4.0 ALTERNATIVES

CEQA requires that an EIR describe a reasonable range of alternatives to the project or to the location of the project that could feasibly avoid or lessen significant environmental impacts while substantially attaining the basic objectives of the project.[1] An EIR should also evaluate the comparative merits of the alternatives. This chapter sets forth potential alternatives to the proposed project and provides a qualitative analysis of each alternative and a comparison of each alternative to the proposed project. Key provisions of the CEQA Guidelines pertaining to the alternatives analysis are summarized below.[2]

- The discussion of alternatives shall focus on alternatives to the project including alternative locations that are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.
- The No Project Alternative shall be evaluated along with its potential impacts. The No Project Alternative analysis shall discuss the existing conditions at the time the notice of preparation is published, as well as what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.
- The range of alternatives required in an EIR is governed by a "rule of reason." Therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the proposed project.
- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.
- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.

The range of feasible alternatives is selected and discussed in a manner intended to foster meaningful public participation and informed decision making. Among the factors that may be taken into account when addressing the feasibility of alternatives (as described in CEQA Guidelines Section 15126.6[f][1]) are environmental impacts, site suitability, economic viability, availability of infrastructure, general plan consistency, regulatory limitations, jurisdictional boundaries, and whether the proponent could reasonably acquire, control, or otherwise have access to the alternative site.

An EIR must briefly describe the rationale for selection and rejection of alternatives. The lead agency may make an initial determination as to which alternatives are feasible, and, therefore, merit in-depth consideration.[3] Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet project objectives, are infeasible, or do not avoid any significant environmental effects.[4]

[1]CEQA Guidelines, California Code of Regulations (CCR), Title 14, Division 6, Chapter 3, § 15126.6, 2011.
[2]*Ibid*.
[3]CEQA Guidelines, CCR, Title 14, Division 6, Chapter 3, §15126.6(f)(3), 2005.
[4]CEQA Guidelines, CCR, Title 14, Division 6, Chapter 3, §15126.6(c), 2005.

4.1 PROJECT-LEVEL IMPACTS AND OBJECTIVES

As addressed in this PEIR, the proposed project would create significant and unavoidable impacts associated with:

- **Aesthetics** (Scenic Vistas, Scenic Highways, Visual Character, Light and Glare/Shade and Shadow,)
- **Air Quality** (Criteria Pollutant Emissions and Construction Emissions)
- **Biological Resources and Open Space** (Special Status Species and Habitat, Natural Lands, Loss of Open Space)
- **Cultural Resources** (Historical Resources, Archeological Resources, Paleontological Resources and Human Remains)
- **Geology, Soils and Mineral Resources** (Seismicity, Soil Erosion, Expansive Soils, and Aggregate and Mineral Resources)
- **Greenhouse Gas Emissions** (Total GHG Emissions, and AB 32 Analysis)
- **Hazardous Materials** (Routine Transport, Upset and Accident Conditions, Contaminated Property, and Schools)
- **Land Use and Agricultural Resources** (Consistency with Plans and Policies, Division of Communities, and Agricultural and Farmlands)
- **Noise** (Construction Noise and Vibration, Land Use Compatibility, and Vibration)
- **Population, Housing and Employment** (Population and Displacement)
- **Public Services and Utilities** (Police, Fire Protection & Emergency Services Wildfire Hazards, Educational Facilities, Recreational Facilities, and Energy: Non-Renewable Energy Consumption)
- **Transportation, Traffic and Security** (Vehicle Miles Traveled and Truck Delay)
- **Water Resources** (Water Supply, Wastewater, Riparian Habitats., Groundwater, Water Quality, and Runoff/Drainage)

Objectives and Goals

As called for by the CEQA Guidelines, the achievement of project objectives must be balanced by the ability of an alternative to reduce the significant impacts of the project. The proposed project's objectives and goals include:

- Align the plan investments and policies with improving regional economic development and competitiveness
- 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 and health for our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking)
- Actively encourage and create incentives for energy efficiency, where possible
- Encourage land use and growth patterns that facilitate transit and non-motorized transportation; and
- Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.

A feasible alternative must meet most if not all of these project objectives. In addition, while not specifically required under CEQA, other parameters may be used to further establish criteria for selecting alternatives such as adjustments to phasing, and other "fine-tuning" that could shape feasible alternatives in a manner that could result in reducing identified environmental impacts.

4.2 ALTERNATIVES TO THE PROPOSED PROJECT

The CEQA statute, the CEQA Guidelines, and related recent court cases do not specify a precise number of alternatives to be evaluated in an EIR. Rather, "the range of alternatives required in an EIR is governed by the rule of reason that sets forth only those alternatives necessary to permit a reasoned choice."[5] At the same time, Section 15126.6(b) of the CEQA Guidelines requires that "...the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project" and Section 15126.6(f) requires, "The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project." Accordingly, alternatives that would not address potentially significant effects are not considered herein. However, the CEQA Guidelines require that a "No Project" alternative must be included and, if appropriate, an alternative site location should be analyzed.[6] Other project alternatives may involve a modification of the proposed land uses, density, or other project elements at the same project location.

Alternatives should be selected on the basis of their ability to attain all or most of the basic objectives of the project while reducing the project's significant environmental effects. The CEQA Guidelines state that "...[t]he EIR should briefly describe the rationale for selecting alternatives to be discussed [and]...shall include sufficient information to allow meaningful evaluation, analysis and comparison with the proposed project."[7] The feasibility of the alternatives is another consideration in the selection of alternatives. The CEQA Guidelines state that "[a]mong the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations [and] jurisdictional boundaries..."[8] Also, "[t]he range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making."[9] Alternatives that are considered remote or speculative, or whose effects cannot be reasonably predicted do not require consideration. Therefore, feasibility, the potential to mitigate significant project-related impacts, and reasonably informing the decision-maker are the primary considerations in the selection and evaluation of alternatives.

The following alternatives are analyzed in this PEIR; they represent a reasonable range and bracket the range of potential impacts. The No Project Alternative is required by CEQA; the 2008 RTP represents what could occur under the previous RTP (with updates to population information); and the Envision 2 alternative represents enhancements to the Plan that are anticipated to reduce some impacts associated with the Plan:

Alternative 1 – No Project Alternative. The No Project Alternative is required by Section 15126.6(e)(2) of the CEQA Guidelines and assumes that the proposed project would not be implemented. The No Project Alternative allows decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. However, "no project" does not necessarily mean that development on the project site will be prohibited. The No Project Alternative includes "what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services" (CEQA Section 15126.6[e][2]). For purposes of this document, the No Project Alternative includes only those transportation projects that are included in the first year of the previously conforming transportation plan and/or TIP, or have completed environmental review by December 2010. These reasonably foreseeable projects fulfill the definition of the CEQA mandated "No Project Alternative." The growth scenario included in the No Project Alternative is based on 2008 RTP local input which was then adjusted to reflect 2012-2035 RTP/SCS regional population, housing and jobs totals.

[5]Section 15126.6(f).
[6]Section 15126.6(e) and Section 15126(f)(2).
[7]Section 15126.6(e) and Section 15126(f).
[8]Section 15126.6(f)(1).
[9]Section 15126.6(f).

Alternative 2 – Modified 2008 RTP Alternative. The Modified 2008 RTP Alternative is an update of the adopted 2008 RTP to reflect the most recent growth estimates and transportation planning decisions and assumptions. This alternative does not include urban form strategies included within the SCS, but includes all of the modifications and projects in the 2008 RTP through RTP Amendment 4. The growth scenario for the Modified 2008 RTP Alternative is a combination of local input and existing general plan and land use data provided by local jurisdictions.

Alternative 3 – Envision 2 Alternative. The Envision 2 Alternative builds on the enhanced density and ideas of the SCS as described in the Plan and goes further. It includes far more aggressive densities than the 2012-2035 RTP/SCS, especially around High Quality Transit Areas (HQTAs), increases mobility through additional transportation investments, reduces emissions, and limits the development of single-family housing that would be built in the region. This builds off of the 2008 RTP Alternative also called Envision 2. The Envision 2 transportation network is similar to the Plan network with minor changes to goods movement and transit projects. The growth network associated with Envision 2 maximizes urban centers, TODs and HQTAs. It also includes a more progressive jobs/housing distribution optimized for TOD and infill.

The summary comparison of major impact categories of the project alternatives and the proposed project is included in **Table 4-1**.

TABLE 4-1: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT				
Environmental Issue	**Project Impact**	**Alternative 1 No Project Alternative**	**Alternative 2 Modified 2008 RTP Alternative**	**Alternative 3 Envision 2 Alternative**
AESTHETICS				
Scenic Vistas	Significant and Unavoidable	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Scenic Highways	Significant and Unavoidable	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Visual Character	Significant and Unavoidable	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Light and Glare/Shade and Shadow	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
AIR QUALITY				
Criteria Pollutant Emissions	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Change in Risk Levels Adjacent to Freeways	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Similar (Less Than Significant)
Increased Population adjacent to freeways and railways	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Similar (Less Than Significant)
Construction Emissions	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Cumulative Impacts	Less than significant	Similar (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)
BIOLOGICAL RESOURCES AND OPEN SPACES				
Sensitive Species/Habitat	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Habitat Loss and Fragmentation	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Natural Lands	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Direct Construction Effects to Biological Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Indirect Construction Effects to Biological Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)

TABLE 4-1: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT				
Environmental Issue	**Project Impact**	**Alternative 1 No Project Alternative**	**Alternative 2 Modified 2008 RTP Alternative**	**Alternative 3 Envision 2 Alternative**
CULTURAL RESOURCES				
Historical Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)
Archeological Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Paleontological Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Human Remains	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
GEOLOGY, SOILS AND MINERAL RESOURCES				
Seismicity	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Soil Erosion	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Expansive Soils	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Aggregate and Mineral Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
GREENHOUSE GAS EMISSIONS				
Total GHG Emissions	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
AB 32 Analysis	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
SB 375 Analysis	Less Than Significant	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Less Than Significant)
HAZARDOUS MATERIALS				
Routine Transport, Use or Disposal of Hazardous Materials	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Similar (Less Than Significant)
Upset and Accident Conditions	Significant and Unavoidable	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Schools	Significant and Unavoidable	Less (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Disturbance of Contaminated Property During Construction	Less Than Significant	Greater (Less Than Significant)	Similar (Less Than Significant)	Similar (Less than Significant)

TABLE 4-1: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT				
Environmental Issue	**Project Impact**	**Alternative 1 No Project Alternative**	**Alternative 2 Modified 2008 RTP Alternative**	**Alternative 3 Envision 2 Alternative**
LAND USE & AGRICULTURAL RESOURCES				
Consistency with Plans and Policies	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Divide a Community	Significant and Unavoidable	Less (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Forest, Agricultural and Farm Lands	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
NOISE				
Construction Noise and Vibration	Significant and Unavoidable	Less (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Land Use Compatibility	Significant and Unavoidable	Less (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Vibration	Significant and Unavoidable	Less (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
POPULATION, HOUSING, & EMPLOYMENT				
Population Growth	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Displacement	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
PUBLIC SERVICES AND UTILITIES				
Police, Fire and Emergency Services	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Wildfire Hazards	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Educational Facilities	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Recreational Facilities	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Solid Waste Disposal and Transfer Facilities	Significant and Unavoidable	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Utility Lines	Less Than Significant	Similar (Less Than Significant)	Similar (Less Than Significant)	Similar (Less Than Significant)
Non-Renewable Energy Consumption	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)

TABLE 4-1: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT				
Environmental Issue	**Project Impact**	**Alternative 1 No Project Alternative**	**Alternative 2 Modified 2008 RTP Alternative**	**Alternative 3 Envision 2 Alternative**
TRANSPORTATION, TRAFFIC & SECURITY				
Vehicle Miles Traveled	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Vehicle Hours in Delay	Less than significant	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)
Truck Delay	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)
Worker Commute	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Less (Significant and Unavoidable)
Transportation System Fatality Rate	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Less (Less Than Significant)
Transportation System Injury Rate	Less Than Significant	Greater (Less Than Significant)	Greater (Less Than Significant)	Less (Less Than Significant)
WATER RESOURCES				
Water Supply	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Wastewater	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Less (Significant and Unavoidable)
Riparian Habitats and Waters	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Groundwater	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Water Quality	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Runoff/Drainage	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
CUMULATIVE IMPACTS				
Aesthetics	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Air Quality	Significant and Unavoidable	Greater Significant and Unavoidable	Greater Significant and Unavoidable	Similar Significant and Unavoidable
Biological Resources and Open Space	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Cultural Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
Geology, Soils and Mineral	Significant and Unavoidable	Similar	Similar	Similar

TABLE 4-1: COMPARISON OF ALTERNATIVES TO THE PROPOSED PROJECT				
Environmental Issue	**Project Impact**	**Alternative 1 No Project Alternative**	**Alternative 2 Modified 2008 RTP Alternative**	**Alternative 3 Envision 2 Alternative**
Resources		(Significant and Unavoidable)	(Significant and Unavoidable)	(Significant and Unavoidable)
Greenhouse Gas Emissions	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Hazardous Materials	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Land Use, Forest Lands and Agricultural Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Noise	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Population, Housing and Employment	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Public Services and Utilities	Significant and Unavoidable	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Transportation, Traffic and Security	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Similar (Significant and Unavoidable)
Water Resources	Significant and Unavoidable	Greater (Significant and Unavoidable)	Greater (Significant and Unavoidable)	Less (Significant and Unavoidable)
SOURCE: TAHA, 2011.				

