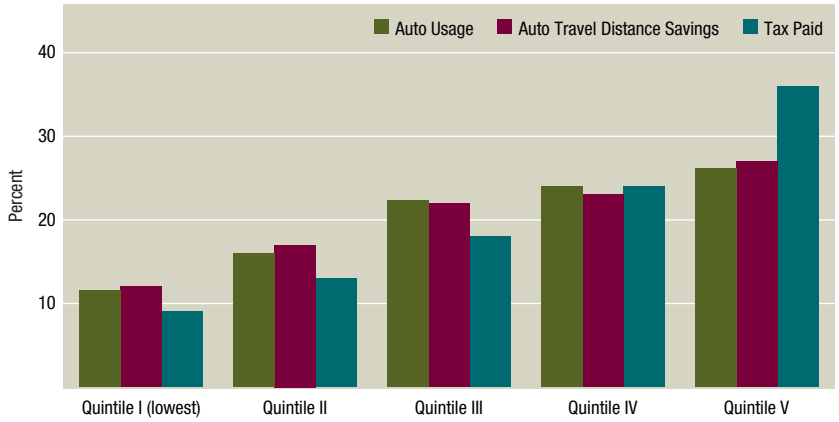


TRAVEL DISTANCE REDUCTIONS

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)

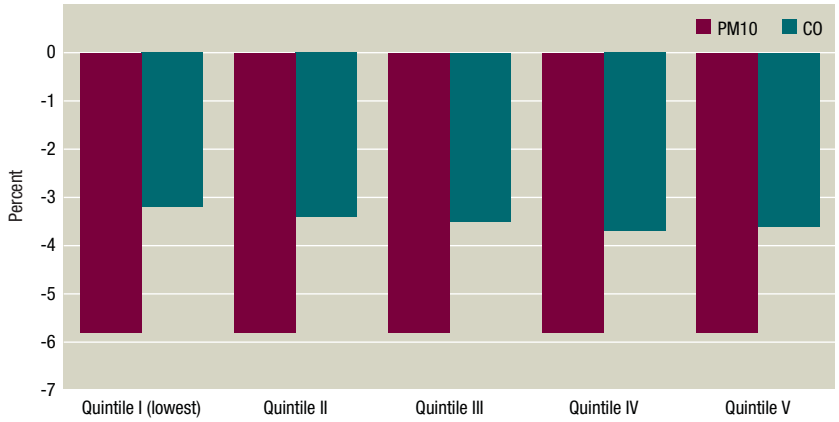
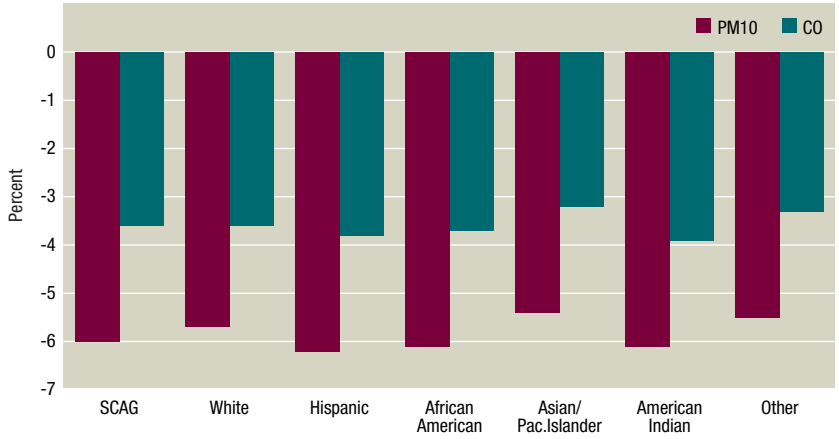


FIGURE 5.23 DECREASE IN AIR POLLUTANT EMISSIONS BY ETHNIC/ RACIAL CATEGORY (PLAN VS. BASELINE, 2035)



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)

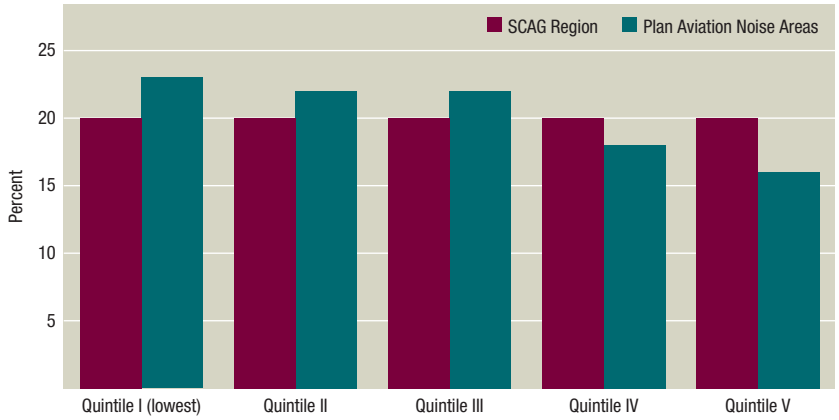


FIGURE 5.25 DISTRIBUTION OF HOUSEHOLDS IN AVIATION NOISE AREAS BY ETHNIC/RACIAL CATEGORY (PLAN VS. BASELINE, 2035)