ANALYSIS OF ALTERNATIVE 1 – NO PROJECT ALTERNATIVE

Aesthetics

The No Project Alternative includes fewer transportation projects than the Plan and would have a lesser impact in terms of obstructing views and scenic resources, creating contrasting visual elements and adding visual elements to existing natural, rural, and open space areas. The No Project Alternative would not affect any State Scenic Highways or vista points.

The No Project Alternative is expected to accommodate the same increase in total population, households and jobs as the Plan. However, the Plan includes strategies to focus growth in HQTAs which would help reduce the consumption and disturbance of natural lands and reduce impacts to aesthetics and views. Under the No Project Alternative, these land use strategies may not occur – although individual jurisdictions may still seek to reduce the urban footprint through their general plans. The Plan also includes transportation improvements that facilitate access to undeveloped lands, making those lands more attractive for development than under the No Project Alternative. However, the Plan includes policies to dissuade such encroachment on open space and vacant lands and is anticipated to result in far fewer impacts. The No Project Alternative impacts would be greater than the Plan impacts because of the increased consumption of open space and vacant land (742 square miles as opposed to 334 square miles under the Plan) that would result in loss of scenic resources and changes in visual character. As shade/shadow and glare impacts typically occur in urban areas, these impacts would be reduced under the No Project Alternative. In addition, the No Project Alternative would result in greater light and glare impacts as many of the transportation projects would occur in areas that are currently undeveloped or underdeveloped and would introduce new sources of light and materials that cause glare.

Air Quality, including Cancer Risk and Other Health Incidences Related to VMT

Table 4-2 compares the No Project Alternative criteria pollutant emissions by county to the Plan emissions. The Plan would result in fewer emissions than the No Project Alternative with three exceptions. NO_X emissions would not change in Imperial County and would increase slightly in Riverside County and Ventura County. Despite small NO_X increases in the previously mentioned counties, the Plan overall would improve regional emissions compared to the No Project Alternative.

Tables 4-3 and **4-4** show the residential and workplace cancer risk, respectively. The maximum residential and workplace risks due to vehicle operation on all freeway segments are much higher under existing (2012) conditions than under the No Project Alternative. The declines in cancer risk across all freeway segments are the result of continued decreases in per-vehicle mile fleet emissions projected to occur due to continued emission control technology improvements in new vehicles. When compared to the Plan, the No Project Alternative would result in a higher risk in all counties except for Orange and Imperial Counties. Regardless, the total regional risk would be lower under the Plan than the No Project Alternative. In addition, it is estimated that the Plan would result in 293,633 annual health incidences leading to $4,952,996,222 spent on healthcare. This is a 24 percent reduction when compared to the 2035 baseline. Under the No Project Alternative, no new transportation investments would be made, beyond those that are currently programmed. As a result, fewer transportation projects would be built than under the Plan resulting in less construction emissions. However, construction emissions would still likely exceed the significance thresholds established in the CEQA Guidelines. Similar to the Plan, construction emissions would result in a significant short-term impact. Projected long-term emissions are considered to be cumulatively significant if they are not consistent with the local air quality management plans and state implementation plans. As previously indicated, regional emissions under the No Project Alternative are greater than under the Plan. The Plan conforms to the local air quality management plans, and cumulative impacts are considered less than significant. Unlike the Plan, the No Project Alternative may not conform to the local air quality management plans and could have a significant cumulative impact.

TABLE 4-2: CRITERIA POLLUTANT EMISSIONS BY COUNTY – NO PROJECT ALTERNATIVE (2035) VS PLAN (2035)

County		Tons/Day								
		ROG Summer	ROG Annual	NO_x Summer	NO_x Annual	NO_x Winter	CO Winter	PM10 Annual	PM2.5 Annual	SO_x Annual
Los Angeles /a/	No Project	43	42	71	72	76	321	14	9	1
	Plan	42	41	70	71	75	299	12	8	1
	Difference	(1)	(1)	(1)	(1)	(1)	(22)	(1)	(1)	0
Imperial	No Project	4	3	9	9	9	25	1	1	0
	Plan	4	3	9	9	9	24	1	1	0
	Difference	0	0	0	0	0	0	0	0	0
Orange	No Project	15	14	19	19	20	102	4	3	0
	Plan	14	14	19	19	20	96	4	3	0
	Difference	0	0	0	0	0	(6)	0	0	0
Riverside /b/	No Project	15	14	35	34	36	119	6	4	1
	Plan	15	13	35	35	36	114	5	3	1
	Difference	0	0	0	0	0	(6)	0	0	0
San Bernardino /c/	No Project	15	14	40	39	40	123	5	4	1
	Plan	15	13	37	37	38	114	5	3	0
	Difference	1	(1)	(2)	(2)	(2)	(9)	1	0	0
Ventura	No Project	4	4	5	6	6	28	1	1	0
	Plan	4	4	5	6	6	27	1	1	0
	Difference	0	0	0	0	0	(1)	0	0	0

Note: 2012 modeled conditions are used to approximate 2011 conditions; in the professional opinion of SCAG modelers 2012 conditions are similar if not the same as 2011 conditions.
/a/ Los Angeles County excludes Antelope Valley
/b/ Riverside County includes the SCAB, MDAB and Coachella Valley portions
/c/ San Bernardino County includes the SCAB and MDAB portions
SOURCE: SCAG Transportation Modeling, 2011.

TABLE 4-3: MAXIMUM CANCER RISK BASED ON RESIDENTIAL EXPOSURE TO VEHICLE OPERATION BY PLANNING SCENARIO AND FREEWAY CORRIDOR – NO PROJECT ALTERNATIVE

	Maximum Cancer Risk Over 70-Year Residential Exposure (in one million)							
Planning Scenario	**I-405 (Orange)**	**I-710 (Los Angeles)**	**I-8 (Imperial)**	**SR 60 (San Bernardino)**	**SR 91 (Riverside)**	**US 101 (Ventura)**	**SR 60 (Los Angeles)**	**I-15 (San Bernardino)**
Existing Conditions (2012)	1,080	1,040	503	1,770	1,960	372	1,470	811
No Project (2035)	442	734	385	735	943	201	562	368
Plan (2035)	462	475	399	714	668	199	536	354

SOURCE: Sierra Research, 2011.

TABLE 4-4: MAXIMUM CANCER RISK BASED ON WORKPLACE EXPOSURE TO VEHICLE OPERATION BY PLANNING SCENARIO AND FREEWAY CORRIDOR – NO PROJECT ALTERNATIVE

	Maximum Cancer Risk Over 70-Year Residential Exposure (in one million)							
Planning Scenario	**I-405 (Orange)**	**I-710 (Los Angeles)**	**I-8 (Imperial)**	**SR 60 (San Bernardino)**	**SR 91 (Riverside)**	**US 101 (Ventura)**	**SR 60 (Los Angeles)**	**I-15 (San Bernardino)**
Existing Conditions (2012)	163	158	76	269	297	56	223	123
No Project (2035)	67	111	58	111	143	30	85	56
Plan (2035)	70	72	60	108	101	30	81	54

SOURCE: Sierra Research, 2011.

Biological Resources and Open Space

Under the No Project Alternative, fewer areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. However, anticipated development under the No Project Alternative would consume 742 square miles of undeveloped (vacant) land, whereas the Plan would consume 334 square miles of undeveloped land. While the No Project Alternative would reduce the number of transportation projects built in the SCAG region, it would result in greater vacant land consumption, including sensitive species habitat and natural lands, that would, in turn, increase the impacts to biological resources and open space, such as habitat loss and fragmentation. Therefore, the No Project Alternative impacts to biological resources and open space would be greater than the impacts from the 2012-2035 RTP/SCS. Additionally, because the No Project Alternative would consume greater amounts of vacant land and result in a more spread out growth pattern which would result in the development of lands that contain biological resources and open space, the No Project Alternative's cumulative impacts to biological resources and open space would be greater than those of the 2012-2035 RTP/SCS.

Cultural Resources

Under the No Project Alternative, fewer developed areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. However, growth patterns under the No Project Alternative would consume 742 square miles of undeveloped (vacant) land whereas the Plan would consume 334 square miles of undeveloped land. While the No Project Alternative would reduce the number of transportation projects built in the SCAG region, it would result in greater vacant land consumption that could, in turn, increase the chance to uncover a greater number of previously undisturbed resources. Therefore, the No Project Alternative impacts to cultural resources would be greater than the impacts from the 2012-2035 RTP/SCS. Additionally, because the No Project Alternative would consume greater amounts of vacant land and result in a more spread out growth pattern which could result in the development of lands that contain previously undisturbed and undiscovered archaeological, paleontological, or human remains, the No Project Alternative's cumulative impacts to cultural resources would be greater than those of the 2012-2035 RTP/SCS. The Plans greater focus on urban areas could result in greater impacts to historic buildings, although many jurisdictions have policies and ordinances in place to protect historic resources.

Geology and Soils

Implementation of the 2012-2035 RTP/SCS would result in a greater amount of transportation projects and would increase the amount of transportation infrastructure that would be subject to risk as a result of surface rupture, ground-shaking liquefaction, and landsliding and other risks associated with seismic events. The No Project Alternative would result in the construction of approximately 68,040 new lane miles compared with over 74,297 new lane miles in the 2012-2035 RTP/SCS. Impacts related to geologic and seismic resources would be similar to the Plan under the No Project Alternative because the population would be the same and entire region is subject to seismic risk. The reduced amount of RTP projects would be expected to occur under the No Project Alternative could result in a decrease in the amount of aggregate and mineral resources demand in the region. However as more land would be consumed under the No Project Alternative (742 square miles compared to 334 square miles under the Plan), more local access roads are anticipated to be needed. The more compact development pattern under the Plan could use less aggregate per capita as more compact development is more efficient. On balance it is anticipated that the No Project Alternative would result in greater impacts because dispersed development is less efficient in its use of aggregate as compared to a more compact development pattern.

Greenhouse Gas Emissions

Table 4-5 compares the No Project Alternative greenhouse gas (GHG) emissions for residential and commercial construction and energy demand and all mobile sources by county to the Plan emissions. It is estimated (based on simplified gross estimates of construction, energy use and water use) that in 2020 the Plan would result in six million metric tons less of GHG emissions than the No Project Alternative. In 2035, the Plan would result in 13 million metric tons less of GHG emissions than the No Project Alternative. The Plan would improve regional GHG emissions compared to the No Project Alternative.

TABLE 4-5: GREENHOUSE GAS EMISSIONS BY COUNTY – NO PROJECT ALTERNATIVE

	CO_2e Emissions (Million Metric Tons per Year)			
Area and Source	**Future No Project (2020)**	**Plan (2020)**	**Future No Project (2035)**	**Plan (2035)**
IMPERIAL COUNTY				
Construction	0.01	0.01	0.01	0.01
Transportation	1.7	1.7	2.4	2.4
Building Energy	0.56	0.41	0.62	0.39
Water-Related Energy	0.05	0.03	0.06	0.02
Subtotal	2.3	2.2	3.1	2.8
LOS ANGELES COUNTY				
Construction	0.16	0.16	0.15	0.15
Transportation	43	41	48	44
Building Energy	23	23	22	21
Water-Related Energy	2.1	2.2	1.9	1.9
Subtotal	68	66	72	67
ORANGE COUNTY				
Construction	0.04	0.04	0.04	0.04
Transportation	14	13	15	14
Building Energy	6.2	6.0	5.9	5.6
Water-Related Energy	0.62	0.64	0.57	0.59
Subtotal	21	20	22	20
RIVERSIDE COUNTY				
Construction	0.11	0.11	0.11	0.11
Transportation	14	14	19	18
Building Energy	5.5	4.8	6.5	4.9
Water-Related Energy	0.48	0.42	0.57	0.38
Subtotal	20	19	26	23
SAN BERNARDINO COUNTY				
Construction	0.07	0.07	0.07	0.07
Transportation	14	13	19	17
Building Energy	4.9	4.4	5.4	4.3
Water-Related Energy	0.41	0.38	0.48	0.34
Subtotal	19	18	25	22
VENTURA COUNTY				
Construction	0.01	0.01	0.01	0.01
Transportation	3.7	3.7	4.1	3.9
Building Energy	2.0	1.9	2.0	1.8
Water-Related Energy	0.17	0.17	0.17	0.09
Subtotal	5.9	5.8	6.3	5.8
Total Emissions	**137**	**131**	**154**	**141**
Plan (2020) Compared to Future No Project (2020)				**(6)**
Plan (2035) Compared to Future No Project (2035)				**(13)**

Note: The estimation of GHG emissions does not include the following sources: solid waste, aircraft, watercraft, trains, and industrial process sources. Total emissions resulting from construction, energy and water use are gross estimates based on simplified assumptions for purposes of this programmatic analysis.
SOURCE: TAHA, 2011; SCAG Transportation Modeling, 2011; Calthorpe, 2011.

AB 32 calls for GHG emissions to be reduced to 1990 levels by 2020. In the absence of reliable 1990 GHG emissions estimates, ARB recommends an equivalent metric of 15 percent below 2005 GHG emissions. Because the Scoping Plan time horizon is limited to 2020, analysis is presented for the year 2020 only, not for 2035 or 2050. As shown in **Table 4-6**, GHG emissions in 2020 are expected to be greater than the Plan and greater than the GHG emissions target set by AB 32. Because SCAG has no control over many future emissions factors (e.g., energy and water demand), SCAG made extremely conservative assumptions regarding these factors. Similar to the Plan, the No Project Alternative could not achieve the AB 32 targets alone.

TABLE 4-6: GREENHOUSE GAS AB 32 ANALYSIS– NO PROJECT ALTERNATIVE

Scenario	CO_2e Emissions (Million Metric Tons per Year)
Plan vs. 2005 Baseline Change in Emissions (AB 32 Target is 15% below 2005 levels by 2020)	1%
No Project vs. 2005 Baseline Change in Emissions (AB 32 Target is 15% below 2005 levels by (2020)	3%

Note: The estimation of GHG emissions does not include the following sources: solid waste, waterborne navigations, trains, aviation, agricultural uses, ozone depleting substances commercially produced (e.g., hydrofluorocarbons), and industrial processes.
SOURCE: TAHA, 2011, SCAG Transportation Modeling, 2011; Calthorpe, 2011.

As described in the Regulatory Setting above, SB 375 requires ARB to develop regional CO_2 emission reduction targets, compared to 2005 emissions, *for cars and light trucks only* for 2020 and 2035 for each of the State's MPOs. Significantly, where SCAG has control over transportation network improvements and growth distribution as part of its Plan, it is able to meet the SB 375 target with the SCS. **Table 4-7** shows that regional per capita GHG emissions would increase under the No Project Alternative. As a result, the No Project Alternative would not achieve the SB 375 emissions targets (as compared to the Plan which would meet the targets).

TABLE 4-7: SB 375 ANALYSIS – NO PROJECT ALTERNATIVE

County	Baseline (2005)	Future No Project (2020)	Plan (2020)	Future No Project (2035)	Plan (2035)
Resident Population (per 1,000) /a/	17,161	19,344	19,346	21,769	21,773
CO_2 Emissions (per 1,000 Tons) /b/	204.7	220.6	211.4	249.2	222.9
Per Capita Emissions (Pounds)	23.9	22.8	21.9	22.9	20.5
Percent Difference from Plan (2020) to Baseline (2005)					(8%)
Percent Difference from Plan (2035) to Baseline (2005)					(14%)
(Additional Reductions from 4D Model) /c/					(2%)
Total Reductions					(16%)
Percent Difference from Future No Project (2020) to Baseline (2005)					(4%)
Percent Difference from Future No Project (2035) to Baseline (2005)					(4%)

/a/ Population estimates exclude the group quarter population (e.g., dorms, prisons, long term hospitals).
/b/ Emissions are from passenger vehicles and light-duty trucks.
/c/ For description of 4D Model, see SCAG NHTS Model Documentation Report
SOURCE: SCAG Transportation Modeling, 2011.

Hazardous Materials

Due to the reduced number of transportation projects and increased number of transportation gaps, the No Project Alternative could result in a reduced movement of hazardous materials around the SCAG region, resulting in fewer associated risks. The No Project Alternative would result in the construction of approximately 68,040 new lane miles compared with over 74,297 new lane miles in the 2012-2035 RTP/SCS. As a result, new transportation projects in the No Project Alternative would be within a quarter-mile radius of 147 K-12 schools, which would be 394 less schools than under the Plan. Under the No Project

Alternative, new highway, transit, and freight rail projects would be within 150 feet of 359 acres of residential and 266 acres of commercial land uses. This is far fewer acres of potentially affected neighborhoods and communities than under the 2012-2035 RTP/SCS. Because there would be fewer projects built, the No Project Alternative could result in a smaller increase in the movement of hazardous materials around the SCAG region, resulting in fewer associated risks. However, without the transportation system improvements incorporated in the 2012-2035 RTP/SCS, vehicle miles travelled (VMT) and vehicles in delay (VHD) would increase more by 2035 for the No Project Alternative than for the project. Thus, there would be more opportunities for accidents with vehicles transporting hazardous materials in the No Project Alternative than in the Plan. Also, with fewer new roadways constructed, hazardous materials transport would be concentrated on existing routes, and could not be diverted to dedicated lanes or grade-separated from automobile traffic. Construction related to improvements and other projects in the 2012-2035 RTP/SCS could involve construction on or adjacent to a greater number of potentially contaminated sites than under the No Project Alternative. In addition, the Plan assumes the use of urban form strategies that would encourage greater property reuse and more infill development than under the No Project Alternative. Thus, it is more likely that previously contaminated sites would be encountered under the Plan than the No Project Alternative.

With the construction of fewer new lane miles and other transportation projects in the No Project Alternative compared to the Plan, more transportation demand could be transferred to surrounding counties, and therefore, more hazardous materials transportation could potentially be facilitated in those counties. The No Project Alternative could have fewer adverse cumulative hazardous materials impacts than the Plan. Anticipated development patterns under the No Project Alternative would consume far greater open space and vacant lands and possibly greater farming lands. Farming lands are frequently contaminated by past pesticide use. Required testing and clean up of contaminated lands should address any potential hazards.

Land Use and Agricultural Resources

The No Project Alternative includes fewer transportation projects than the 2012-2035 RTP/SCS and does not include any land use strategies. It would have a lesser potential for conflicting with general plans as the only growth strategies that would occur would be local land use controls. It also would have less of an influence on the patterns of urbanization in the region. Nonetheless, urbanization with significant potential for land use incompatibility would occur. The No Project Alternative would result in a more dispersed land use pattern. The No Project Alternative would consume an estimated 742 square miles of open space/ vacant land, while the Plan would consume only 334 square miles of open space/vacant land. Therefore, the No Project Alternative would have greater impacts related to conversion of farmland and agricultural lands. The No Project Alternative would likely have similar or possibly greater impact on land use incompatibility because redevelopment in existing communities would still occur and more land in general would be impacted.

The No Project Alternative contains fewer transportation investments than the Plan Alternative. Consequently, there would be fewer places where businesses and homes would be displaced by transportation projects and fewer places where communities would be disrupted. The No Project Alternative would occur within 150 feet of 391 acres of business land uses (commercial, industrial and extraction land uses) and 359 acres of residential land uses (rural, low, and medium to high density housing land uses). For the Plan 5,942 acres of business land uses and about 3,236 acres of residential land uses would be affected by transportation projects. The impacts of transportation projects alone under the Plan would result in greater impacts as compared to the No Project Alternative. Development impacts are less clear, since under the Plan development would be concentrated in urban areas. In contrast, in the No Project Alternative land uses would change to a much greater extent in undeveloped areas.

The No Project Alternative is expected to accommodate the same increase in total population as the proposed Plan. However, the Plan includes land use measures that would help reduce the consumption and

disturbance of agricultural lands, vacant lands, open space, and recreation lands. These policies and mitigation strategies are absent in the No Project Alternative. Under the No Project Alternative, up to approximately 742 square miles or 474,900 acres of vacant, open space and agricultural lands would be consumed, compared 334 square miles or 213,800 acres under the Plan. The more dispersed land use pattern of the No Project Alternative would consume more vacant land, but also could impact areas outside the region through setting a precedent for the conversion of non-urban lands. This would happen as development spreads out along existing freeways or similar methods of expansion. Under the No Project Alternative land use changes could affect jurisdictions outside the SCAG region, by setting a precedent for and/or inducing consumption of agricultural lands; such impacts would be cumulatively considerable. The Plan would decrease congestion potentially making it easier for people to live and work outside the region, thereby inducing land uses changes outside the region, these impacts also could be cumulatively considerable.

Noise

Construction noise and vibration impacts under the No Project Alternative would be less than those of the Plan. With fewer transportation projects being built under the No Project Alternative, there would be substantially less construction noise and vibration affecting sensitive receptors. Because fewer transportation projects would be built, construction impacts due to activities such as grading, power tools, and earth moving would be reduced.

Through the construction of transportation projects, and increases in traffic volume and speed, the 2012-2035 RTP/SCS projects would create substantially more noise than the No Project Alternative. The same level of population, household and job growth is anticipated under the No Project Alternative as under the Plan, so similar amounts of development are anticipated. However under the Plan uses are anticipated to be more compact (more multi-family as compared to single-family housing), and will therefore result in more intense areas of development and higher noise levels in the HQTAs. If the Plan is not implemented, the levels of cumulative ambient noise would be less than with the Plan in existing communities as a result of fewer sources and reduced speeds. Under the Plan, transportation noise would similarly be concentrated in HQTAs as compared to the No Project Alternative.

The No Project Alternative could have a significant impact on noise and vibration outside the region. Cumulative transportation noise would increase outside the region partially as a result of population, household and job growth. This ambient noise increase would be related to various sources including, aircraft overflights, port noise, ship horns, railroads, as well as freeway, arterial and transit noise. As such, the No Project Alternative would have similar cumulative noise impact as the Plan.

Population, Housing and Employment

The No Project Alternative is expected to accommodate the same increase in total population, housing, and employment as the Plan. Therefore, the No Project Alternative would result in the same population growth impacts as the Plan.

The No Project Alternative contains fewer transportation projects than the 2012-2035 RTP/SCS. Consequently, there would be fewer places where businesses and homes would be displaced and fewer places where communities would be disrupted. The GIS analysis of existing land use data shows that the freeway, transit, and freight rail projects in the No Project Alternative would occur within 150 feet of 5,740 acres of business land uses (commercial, industrial and extraction land uses) and 2,540 acres of residential land uses (rural, low, and medium to high density housing land uses). For the Plan 7,800 acres of business land uses and 6,500 acres of residential land uses would be affected by transportation projects. Therefore, the Plan impacts would be greater than the No Project Alternative.