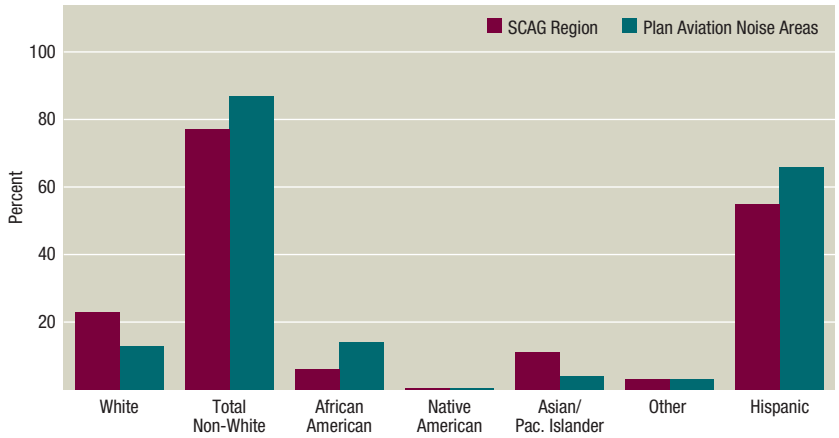


Figure 5.25: Distribution of Households in Aviation Noise Areas by Ethnic/ Racial Category, indicates that the 2008 RTP is projected to have a disproportionate aviation noise impact on minority groups. Although non-whites will comprise 77 percent of the region's population in 2035, they will make up 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)

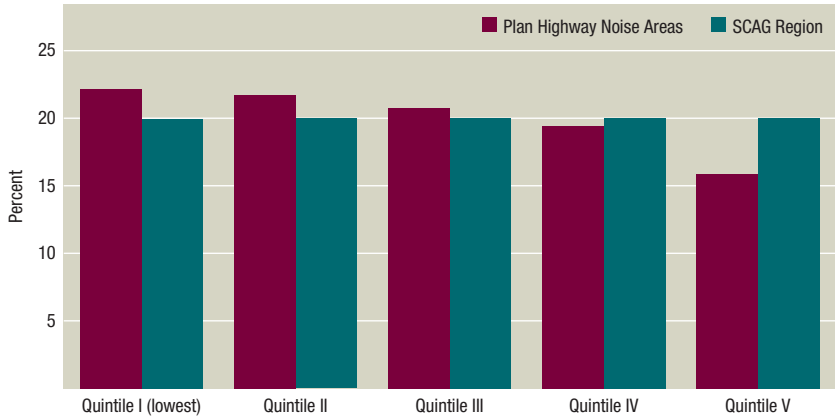
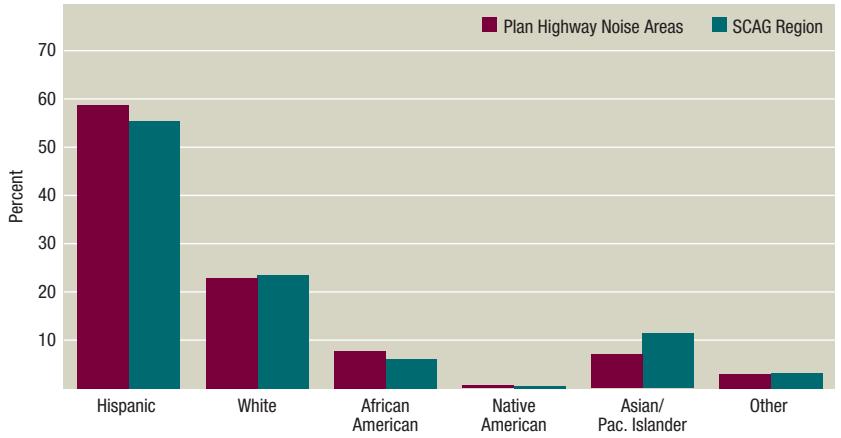


FIGURE 5.27 DISTRIBUTION OF HOUSEHOLDS IN HIGHWAY NOISE AREAS BY ETHNIC/RACIAL CATEGORY (PLAN VS. BASELINE, 2035)



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

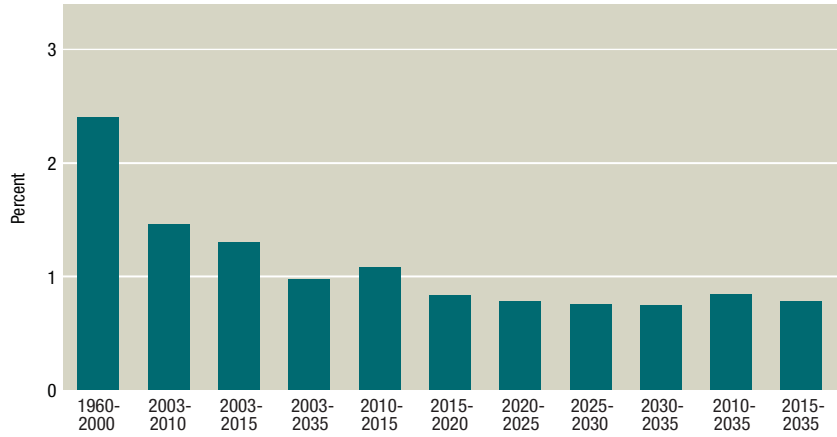
As revealed in current and previous RTP growth forecasts, the region's employment growth will slow down considerably after 2010, compared with historical trends. This sharp and unprecedented decline in job growth as well as underlying changes in the makeup of the labor force in the region are due primarily 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