The No Project Alternative is expected to accommodate the same increase in total population, housing, and employment as the Plan. It is anticipated that more development would occur in urban areas under the Plan, therefore more displacement could occur under the Plan. The Plan includes additional transportation improvements that would facilitate access to currently vacant lands that would be less accessible with the No Project Alternative. This improved accessibility under the Plan could help facilitate population and economic growth in areas of the region that are currently not undeveloped and under developed. While the Plan could encourage growth in previously undeveloped areas, land use strategies would aggressively seek to reduce consumption of vacant, open space/recreation and agricultural lands. The No Project Alternative could consume about 742 acres of vacant, open space/recreation and agricultural lands, while the 2012-2035 RTP/SCS would consume about 334 acres. Although the Plan and the No Project Alternative would result in a different distribution of consumed land, they would result in the same total number of population, households, and employment. Therefore, the No Project Alternative's cumulative impacts to population, households, and employment would be approximately the same as those of the 2012-2035 RTP/SCS.

Public Services and Utilities

Fire and Police Protection and Emergency Services

The congestion that results because of a lack of additional transportation improvement projects and the population distribution would result in emergency vehicle response times that are worse in the No Project Alternative than under the Plan. Traffic delay is measured in vehicle hours travelled, or VHT. Under the Plan, total daily VHT in the SCAG region is expected to grow from 3,277,000 person hours in 2011 to 4,357,000 person hours by 2035. Under the No Project Alternative, VHT would increase to 6,015,000 person hours by 2035. Therefore, implementation of the Plan would reduce traffic delay by approximately 38 percent as compared to the No Project Alternative, thereby reducing delays in emergency vehicle response times.

Under the No Project Alternative, it is anticipated that 83,990 households would be exposed to extreme wildfire threats; whereas under the 2012-2035 RTP/SCS, the number would be reduced to 71,553. This would be a 14 percent decrease in households exposed to extreme wildfire threats, as measures to reduce wildfire threats are implemented with planned 2012-2035 RTP/SCS projects. Therefore, the No Project Alternative would result in greater impacts as compared to the proposed Plan.

The 2035 population would be the same under the No Project Alternative as under the Plan. Therefore, the cumulative need for additional emergency personnel to accommodate the population would be the same under The No Project Alternative and the Plan. Under the No Project Alternative, new growth would be spread over about 474,880 acres of vacant, open space/recreational and agricultural lands compared to about 213,760 under the Plan. Thus greater extension of fire and police protection and emergency services would be needed under the No Project Alternative.

Educational Facilities

The No Project Alternative would result in similar impacts related to educational facilities as under the Plan. The No Project Alternative assumes the continuation of development patterns that the region has experienced over the past decades, and the same future population is expected. Therefore, the demand for educational facilities would remain the same under the No Project Alternative as under the Plan.

Recreational Facilities

The No Project Alternative includes fewer transportation projects than the Plan and does not include land use strategies beyond those put in place by local jurisdictions. Thus, the No Project Alternative would be expected to directly consume or disturb fewer acres of agricultural lands and open space than the Plan.

The No Project Alternative is expected to accommodate the same increase in total population as the Plan. The Plan includes additional transportation improvements that facilitate access to agricultural lands, vacant lands, open space, and recreation lands that would be less accessible with the No Project Alternative. However, the Plan also includes land use measures that would help reduce the consumption and disturbance of agricultural lands, vacant lands, open space, and recreation lands. These mitigation measures are potentially absent in the No Project Alternative. The No Project Alternative is expected to result in the continuation of past land use development patterns, which result in more growth in undeveloped land and open spaces. Under the No Project Alternative, by 2035, up to approximately 474,900 acres of vacant, open space and agricultural lands would be consumed, compared to 213,800 under the Plan. Therefore, the No Project Alternative would result in greater impacts to recreational lands than the Plan.

Solid Waste and Transfer Facilities

The No Project Alternative would result in the same or fewer impacts related to solid waste disposal and transfer facilities as compared to the Plan. With fewer transportation projects being constructed, the need for solid waste disposal facilities for construction related material would be less under the No Project Alternative than under the Plan.

The need for additional solid waste services to accommodate the population would be the same under the No Project Alternative as in the Plan. Under the No Project Alternative new growth would be spread over about 742 square miles of vacant, open space/recreational and agricultural lands compared to about 334 under the Plan. Thus greater extension of solid waste transport and disposal infrastructure would be needed under the No Project Alternative. Green waste generation could also increase under the No Project Alternative because of the greater expanse of land that is urbanized with single-family homes and other low-density landscaped development.

Energy

The No Project Alternative would result in greater impacts to energy as compared to the Plan. Because the No Project Alternative contains fewer transportation projects than the Plan, the potential to disrupt or sever underground utility lines would be less in the No Project Alternative than in the Plan. The No Project Alternative would result in the construction of approximately 300 new lane miles compared with approximately 6,000 new lane miles in the Plan. However, the total projected use of transportation fuels would be greater under the No Project Alternative. This difference would result from development under the No Project Alternative continuing the same patterns of growth that the region has experienced in past decades, relying heavily on growth in undeveloped lands at the edges of cities and beyond. The No Project Alternative would consume approximately 742 square miles of vacant land, as opposed to 334 square miles under the Plan. Therefore, the No Project Alternative would result in greater VMT and related transportation fuel consumption than the Plan, because vehicles would be traveling over nearly twice as much developed land under the No Project Alternative. By 2035, under the No Project Alternative, VMT is expected to be approximately 547 million miles per day; as compared to 517 under the Plan. In addition, scenarios that contain more mixed-use, walkable, and urban infill development, such as that under the Plan, accommodate a higher proportion of growth in more energy-efficient housing types like townhomes, apartments, and smaller single-family homes, as well as more compact commercial building types. By contrast, a large proportion of standard development, such as that which is anticipated to occur under the No Project Alternative, leads to a higher proportion of larger single -amily homes, which are typically less energy-efficient. Specifically, under

the No Project Alternative, the total building energy that is anticipated to be consumed in 2035 is approximately 604 trillion Btu, as compared with 589 trillion Btu under the Plan.

Transportation, Traffic and Security

The No Project Alternative would not include transportation and land use strategies that focus growth along existing corridors and in urbanized areas. As a result, population would be more scattered thought the region when compared to the Plan, and per capita VMT would not be reduced and other transportation metrics would not be improved. Implementation of the Plan would reduce vehicle miles of travel in 2035 from 547 million miles to 517 million miles. This constitutes a seven percent decrease from the No Project Alternative. The Plan impact would be less than the No Project impacts for VMTs.

Implementation of the Plan would reduce VHD in 2035 from 6,015 thousand vehicle-hours to 3,115 thousand vehicle-hours. This constitutes a 48 percent decrease from the No Project Alternative and includes light, medium and heavy-duty truck VHD in all six counties. The Plan impact would be less than the No Project impact for VHDs.

Implementation of the Plan would reduce heavy-duty truck VHD in 2035 from 354,000 hours to 158,000 thousand hours. This constitutes a 55 percent decrease from the No Project Alternative. The Plan impact would be less than the No Project impacts for heavy-duty truck VHD.

Implementation of the No Project Alternative would decrease the work opportunities within 45 minutes travel time by single occupancy vehicle in 2035 as compared to the Plan from 82 percent to 79 percent, would decrease the work opportunities within 45 minutes travel time by high occupancy vehicle from 77 to 68 percent, and would decrease the work opportunities within 45 minutes travel time by transit from 21 to 20 percent. The No Project Alternative would not improve the percent of work opportunities within 45 minutes travel time. The Plan impact would be less than the No Project impacts for work opportunities within 45 minutes travel time.

Implementation of the Plan would result in a system-wide daily fatality rate of 0.17 fatalities per million persons for all travel modes, a decrease of 0.01 daily fatalities per million persons when compared to the No Project Alternative rate of 0.18. Implementation of the Plan would result in a system-wide daily injury rate of 12.93 injuries per million persons for all travel modes, a decrease of 5.34 daily injuries per million persons when compared to the No Project Alternative rate of 13.67. The Plan impact would be less than the No Project impact for the transportation system fatality and injury rates.

The Plan includes transportation and land use strategies that focus growth along existing corridors and in urbanized areas, rather than allowing development of vacant, open space/recreation and agricultural lands. This compact development pattern included in the Plan would concentrate population in urban areas and encourage alternative modes of travel other than automobiles. Without the planned development patterns, vehicles miles travels, vehicle hours of delay, worker commute trips, and accident rates would be higher than under the Plan. The Plan would result in fewer cumulative impacts than the No Project Alternative.

Water Resources

Under the No Project Alternative, fewer areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. However, growth patterns under the No Project Alternative would consume 742 square miles of undeveloped (vacant) land whereas the Plan would consume 334 square miles of undeveloped land. While the No Project Alternative would reduce the number of transportation projects built in the SCAG region, it would result in greater vacant land consumption that would, in turn, increase the amount of impervious surfaces and increase impacts to water resources. Therefore, the No Project Alternative impacts to water resources would be greater than the impacts from the 2012-2035 RTP/SCS.

Additionally, because the No Project Alternative would consume greater amounts of vacant land and result in a more spread out growth pattern which would result in the development of land, the No Project Alternative's cumulative impacts to water resources would be greater than those of the 2012-2035 RTP/SCS.

With fewer transportation projects than the 2012-2035 RTP/SCS, the direct effects of the No Project Alternative on water resources would be reduced when compared with the 2012-2035 RTP/SCS. As the currently planned projects included in the No Project alternative are built, the impacts resulting from increased roadway runoff and drainage patterns would remain significant. Likewise, the impacts to groundwater infiltration caused by the increased impervious surfaces of roadway projects, and to increased flooding hazards, would remain significant. While the Plan and the No Project would result in the same total population, the more dispersed growth pattern under the No Project Alternative would result in less efficient use of water (more single-family homes with landscaping) and therefore would result in a greater per capita use of water. As the Plan's more compact growth pattern would be more water efficient, the Plans water supply impacts would be less than the No Project.

Similar to water supply, wastewater could be increased through the less efficient land use patterns. More new development would be located in areas that are not served by existing infrastructure which could result in additional impacts. The impacts to water quality would be greater under the No Project Alternative as the projected urbanized acreage under the No Project Alternative would be greater compared to the Plan (converting 334 square miles of open space to urbanized land within the region). In comparison, the No Project Alternative is projected to convert 742 square miles of open space to urbanized land in the region. Due to a more dispersed growth pattern, the No Project Alternative's impacts to both water quality and flood risk would be greater than those associated with the 2012-2035 RTP/SCS. Flooding impacts would generally be site specific although with greater consumption of vacant land, the No Project Alternative has a greater risk of locating RTP projects and/or development in flood prone areas. Overall, it is anticipated that the Plan would result in fewer impacts to water resources because of a compact growth pattern that would result in less impervious surfaces and less demand for water.

Cumulatively, both the Plan and the No Project Alternative would impact water quality, groundwater recharge, flood hazards, and water supply. The No Project Alternative would accommodate the same increase in population as projected for the Plan but in a more dispersed pattern. To reduce land consumption, the Plan includes land use measures that encourage development targeted in HQTAs. These measures are largely absent in the No Project alternative. As discussed above, the large lot development associated with the No Project Alternative would result in greater demands on water supply. This increase in water consumption would pull additional water from imported sources, thereby limiting water available for other parts of the State. Therefore, the No Project Alternative would result in greater cumulative impacts to water supply than the Plan.

Additional impacts described above include water quality effects. These impacts would be greater under the No Project Alternative as increased impervious surface (which contributes to water quality impacts) would be greater under the No Project Alternative. This would result in greater impacts to water quality and could affect water in areas outside the SCAG region. Therefore, cumulative water quality impacts would be greater under the No Project Alternative than the Plan alternative.

ANALYSIS OF ALTERNATIVE 2 – MODIFIED 2008 RTP ALTERNATIVE

Aesthetics

Under the Modified 2008 RTP Alternative, fewer roadways would be constructed resulting in fewer opportunities for impacts to scenic highways and vistas. However, the Modified 2008 RTP Alternative would not include the urban form strategies included in the SCS, intended to focus more growth in walkable, mixed-use communities and existing and planned high-quality transit areas. As shade/shadow and glare impacts typically occur in urban areas, these impacts would be reduced under the Modified 2008 RTP Alternative. Nighttime lighting impacts would be greater as more vacant land would be consumed under the 2008 Modified RTP Alternative, as lighting impacts are most pronounced in rural areas. Therefore, the Modified 2008 RTP Alternative would result in fewer impacts to scenic vistas and shade/shadow and glare but would result in greater lighting impacts than the 2012-2035 RTP/SCS.

Air Quality, including Cancer Risk and Other Health Incidences Related to VMT

Table 4-8 compares the Modified 2008 RTP Alternative criteria pollutant emissions by county to the Plan emissions. The Plan would result in fewer emissions than the Modified 2008 RTP Alternative with two exceptions. NO_X emissions would not change in Los Angeles County and summer NO_X emissions would not change in Ventura County. The Plan would improve regional emissions compared to the Modified 2008 RTP Alternative.

Tables 4-9 and **4-10** show the residential and workplace cancer risk, respectively. The maximum residential and workplace risks due to vehicle operation on all freeway segments are much higher under existing (2012) conditions than under the Modified 2008 RTP Alternative. The declines in cancer risk across all freeway segments are the result of continued decreases in per-vehicle mile fleet emissions projected to occur due to continued emission control technology improvements in new vehicles. The total regional risk would be lower under the Modified 2008 RTP Alternative than the No Project Alternative. When compared to the Plan, the Modified 2008 RTP Alternative would result in a higher risk in Imperial, Riverside, and San Bernardino Counties. In addition, it is estimated that the Modified 2008 RTP Alternative would result in 318,093 annual health incidences leading to $5,355,838,209 spent on healthcare whereas the Plan would result in 293,633 annual health incidences leading to $4,952,996,222 spent on healthcare. Therefore, the Modified 2008 RTP Alternative would result in a greater health risks.

Increasing population adjacent to transportation facilities could expose more people to increased cancer and other health risks. The dispersed nature of the Modified 2008 RTP would result in more development around freeways and therefore, risk levels would be greater than the Plan.

The Modified 2008 RTP Alternative would involve construction activity throughout the transportation system. Construction emissions would likely exceed the significance thresholds established in the CEQA Guidelines. Similar to the Plan, construction emissions would result in a significant short-term impact.

Projected long-term emissions are considered to be cumulatively significant if they are not consistent with the local air quality management plans and state implementation plans. As previously indicated, regional emissions under the Modified 2008 RTP Alternative are greater than under the Plan. The Plan conforms to the local air quality management plans, and cumulative impacts are considered less than significant. Unlike the Plan, the Modified 2008 RTP Alternative may not conform to the local air quality management plans and could have a significant cumulative impact.

TABLE 4-8: CRITERIA POLLUTANT EMISSIONS BY COUNTY – MODIFIED 2008 RTP ALTERNATIVE (2012) VS PLAN (2035)

County		Tons/Day								
		ROG Summer	ROG Annual	NO_x Summer	NO_x Annual	NO_x Winter	CO Winter	PM10 Annual	PM2.5 Annual	SO_x Annual
Los Angeles /a/	Modified 2008 RTP	43	41	70	71	75	315	13	9	1
	Plan	42	41	70	71	75	299	12	8	1
	Difference	(1)	(1)	0	0	0	(15)	(1)	(1)	0
Imperial	Modified 2008 RTP	4	3	10	9	10	25	1	1	0
	Plan	4	3	9	9	9	24	1	1	0
	Difference	0	0	0	0	0	(1)	0	0	0
Orange	Modified 2008 RTP	15	14	19	19	20	101	4	3	0
	Plan	14	14	19	19	20	96	4	3	0
	Difference	0	0	0	0	0	(5)	0	0	0
Riverside /b/	Modified 2008 RTP	15	14	36	35	37	121	5	4	1
	Plan	15	13	35	35	36	114	5	3	1
	Difference	0	0	(1)	1	(1)	(8)	0	0	0
San Bernardino /c/	Modified 2008 RTP	15	14	39	39	39	121	5	3	1
	Plan	15	13	37	37	38	114	5	3	0
	Difference	0	0	(1)	(1)	(1)	(6)	0	0	0
Ventura	Modified 2008 RTP	4	4	5	6	6	28	1	1	0
	Plan	4	4	5	6	6	27	1	1	0
	Difference	0	0	0	0	0	(1)	0	0	0

Note: 2012 modeled conditions are used to approximate 2011 conditions; in the professional opinion of SCAG modelers 2012 conditions are similar if not the same as 2011 conditions.
/a/ Los Angeles County excludes Antelope Valley
/b/ Riverside County includes the SCAB, MDAB and Coachella Valley portions
/c/ San Bernardino County includes the SCAB and MDAB portions
SOURCE: SCAG Transportation Modeling, 2011.

TABLE 4-9: MAXIMUM CANCER RISK BASED ON RESIDENTIAL EXPOSURE TO VEHICLE OPERATION BY PLANNING SCENARIO AND FREEWAY CORRIDOR – MODIFIED 2008 RTP ALTERNATIVE

	Maximum Cancer Risk Over 70-Year Residential Exposure (in one million)							
Planning Scenario	**I-405 (Orange)**	**I-710 (Los Angeles)**	**I-8 (Imperial)**	**SR 60 (San Bernardino)**	**SR 91 (Riverside)**	**US 101 (Ventura)**	**SR 60 (Los Angeles)**	**I-15 (San Bernardino)**
Existing Conditions (2012)	1,080	1,040	503	1,770	1,960	372	1,470	811
Modified 2008 RTP (2035)	442	421	401	618	674	196	476	405
Plan (2035)	462	475	399	714	668	199	536	354

SOURCE: Sierra Research, 2011.

TABLE 4-10: MAXIMUM CANCER RISK BASED ON WORKPLACE EXPOSURE TO VEHICLE OPERATION BY PLANNING SCENARIO AND FREEWAY CORRIDOR – MODIFIED 2008 RTP ALTERNATIVE

	Maximum Cancer Risk Over 70-Year Residential Exposure (in one million)							
Planning Scenario	**I-405 (Orange)**	**I-710 (Los Angeles)**	**I-8 (Imperial)**	**SR 60 (San Bernardino)**	**SR 91 (Riverside)**	**US 101 (Ventura)**	**SR 60 (Los Angeles)**	**I-15 (San Bernardino)**
Existing Conditions (2012)	163	158	76	269	297	56	223	123
Modified 2008 RTP (2035)	67	64	61	94	102	30	72	61
Plan (2035)	70	72	60	108	101	30	81	54

SOURCE: Sierra Research, 2011.

Biological Resources and Open Space

Under the Modified 2008 RTP Alternative, fewer areas would be impacted by excavation and construction activities as compared to the Plan. However, the Modified 2008 RTP Alternative would not include the urban form strategies included in the SCS, intended to focus more growth in walkable, mixed-use communities and existing and planned high-quality transit areas. Therefore, the Modified 2008 RTP Alternative would result in transportation projects and development taking place over a greater amount of land. Specifically, new transportation projects included in the Modified 2008 RTP Alternative would result in 355 square miles of new land consumption, as compared to 334 square miles under the Plan. This would result in greater vacant land consumption, including sensitive species habitat and natural lands, that would, in turn, increase the impacts to biological resources and open space, such as habitat loss and fragmentation. Therefore, the Modified 2008 RTP Alternative impacts to biological resources and open space would be greater than the impacts from the 2012-2035 RTP/SCS.

Cultural Resources

Under the Modified 2008 RTP Alternative, there would be a similar number of transportation projects but development patterns would extend over a somewhat greater area of land. The Modified 2008 RTP Alternative would not include the urban form strategies included in the SCS, intended to focus more growth in walkable, mixed-use communities and existing and planned high-quality transit areas. Therefore, the Modified 2008 RTP Alternative would result in development taking place over a greater area of land. The Modified 2008 RTP Alternative would result in 355 square miles of new land consumption, as compared to 334 square miles under the Plan. This would increase the chance to uncover a greater number of previously undisturbed resources. Therefore, the Modified 2008 RTP Alternative impacts to cultural resources would be greater than the impacts from the 2012-2035 RTP/SCS. The Modified 2008 RTP Alternative would not focus growth in urban areas to the extent of the Plan and therefore could have fewer impacts ion historic buildings.

Geology and Soils

Implementation of the 2012-2035 RTP/SCS would result in a greater number of transportation projects and would increase the amount of transportation infrastructure that would be subject to risk as a result of surface rupture, ground-shaking liquefaction, and landsliding and other risks associated with seismic events. The Modified 2008 Alternative would result in the construction of fewer new lane miles than the 2012-2035 RTP/SCS. Impacts related to geologic and seismic resources would be similar to the Plan under the Modified 2008 Alternative because the population would be the same and entire region is subject to seismic risk.

The reduced amount of RTP projects would be expected to occur under the Modified 2008 Alternative could result in a decrease in the amount of aggregate and mineral resources demand in the region. However as more land would be consumed under the Modified 2008 Alternative (355 square miles compared to 334 square miles under the Plan), more local access roads are anticipated to be needed. The more compact development pattern under the Plan could use less aggregate per capita as more compact development is more efficient. On balance it is anticipated that the Modified 2008 Alternative would result in greater impacts because dispersed development is less efficient in its use of aggregate as compared to a more compact development pattern.

Greenhouse Gas Emissions

Table 4-11 compares the Modified 2008 RTP Alternative GHG emissions by county to the Plan emissions. It is estimated (based on simplified gross estimates of construction, energy use and water use) that in 2020 the Plan would result in five million metric tons less of GHG emissions than the Modified 2008 RTP Alternative. In 2035, the Plan would result in 12 million metric tons less of GHG emissions than the Modified 2008 RTP Alternative. The Plan would improve regional GHG emissions compared to the Modified 2008 RTP Alternative.

TABLE 4-11: GREENHOUSE GAS EMISSIONS BY COUNTY - 2008 MODIFIED RTP ALTERNATIVE

Area and Source	CO_2e Emissions (Million Metric Tons per Year)			
	Modified 2008 RTP (2020)	Plan (2020)	Modified 2008 RTP (2035)	Plan (2035)
IMPERIAL COUNTY				
Construction	0.01	0.01	0.01	0.01
Transportation	1.8	1.7	2.5	2.4
Building Energy	0.53	0.41	0.58	0.39
Water-Related Energy	0.04	0.03	0.05	0.02
Subtotal	2.4	2.2	3.1	2.8
LOS ANGELES COUNTY				
Construction	0.16	0.16	0.15	0.15
Transportation	43	41	48	44
Building Energy	22	23	21	21
Water-Related Energy	2.1	2.2	1.9	1.9
Subtotal	67	66	71	67
ORANGE COUNTY				
Construction	0.04	0.04	0.04	0.04
Transportation	14	13	15	14
Building Energy	6.1	6.0	5.6	5.6
Water-Related Energy	0.63	0.64	0.57	0.59
Subtotal	21	20	21	20
RIVERSIDE COUNTY				
Construction	0.11	0.11	0.11	0.11
Transportation	15	14	20	18
Building Energy	5.5	4.8	6.3	4.9
Water-Related Energy	0.50	0.42	0.55	0.38
Subtotal	21	19	27	23
SAN BERNARDINO COUNTY				
Construction	0.07	0.07	0.07	0.07
Transportation	14	13	18	17
Building Energy	4.7	4.4	5.1	4.3
Water-Related Energy	0.43	0.38	0.44	0.34
Subtotal	19	18	24	22
VENTURA COUNTY				
Construction	0.01	0.01	0.01	0.01
Transportation	3.9	3.7	4.3	3.9
Building Energy	1.9	1.9	1.9	1.8
Water-Related Energy	0.18	0.17	0.16	0.09
Subtotal	6.0	5.8	6.4	5.8
Total Emissions	**136**	**131**	**153**	**141**
Plan (2020) Compared to Modified 2008 RTP (2020)				**(5)**
Plan (2035) Compared to Modified 2008 RTP (2035)				**(12)**

Note: The estimation of GHG emissions does not include the following sources: solid waste, aircraft, watercraft, trains, and industrial process sources. Total emissions resulting from construction, energy and water use are gross estimates based on simplified assumptions for purposes of this programmatic analysis.
SOURCE: TAHA, 2011; SCAG Transportation Modeling, 2011; Calthorpe, 2011.

AB 32 calls for GHG emissions to be reduced to 1990 levels by 2020. In the absence of reliable 1990 GHG emissions estimates, ARB recommends an equivalent metric of 15 percent below 2005 GHG emissions. Because the Scoping Plan time horizon is limited to 2020, analysis is presented for the year 2020 only, not for 2035 or 2050. As shown in **Table 4-12**, GHG emissions in 2020 are expected to be greater than the Plan and greater than the GHG emissions target set by AB 32. Because SCAG has no control over many future emissions factors (e.g., energy and water demand), SCAG made extremely conservative assumptions regarding these factors. Similar to the Plan, the Modified 2008 RTP Alternative would not achieve the AB 32 targets.

TABLE 4-12: GREENHOUSE GAS AB 32 ANALYSIS – 2008 MODIFIED RTP ALTERNATIVE	
Scenario	**CO_2e Emissions (Million Metric Tons per Year)**
Plan vs. 2005 Baseline Change in Emissions (AB 32 Target is 15% below 2005 levels by 2020)	1%
Modified 2008 RTP vs. 2005 Baseline Change in Emissions (AB 32 Target is 15% below 2005 levels by (2020)	3%
Note: The estimation of GHG emissions does not include the following sources: solid waste, waterborne navigations, trains, aviation, agricultural uses, ozone depleting substances commercially produced (e.g., hydrofluorocarbons), and industrial processes. **SOURCE**: TAHA, 2011; SCAG Transportation Modeling, 2011; Calthorpe, 2011.	

As described in the Regulatory Setting above, SB 375 requires ARB to develop regional CO_2 emission reduction targets, compared to 2005 emissions, *for cars and light trucks only* for 2020 and 2035 for each of the State's MPOs. Significantly, where SCAG has control over transportation network improvements and growth distribution as part of its Plan, it is able to meet the SB 375 target with the SCS. **Table 4-13** shows that regional per capita GHG emissions would increase under the Modified 2008 RTP Alternative. As a result, the Modified 2008 RTP Alternative would not achieve the SB 375 emissions targets (as compared to the Plan which would meet the targets).

TABLE 4-13: SB 375 ANALYSIS – 2008 MODIFIED RTP ALTERNATIVE			
County	**Baseline (2005)**	**Modified 2008 RTP 2035)**	**Plan (2035)**
Resident Population (per 1,000) /a/	17,161	21,773	21,773
CO_2 Emissions (per 1,000 Tons) /b/	204.7	243.9	222.9
Per Capita Emissions (Pounds)	23.9	22.4	20.5
Percent Difference from Plan (2035) to Baseline (2005)			(14%)
(Additional Reductions from 4D Model) /c/			(2%)
Total Reductions			(16%)
Percent Difference from Modified 2008 RTP (2035) to Baseline (2005)			(6%)
/a/ Population estimates exclude the group quarter population (e.g., dorms, prisons, long term hospitals). /b/ Emissions are from passenger vehicles and light-duty trucks. /c/ For description of 4D Model, see SCAG NHTS Model Documentation Report. **SOURCE**: SCAG Transportation Modeling, 2011.			

Hazardous Materials

The Modified 2008 RTP Alternative would have similar impacts related to the accidental release of hazardous materials as compared to the Plan. The Modified 2008 RTP Alternative would not include the urban form strategies included in the SCS which are intended to focus more growth in walkable, mixed-use communities and existing and planned HQTAs. Anticipated development under the Modified 2008 RTP Alternative would result in 355 square miles of new land consumption, as compared to 334 square miles under the Plan. The Modified 2008 RTP Alternative may not include as much redevelopment of urban infill properties as the Plan, and, therefore, may result in fewer potential impacts related to disturbance of contaminated sites as compared to the Plan. However it would disturb somewhat more undeveloped and open space uses, some of which might be farmland and may be contaminated with pesticides from past operations and thus can result in impacts when ground is disturbed.

The Modified 2008 RTP Alternative would result in similar cumulative impacts as the Plan, as this Alternative would include transportation investments that would increase mobility. It is anticipated that VMT under the Modified 2008 RTP Alternative would be 159.6 billion miles in 2035, as compared to 147.3 billion under the Plan. Increased mobility would increase the possibility of hazardous materials transport throughout the SCAG region, as well as through areas outside of the region. As the population in southern California increases through 2035, the number of trips in the SCAG region that originate, end or pass through

Santa Barbara, San Diego and Kern counties as well as other counties and states would increase, including trips involving the transportation of hazardous materials

Land Use and Agricultural Resources

The Modified 2008 RTP Alternative includes fewer transportation projects than the 2012-2035 RTP/SCS and does not include any land use strategies. It would have a lesser potential for conflicting with general plans as the only growth strategies that would occur would be local land use controls. It also would have less of an influence on the patterns of urbanization in the region. Nonetheless, urbanization with significant potential for land use incompatibility would occur. The Modified 2008 RTP Alternative would result in a more dispersed land use pattern. The Modified 2008 RTP Alternative would consume an estimated 355 square miles of open space/vacant land, while the Plan would consume only 334 square miles of open space/vacant land. Therefore, the Modified 2008 RTP Alternative would have greater impacts related to conversion of farmland and agricultural lands. The Modified 2008 RTP Alternative would likely have similar or possibly greater impact on land use incompatibility because redevelopment in existing communities would still occur and more land in general would be impacted.

The Modified 2008 RTP Alternative contains fewer transportation investments than the Plan Alternative. Consequently, there would be fewer places where businesses and homes would be displaced by transportation projects and fewer places where communities would be disrupted. Due to the dispersed pattern of the Modified 2008 RTP Alternative, the Modified 2008 RTP Alternative would occur within fewer acres of business land uses (commercial, industrial and extraction land uses) and residential land uses (rural, low, and medium to high density housing land uses) than the Plan. The impacts of transportation projects alone under the Plan would result in greater impacts as compared to the Modified 2008 RTP Alternative. Development impacts are less clear, since under the Plan development would be concentrated in urban areas. In contrast, in the Modified 2008 RTP Alternative land uses would change to a much greater extent in undeveloped areas.

The Modified 2008 RTP Alternative is expected to accommodate the same increase in total population as the Plan. However, the Plan includes land use measures that would help reduce the consumption and disturbance of agricultural lands, vacant lands, open space, and recreation lands. These policies and mitigation strategies are absent in the Modified 2008 RTP Alternative. Under the Modified 2008 RTP Alternative, up to approximately 355 square miles of vacant, open space and agricultural lands would be consumed, compared 334 square miles under the Plan. The more dispersed land use pattern of the Modified 2008 RTP Alternative would consume more vacant land, but also could impact areas outside the region through setting a precedent for the conversion of non-urban lands. This would happen as development spreads out along existing freeways or similar methods of expansion. Under the Modified 2008 RTP Alternative land use changes could affect jurisdictions outside the SCAG region, by setting a precedent for and/or inducing consumption of agricultural lands; such impacts would be cumulatively considerable. The Plan would decrease congestion potentially making it easier for people to live and work outside the region, thereby inducing land uses changes outside the region, these impacts also could be cumulatively considerable.

Noise

The transportation improvements in the Modified 2008 RTP Alternative are similar to those in the Plan. Construction noise and vibration related to activities such as grading, power tools, and earth moving would therefore be generally the same as for the Plan. The Plan and the 2008 Modified RTP Alternative would have similar construction related impacts.

The impact of noise on areas directly located next to transportation facilities would be similar for the Modified 2008 RTP Alternative and the Plan. The projects included in both alternatives would be similar resulting in similar impacts occurring near transportation facilities, both would also likely result in a comparable number of sensitive receptors that would be impacted.

Cumulative noise impacts for the Modified 2008 RTP Alternative would also be similar to those from implementation of the Plan. Construction, ambient, aviation and port noise would be the same between the two alternatives. The Plan would have similar noise impacts to the 2008 Modified RTP Alternative.

Population, Housing and Employment

The Modified 2008 RTP Alternative has the same population, household, and employment growth as the Plan. The impact of the induced growth from the Modified 2008 RTP Alternative would be similar to the Plan, although there would be differences in the distributions. For example, the 2008 Modified RTP would result in an increase in population, households, and employment in Orange County. Given that the population, household, and employment growth would be the same at the regional level, the Plan impacts would be the same as those associated with the 2008 Modified RTP.

The Modified 2008 RTP Alternative's growth strategies would not focus the future population in urban areas to the same extent as the Plan's 355 acres (227,200 acres) of previously undisturbed land (as compared to 334 square miles – 213,800 acres -- disturbed under the Plan); the Plan's growth strategies would result in more compact development around HQTAs. The Plan would be more likely to result in displacing more businesses or homes as more than half of the anticipated development would occur in already urbanized areas. In many of these urbanized areas vacant land is scarce, resulting in a greater potential for projects to displace existing uses.

Public Services and Utilities

Fire and Police Protection and Emergency Services

The Modified 2008 RTP Alternative would result in similar transportation-related public services impacts as compared to the Plan. The No Project Alternative and the Plan alternatives include the same number of population, housing and jobs that would require police, fire and emergency facilities. However, under the 2008 Modified RTP Alternative, development would be more dispersed resulting in slightly greater impacts as response times may be increased as police, fire and emergency personnel have to travel farther distances.

The Modified 2008 RTP would result in greater impacts related to wildfire threats as compared to the Plan, because without the urban form strategies included in the SCS, there would be less focus on urban centers and a greater number of homes and communities could locate in rural areas with a greater risk of wildfire.

Educational Facilities

The Modified 2008 RTP Alternative would result in similar educational facilities impacts as the Plan. Without the land use strategies of the Plan, the Modified 2008 RTP may not result in the same level of urbanization as the Plan; however, the population in the SCAG region is anticipated to be the same under both Alternatives. Therefore, both the Modified 2008 RTP Alternative and the Plan would result in the need for additional educational facilities to accommodate a growing population.

Recreational Facilities

The Modified 2008 RTP Alternative would result in greater impacts to recreational facilities as compared to the Plan. Without the urban form strategies included in the Plan, the Modified 2008 RTP would result in more development outside of urban areas, thereby increasing the potential for impacts to recreation lands or open space. The Modified 2008 RTP would consume 355 square miles of new land as compared to 334 square miles under the Plan. The 2035 population is anticipated to be the same under the Modified 2008 RTP Alternative as under the Plan, resulting in a similar parks-to-people ratio.

Solid Waste and Transfer Facilities

The Modified 2008 RTP Alternative would result in similar impacts to solid waste disposal and transfer facilities as the Plan. This Alternative would include similar transportation improvements projects as the Plan, resulting in the need for solid waste disposal and transfer facilities during construction. The 2035 population is anticipated to be the same under the Modified 2008 RTP Alternative as under the Plan, thereby resulting in similar need for solid waste disposal and transfer facilities to accommodate the population. Increased greenwaste could occur under the Modified 2008 RTP because of the increased consumption of land and lower density development possibly leading to more landscaping.

Energy

Because the Modified 2008 RTP Alternative contains fewer transportation projects than the Plan, the potential to disrupt or sever underground utility lines would be less in the No Project Alternative than in the Plan, although the more disperse development Plan would increase the opportunity to sever lines outside urban areas. The Modified 2008 RTP Alternative would result in greater impacts to energy as compared to the Plan. Because the Modified 2008 RTP does not include the urban form strategies that are included in the Plan, development would occur in response to local general plans. It can be anticipated that this Alternative would include less mixed-use/walkable communities and urban infill development areas, which tend to accommodate more energy efficient housing types and rely less heavily on motorized forms of transportation. VMT under the Modified 2008 RTP Alternative is expected to be approximately 549 million miles per day, as compared to 517 million miles under the Plan. The total building energy usage under the Modified 2008 RTP Alterative is expected to be approximately the same as under the Plan (589 trillion Btu), however, transportation and development under this Alternative would consume more energy than the Plan because of greater VMT and a more dispersed (less efficient) growth pattern.

Transportation, Traffic and Security

The Modified 2008 RTP Alternative would result in greater than or equal transportation impacts as compared to the Plan. The Modified 2008 RTP Alternative would generally be expected to result in more miles traveled and more delay. In 2035 the Modified 2008 RTP Alternative would result in 549.1 million daily VMT, more than the Plan's 517 million daily VMT. Daily hours of delay under the Modified 2008 RTP Alternative would be 4.4 million vehicle-hours for all vehicles and 0.246 million vehicle-hours for heavy-duty trucks. Comparatively, the Plan would produce 3.1-million vehicle-hours of delay for all vehicles and 0.158 million vehicle-hours of delay for heavy-duty trucks.

The effects of growth and other external factors are included in the Regional Travel Demand Model that produces the results reported above. Because these external factors are modeled, the cumulative effects of regional growth are captured in the VMT, VHD, and heavy-duty truck VHD data reported for the Modified 2008 RTP Alternative above. The Modified 2008 RTP Alternative would have less cumulative impacts than the Plan.

Water Resources

Under the Modified 2008 RTP Alternative, fewer areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. However, the Modified 2008 RTP Alternative would not include the urban form strategies included in the SCS, intended to focus more growth in walkable, mixed-use communities and existing and planned high-quality transit areas. Therefore, the Modified 2008 RTP Alternative would result in development patterns consuming a greater amount of land. Specifically, anticipated development under the Modified 2008 RTP Alternative would result in 355 square miles of new land consumption, as compared to 334 square miles under the Plan thereby increasing the amount of impervious surfaces and increasing impacts to water resources. Therefore, the Modified 2008 RTP Alternative impacts to water resources would be greater than the impacts from the 2012-2035 RTP/SCS.

ANALYSIS OF ALTERNATIVE 3 – ENVISION 2 ALTERNATIVE

Aesthetics

Under the Envision 2 Alternative more aggressive growth strategies would be applied to the region. This would potentially result in greater impacts related to light and glare, shade and shadow and visual character of neighborhoods as more intense development occurs within urban centers. Taller buildings could be incongruous with existing surroundings and could overwhelm historic buildings and/or existing neighborhoods. Further, glare impacts and shade and shadow impacts could be increased due to increase density. However, as more development is focused in urban areas, fewer nighttime lighting impacts would occur in undeveloped areas. Lastly, impacts related to scenic highways and vistas would generally be the same as both alternatives include similar transportation networks.

Air Quality, including Cancer Risk and Other Health Incidences Related to VMT

Table 4-14 compares the Envision 2 Alternative criteria pollutant emissions by county to the Plan emissions. These emission changes result from the development pattern that focuses residential and employment growth in High Quality Transportation Areas. Compared to the Plan, the Envision 2 Alternative could slightly increase regional emissions in Los Angeles County although overall emissions would decrease.

Tables 4-15 and **4-16** show the residential and workplace cancer risk, respectively. The maximum residential and workplace risks due to vehicle operation on all freeway segments are much higher under existing conditions than under the Plan or the Envision 2 Alternative. The declines in cancer risk across all freeway segments are the result of continued decreases in per-vehicle mile fleet emissions projected to occur due to continued emission control technology improvements in new vehicles.

As compared to the Plan, Envision 2 would result in higher risk than the Plan for 2 of the 8 corridors segments modeled: I-15 in San Bernardino and I-405 in Orange. Due to the increased density in urban areas heavy truck volumes on these segments would be higher under Envision 2. (On the I-405, both heavy truck and total vehicle volumes would be higher). In addition, it is estimated that the Envision 2 Alternative would result in 266,340 annual health incidences leading to $4,329,661,096 spent on healthcare, whereas the Plan would result in 293,633 annual health incidences leading to $4,952,996,222 spent on healthcare. Therefore, the Envision 2 Alternative would result in a fewer health risks.

Increasing population adjacent to transportation facilities could expose more people to increased cancer and other health risks. Even though cancer and other health risks adjacent to freeways and railroads would decrease considerably under the Envision 2 Alternative, risk levels would remain above average for the region and would be similar to the Plan. Impacts to increasing population adjacent to transportation facilities would similar to the Plan as both include similar transportation networks

The Envision 2 Alternative would involve construction activity throughout the transportation system and in HQTAs across the region (as well as some construction outside HQTAs). Construction emissions of many projects would likely exceed the significance thresholds established in the CEQA Guidelines. Similar to the Plan, construction emissions would result in significant short-term impacts for individual projects. Projected long-term mobile source emissions are considered to be cumulatively significant if they are not consistent with the local air quality management plans and state implementation plans. Some regional emissions under the Envision 2 Alternative are greater than under the Plan (**Table 4-14**). The Plan conforms to the local air quality management plans, and cumulative impacts are considered less than significant. The Envision 2 Alternative would be expected to meet conformity requirements.

TABLE 4-14: CRITERIA POLLUTANT EMISSIONS BY COUNTY – ENVISION 2 ALTERNATIVE (2012) VS PLAN (2035) (TONS PER DAY)

County		ROG Summer	ROG Annual	NO_x Summer	NO_x Annual	NO_x Winter	CO Winter	PM10 Annual	PM2.5 Annual	SO_x Annual
Los Angeles /a/	Envision 2	43	41	73	74	78	315	13	9	1
	Plan	42	41	70	71	75	299	12	8	1
	Difference	(1)	1	(2)	(3)	(3)	(15)	(1)	(1)	0
Imperial	Envision 2	3	3	9	8	9	21	1	0	0
	Plan	4	3	9	9	9	24	1	1	0
	Difference	0	0	1	1	1	3	0	0	0
Orange	Envision 2	15	14	19	19	20	98	4	3	0
	Plan	14	14	19	19	20	96	4	3	0
	Difference	0	0	0	0	0	(2)	0	0	0
Riverside /b/	Envision 2	14	13	32	32	33	95	4	3	0
	Plan	15	13	35	35	36	114	5	3	1
	Difference	1	1	3	3	3	19	1	1	0
San Bernardino /c/	Envision 2	14	13	36	36	36	104	4	3	0
	Plan	15	13	37	37	38	114	5	3	0
	Difference	0	0	1	2	2	10	1	0	0
Ventura	Envision 2	4	4	5	6	6	26	1	1	0
	Plan	4	4	5	6	6	27	1	1	0
	Difference	0	0	0	0	0	1	0	0	0

Note: 2012 modeled conditions are used to approximate 2011 conditions; in the professional opinion of SCAG modelers 2012 conditions are similar if not the same as 2011 conditions.
/a/ Los Angeles County excludes Antelope Valley
/b/ Riverside County includes the SCAB, MDAB and Coachella Valley portions
/c/ San Bernardino County includes the SCAB and MDAB portions
SOURCE: SCAG Transportation Modeling, 2011.

TABLE 4-15: MAXIMUM CANCER RISK BASED ON RESIDENTIAL EXPOSURE TO VEHICLE OPERATION BY PLANNING SCENARIO AND FREEWAY CORRIDOR – ENVISION 2 ALTERNATIVE

	Maximum Cancer Risk Over 70-Year Residential Exposure (in one million)							
Planning Scenario	**I-405 (Orange)**	**I-710 (Los Angeles)**	**I-8 (Imperial)**	**SR 60 (San Bernardino)**	**SR 91 (Riverside)**	**US 101 (Ventura)**	**SR 60 (Los Angeles)**	**I-15 (San Bernardino)**
Existing Conditions (2012)	1,080	1,040	503	1,770	1,960	372	1,470	811
Envision 2 (2035)	442	421	401	618	674	196	476	405
Plan (2035)	497	441	369	683	619	192	535	388

SOURCE: Sierra Research, 2011.

TABLE 4-16: MAXIMUM CANCER RISK BASED ON WORKPLACE EXPOSURE TO VEHICLE OPERATION BY PLANNING SCENARIO AND FREEWAY CORRIDOR – ENVISION 2 ALTERNATIVE

	Maximum Cancer Risk Over 70-Year Residential Exposure (in one million)							
Planning Scenario	**I-405 (Orange)**	**I-710 (Los Angeles)**	**I-8 (Imperial)**	**SR 60 (San Bernardino)**	**SR 91 (Riverside)**	**US 101 (Ventura)**	**SR 60 (Los Angeles)**	**I-15 (San Bernardino)**
Existing Conditions (2012)	163	158	76	269	297	56	223	123
Envision 2 (2035)	67	64	61	94	102	30	72	61
Plan (2035)	75	67	56	104	94	29	81	59

SOURCE: Sierra Research, 2011.

Biological Resources and Open Space

Under the Envision 2 Alternative, fewer undeveloped areas would be impacted by excavation and construction activities as compared to the Plan. The Envision 2 Alternative focuses on TOD and further expansion of non-motorized transportation. Under the Envision 2 Alternative, transportation improvement projects would result in 75 square miles of new land consumption as compared to 334 square miles under the Plan, thereby reducing the impacts to biological resources and open space as compared to the 2012-2035 RTP/SCS. Given that the Envision 2 Alternative would redevelop moore existing areas than the Plan, the Envision 2 Alternative would result in greater impacts to historic resources.

Cultural Resources

Under the Envision 2 Alternative, fewer undeveloped areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. The Envision 2 Alternative focuses on TOD and further expansion of non-motorized transportation. Under the Envision 2 Alternative, anticipated development would result in 75 square miles (48,000 acres) of new land consumption as compared to 334 square miles (213,800 acres) under the Plan, thereby exposing fewer previously undisturbed cultural resources. As with the Plan, increased focus on redevelopment of existing communities could result in increased impacts to historic buildings.

Geology and Soils

The Envision 2 transportation network is similar to the Plan network with minor changes to goods movement and transit projects. Construction and excavation impacts would therefore be generally the same as for the Plan. The Plan and the Envision 2 Alternative would have similar construction related impacts.

The Envision 2 Alternative focuses residential and employment growth in HQTAs. Development is anticipated to be more compact (more multi-family as compared to single-family housing). Some HQTAs are located near known faults and other geologic hazards which could increase the number of people and structures exposed to potential surface rupture, ground-shaking liquefaction, and landsliding due to seismic events. However, both the Envision 2 Alternative and the Plan would likely result in geological and mineral resources impacts as the transportation networks would be very similar, with some expansion to the transit networks under the Envision 2 Alternative.

Cumulative geologic and mineral resources impacts for the Envision 2 Alternative would also be similar to those from implementation of the Plan. Geological and mineral resources impacts would be similar between the two alternatives. The Plan would have similar cumulative geological and mineral resources impacts to the Envision 2 Alternative.

Greenhouse Gas Emissions

Table 4-17 compares the Envision 2 Alternative GHG emissions by county to the Plan emissions. It is estimated (based on simplified gross estimates of construction, energy use and water use) that in 2035, the Plan would result in 3 million metric tons more of GHG emissions than the Envision 2 Alternative. The Envision 2 Alternative would improve regional GHG emissions compared to the Plan.

TABLE 4-17: GREENHOUSE GAS EMISSIONS BY COUNTY – ENVISION 2 ALTERNATIVE		
	CO_2e Emissions (Million Metric Tons per Year)	
Area and Source	**Envision 2 (2035)**	**Plan (2035)**
IMPERIAL COUNTY		
Construction	0.01	0.01
Transportation	2.0	2.4
Building Energy	0.39	0.39
Water-Related Energy	0.02	0.02
Subtotal	2.4	2.8
LOS ANGELES COUNTY		
Construction	0.15	0.15
Transportation	47	44
Building Energy	21	21
Water-Related Energy	1.9	1.9
Subtotal	70	67
ORANGE COUNTY		
Construction	0.04	0.04
Transportation	14	14
Building Energy	5.6	5.6
Water-Related Energy	0.59	0.59
Subtotal	20	20
RIVERSIDE COUNTY		
Construction	0.11	0.11
Transportation	14	18
Building Energy	4.9	4.9
Water-Related Energy	0.38	0.38
Subtotal	19	23
SAN BERNARDINO COUNTY		
Construction	0.07	0.07
Transportation	15	17
Building Energy	4.3	4.3
Water-Related Energy	0.34	0.34
Subtotal	20	22
Ventura County		
Construction	0.01	0.01
Transportation	4	3.9
Building Energy	1.8	1.8
Water-Related Energy	0.09	0.09
Subtotal	5.9	5.8
Total Emissions	**138**	**141**
	Envision 2 Compared to Plan (2035)	**(3)**

Note: The estimation of GHG emissions does not include the following sources: solid waste, aircraft, watercraft, trains, and industrial process sources. Total emissions resulting from construction, energy and water use are gross estimates based on simplified assumptions for purposes of this programmatic analysis.
SOURCE: TAHA, 2011; SCAG Transportation Modeling, 2011; Calthorpe, 2011.

AB 32 calls for GHG emissions to be reduced to 1990 levels by 2020. In the absence of reliable 1990 GHG emissions estimates, ARB recommends an equivalent metric of 15 percent below 2005 GHG emissions. Under the Plan, GHG emissions in 2020 are expected to be greater than the GHG emissions target set by AB 32. Because SCAG has no control over many future emissions factors (e.g., energy and water demand), SCAG made extremely conservative assumptions regarding these factors. An estimate of 2020 emissions was not completed for the Envision 2 Alternative because the increased land use effects included in Envision 2 don't occur until after 2020. As demonstrated above, the Envision 2 Alternative would generate less GHG emissions than the Plan. However, similar to the Plan, the Envision 2 Alternative would not achieve the AB 32 targets.

As described in the Regulatory Setting above, SB 375 requires ARB to develop regional CO_2 emission reduction targets, compared to 2005 emissions, *for cars and light trucks only* for 2020 and 2035 for each of the State's MPOs. Significantly, where SCAG has control over transportation network improvements and growth distribution as part of its Plan, it is able to meet the SB 375 target with the SCS. **Table 4-18** shows that regional per capita GHG emissions would decrease under the Envision 2 Alternative. As a result, the Envision 2 Alternative would achieve the SB 375 emissions targets (the Plan would also meet the targets).

TABLE 4-18: SB 375 ANALYSIS – ENVISION 2 ALTERNATIVE

County	Baseline (2005)	Envision 2 (2035)	Plan (2035)
Resident Population (per 1,000) /a/	17,161	21,773	21,773
CO_2 Emissions (per 1,000 Tons) /b/	204.7	217.3	222.88
Per Capita Emissions (Pounds)	23.9	20.0	20.47

Percent Difference from Plan (2035) to Baseline (2005)	(14%)
(Additional Reductions from 4D Model) /c/	(2%)
Total Reductions	(16%)
Percent Difference from Envision 2 (2035) to Baseline (2005) No 4D analysis performed	(16%)

/a/ Population estimates exclude the group quarter population (e.g., dorms, prisons, long term hospitals).
/b/ Emissions are from passenger vehicles and light-duty trucks.
/c/ For description of 4D Model, see SCAG NHTS Model Documentation Report.
SOURCE: SCAG Transportation Modeling, 2011.

Hazardous Materials

The Envision 2 Alternative would result in similar impacts related to the accidental release of hazardous materials as compared to the Plan. Envision 2 would include increased transportation projects. The Envision 2 Alternative focuses on TOD and further expansion of non-motorized transportation. Under the Envision 2 only 75 square miles of land would be consumed (as compared to 334 square miles under the Plan). The Envision 2 Alternative could result in greater impacts related to disturbance of contaminated sites as compared with the Plan because of the increased focus on urban redevelopment. The land use patterns associated with the Envision 2 Alternative would maximize urban centers and focus on urban infill. This would increase the potential for disturbance of contaminated sites, as there is a greater likelihood for urban redevelopment sites to be previously exposed to hazardous materials.

Land Use and Agricultural Resources

Current land use practices would have to be changed to accommodate the Envision 2 Alternative because the Envision 2 Alternative focuses considerable growth onto the existing urban area around transit station and existing activity centers. The Envision 2 Alternative would minimize the further use of land for single-family development. To achieve the densities of the Envision 2 Alternative, there would be a greater chance of conflicting with general plans in the Envision 2 Alternative than in the Plan. Because of this, the Envision 2 Alternative would have greater land use impacts than the Plan.

The Envision 2 Alternative would focus development in urban areas and existing communities and would have a greater emphasis on infill development. As a result, the Envision 2 Alternative could result in increased division of existing communities as a result of aggressive redevelopment.

Due to the compact land use development of the Envision 2 Alternative fewer agricultural resources would be impacted from transportation projects. As such, the Envision 2 Alternative would have fewer agricultural resources impacts than the Plan.

Noise

The transportation improvements in the Envision 2 Alternative are similar to those in the Plan. The Envision 2 transportation network is similar to the Plan network with changes to goods movement and transit projects. Construction noise and vibration related to activities such as grading, power tools, and earth moving would therefore be generally the same as for the Plan. The Plan and the Envision 2 Alternative would have similar construction related impacts.

Regarding transportation noise, the Envision 2 Alternative focuses residential and employment growth in High Quality Transportation Areas. Development is anticipated to be more compact (more multi-family as compared to single-family housing), therefore result in more intense areas of development and higher noise levels than under the Plan. However, both the Envision 2 Alternative and the Plan would likely result in a comparable number of sensitive receptors being impacted by transportation noise.

Cumulative noise impacts for the Envision 2 Alternative would also be similar to those from implementation of the Plan. Construction, ambient, aviation and port noise would be the same between the two alternatives. The Plan would have similar cumulative noise impacts to the Envision 2 Alternative.

Population, Housing and Employment

The Envision 2 Alternative would have the same number of households, employment and population as the Plan. The impact of the induced population growth would be similar to the Plan, as both accommodate the same population increase. The Envision 2 Alternative would focus development in urban areas and existing communities and would have a greater emphasis on infill development. As a result, the Envision 2 Alternative could result in an increase in the number of homes or businesses that are displaced as a result of aggressive redevelopment.

Public Services and Utilities

Fire and Police Protection and Emergency Services

The Envision 2 Alternative would include the same number of population, housing and jobs that would require police, fire and emergency personnel; however more of these people would be located in urban areas. In general urban areas are well served by police, fire and emergency services and as personnel would travel shorter distances to calls response times would not be substantially affects. Further, fewer emergency service personnel would be needed to serve previously inaccessible areas of the SCAG region.

The Envision 2 Alternative would result in fewer impacts related to wildfire threats as compared to the Plan, because there would be greater focus on urban centers and fewer homes and communities would locate in rural areas with a greater risk of wildfire.

Educational Facilities

The Envision 2 Alternative would have similar impacts to educational facilities as the Plan The 2035 population is expected to be similar under the Envision 2 Alternative than under the Plan; however, the Envision 2 Alternative includes more aggressive population densities than the Plan and could result in the need for additional school facilities in the areas targeted for increased population densities, such as TOD areas, HQTAs and urban infill areas.

Recreational Facilities

The Envision 2 Alternative would have fewer impacts related to recreational facilities as compared to the Plan. The Envision 2 Alternative focuses on increased densities, especially in HQTAs, and limits the development of single-family housing that would be built in the region. The Envision 2 Alternative would

result in approximately 75 square miles of new land consumption, as compared with 334 square miles under the Plan, thereby decreasing the potential to disturb existing recreational facilities. However, existing urban parks would be more severely impacted under the Envision 2 alternative.

Solid Waste Disposal and Transfer Facilities

The Envision 2 Alternative would result in fewer impacts related to solid waste disposal and transfer facilities than the Plan. The Envision 2 transportation network would require a similar amount of solid waste disposal and transfer facilities during project construction. However, the growth scenario associated with Envision 2 maximizes urban centers, TODs and HQTAs; it also includes a more progressive jobs/housing distribution optimized for TOD and infill.

Energy

Because the Envision 2 Alternative would result in greater development in urban areas, the potential to disrupt or sever underground utility lines would be greater in urban areas than the Plan. The Envision 2 Alternative would result in fewer impacts related to energy than the Plan. It includes far more aggressive densities than the Plan, especially around HQTAs, increases mobility, reduces emissions, and limits the development of single-family housing that would be built in the region. More progressive jobs and housing distribution would result in more energy efficient building types, and mixed-use/walkable communities would reduce reliance on automobiles for transportation. The land use strategies under the Envision 2 Alternative would result in fewer daily VMT. By 2035, under the Envision 2 Alternative, daily VMT would be approximately 498 million miles per day, as compared to 517 million miles under the Plan. In addition, total building energy usage under the Envision 2 Alternative would be approximately 577 trillion Btu by 2035, as compared to 589 trillion Btu under the Plan.

Transportation, Traffic and Security

The Envision 2 Alternative would result in less transportation impacts than the Plan. The Envision 2 Alternative would result in 498.3 million daily VMT, less than the Plan's 517.0 million daily VMT and the VMT in the base year, making it a beneficial impact. Daily hours of delay under the Envision 2 Alternative would be 3.4 million vehicle-hours for all vehicles and 0.159 million vehicle-hours for heavy-duty trucks. Comparatively, the Plan would produce 3.1 million vehicle-hours of delay for all vehicles and 0.158 million vehicle-hours of delay for heavy-duty trucks.

The effects of growth and other external factors are included in the Regional Travel Demand Model that produces the results reported above. Because these external factors are modeled, the cumulative effects of regional growth are captured in the VMT, VHD, and heavy-duty truck VHD data reported for the Envision 2 Alternative above. The Envision 2 Alternative would have less cumulative impacts than the Plan.

Water Resources

Under the Envision 2 Alternative, fewer undeveloped areas would be impacted by excavation and construction activities related to transportation projects as compared to the Plan. The Envision 2 Alternative focuses on Transportation Oriented Development and further expansion of non-motorized transportation. Under the Envision 2 Alternative, anticipated development would result in 75 square miles (48,000 acres) of new land consumption as compared to 334 square miles (213,800 acres) under the plan, thereby reducing the amount of impervious surfaces and decreasing impacts to water resources as compared to the 2012-2035 RTP/SCS.

ENVIRONMENTALLY SUPERIOR ALTERNATIVE

Section 15126.6 of the State CEQA Guidelines requires that an "environmentally superior" alternative be selected among the alternatives that are evaluated in the PEIR. In general, the environmentally superior alternative is the alternative that would be expected to generate the fewest adverse impacts. If the No Project alternative is identified as environmentally superior, then another environmentally superior alternative shall be identified among the other alternatives.

A summary of the alternatives' impacts relative to the proposed project are shown **Table 4-19**.

TABLE 4-19: SUMMARY OF BETTER/WORSE IMPACTS BETWEEN ALL ALTERNATIVES AND THE PROPOSED PROJECT

Alternative	Better than Proposed Project	Worse than Proposed Project
Alternative 1 No Project Alternative	Noise	Aesthetics
		Air Quality
		Biological Resources & Open Spaces
		Cultural Resources
		Geology and Soils
		Greenhouse Gas Emissions
		Land Use & Agricultural Resources
		Public Services & Utilities
		Transportation, Traffic & Security
		Water Resources
Alternative 2 Modified 2008 RTP Alternative	Aesthetics	Air Quality
	Land Use and Agricultural Resources	Biological Resources & Open Spaces
		Cultural Resources
		Greenhouse Gas Emissions
		Hazardous Materials
		Land Use & Agricultural Resources
		Public Services & Utilities
		Transportation, Traffic & Security
		Water Resources
Alternative 3 Envision 2 Alternative	Air Quality	Health risk along some corridors could be greater.
	Aesthetics	
	Biological Resources & Open Spaces	
	Cultural Resources	
	Greenhouse Gas Emissions	
	Hazardous Materials	
	Land Use & Agricultural Resources	
	Population Housing & Employment	
	Public Services & Utilities	Existing Urban parks would be impacted more
	Transportation, Traffic & Security	
	Water Resources	

SOURCE: TAHA, 2011.

Of the three alternatives, the Envision 2 Alternative would be considered the environmentally superior alternative because it does not allow further use of land for single-family development. The Envision 2 Alternative concentrates development in existing urban centers around transit stations and activity centers, and therefore, has less impact on rural and undeveloped areas. The Envision 2 Alternative also has less severe impacts than the other Alternatives.