SB 375 Approach and Process Description

WORKING DRAFT

Introduction

This paper describes a preliminary approach and summary methodology for the implementation of SB 375 in the Southern California Association of Governments (SCAG) region, emphasizing the sub-regional role. Included is a statement of goals, a process overview, and specific proposed steps. The sole purpose of this overview, at this point, is to prompt discussion and seek regional consensus on the approach by fall of 2009.

SB 375 calls for the integration of transportation, land use, and housing planning, and also establishes the reduction of greenhouse gas (GHG) emissions as one of the overarching goals for regional planning. SCAG, working with the County Transportation Commissions (CTCs) and sub-regions, is responsible for implementing SB 375 in the Southern California region. Success in this endeavor is dependant on collaboration with a range of public and private partners throughout the region.

The statute describes an elaborate process with several required milestones. Nevertheless, the regional Metropolitan Planning Organization (SCAG) is afforded substantial discretion in determining the conduct of the program. This approach, and its companion detailed methodology and schedule, lay out a way that those choices can be approached for the SCAG region in order to pursue a successful first cycle of SB 375 implementation. To be clear, **the approach described herein lays out how SCAG can successfully exercise its discretion under the statute, as opposed to focusing on compliance requirements**. SCAG staff has prepared and circulated material previously that provides a detailed description of what the bill requires. Briefly summarized here, SB 375 requires SCAG as the Metropolitan Planning Organization to:

- Prepare a Sustainable Communities Strategy (SCS) as part of its Regional Transportation Plan. The SCS will meet a State determined GHG emission reduction target if it is feasible to do so.
- Prepare an Alternative Planning Strategy that is not part of the RTP if the SCS is unable to meet the target.
- Integrate planning processes, in particular assuring that the Regional Housing Needs Assessment is consistent with the SCS.
- Allow for sub-regional strategy development, and prepare a framework and a set of guidelines to guide the sub-regional effort.
- Develop a substantial participation process involving all stakeholders.

Note that the approach description that follows is not laid out in chronological or narrative format. Rather, it describes the various issue areas and key decisions under SB

375. The summary schedule in this description and the detailed schedule that accompanies it will be helpful in understanding the process in chronological order.

SCAG Region Implementation Goals

- Achieve the regional GHG emission reduction target for cars and light trucks through the SCS.
- Fully integrate SCAG's planning processes for transportation, growth, land use housing, and the environment. Seek areas of cooperation that go beyond procedural requirements, but that also results in regional plans that are mutually supportive of a range of goals.
- Build trust by providing an interactive and participatory process for all stakeholders. Provide, in particular, for the robust participation of sub-regions and CTCs in implementing sub-regional provisions of the law.
- Develop strategies that incorporate and are respectful of local and sub-regional priorities, plans, and projects.
- Comply with the provisions of SB 375.

Process

The process for implementing SB 375 in the region includes the following components:

A. Program Setup - Review and Discussion

This approach and process overview is being prepared and circulated at this time in order to prompt discussion. SCAG intends to finalize an approach in approximately September 2009. It is necessary to bring these deliberations to a close at that time in order to fully input to the State process on developing GHG emission reduction targets, and in order to finalize the framework for sub-regional activities.

B. Regional Target

SB 375 requires the development of regional GHG emission reduction targets for 2020 and 2035. At this point, SCAG is proceeding based on a reasonable, though tentative, estimate of what the region's GHG emission reduction target will be for 2020. This estimate is based on the statewide target of five million metric tons of CO2 equivalent (5 MMCO2E) included in the AB 32 Scoping Plan approved by the Air Resources Board (ARB) on December 11, 2008. As roughly half the State, both in terms of population and emissions, we can assume an approximate target of 2.5 MMCO2E for 2020.

B1. RTAC

The Regional Targets Advisory Committee (RTAC) was appointed by ARB on January 23, 2009. The RTAC's mandate, under the statute, is to issue a report on factors and methodologies to be used in the development of the target. Ventura County Supervisor

Linda Parks (SCAG's Regional Council member) represents SCAG on this committee. SCAG Executive Director Hasan Ikhrata also attends the RTAC's meetings. Other participants from our region include representatives from the Los Angeles County Metropolitan Transportation Authority, the Orange County Transportation Authority, the South Coast Air Quality Management District, the City of Los Angeles, the City of Ontario, and the University of Southern California. SCAG intends to coordinate with these individuals. SCAG's anticipated participation and interest in the RTAC process is, at this time, twofold: 1) to maintain a target for the region and State that is ambitious but reasonably achievable. We believe that this goal is best supported by maintaining the estimated target of 5 MMTCO2E established in the Scoping Plan; and 2) to establish a reasonable and equitable baseline against which targets will be measured (discussed further below).

B2. Proposed/estimated regional target

The law allows for a region to propose a target prior to June 2010. SCAG intends to utilize this option, and, in order to do so, SCAG will prepare a preliminary version of its 2012 Regional Transportation Plan (RTP) growth forecast prior to the June 2010 deadline. The forecast will follow the process used in previous cycles, including the development of a technical trend, extensive local and sub-regional input, and the development of a baseline forecast incorporating local input. The proposed regional target will be based on the aggregated local plans and development in process that reflect the region's work on Compass Blueprint and similar "smart growth efforts" over the past several years.

B3. Final Regional Target

The final regional emission reduction target will be issued by the ARB in September 2010.

C. Sub-regional process

SCAG will encourage active sub-regional and CTC participation in its SB 375 activities up to and including developing the SCS as described in the law. The law calls for the development of a framework and a set of guidelines to set the parameters for the sub-regional SCS/Alternative Planning Strategy (APS). As part of the regional framework SCAG intends to propose sub-regional emission reduction targets for use in the sub-regional strategy development if needed. These targets are necessary in order to ensure that strategies developed at the local and sub-regional level can, when aggregated, allow the region to meet its target.

At this time, it is not certain how many sub-regions, if any, will prepare the sub-regional SCS as allowed under SB 375. Several sub-regions likely will not do so, due to resource or capacity limitations. As such, the regional approach must be prepared to accommodate a mix of sub-regions preparing the SCS in some places and SCAG developing strategies in collaboration with the sub-region in other places.

C1. Sub-regional targets

Sub-regional targets are necessary in order to allow that, when aggregated, the regional strategy can achieve the regional target. Shares of the regional target will be expressed in terms of GHG emission reductions, either in absolute terms or per capita. It is imperative to develop targets that can be aggregated such that they contribute to the region attaining the target. The Preliminary Strategy ("Conceptual Land Use Scenario"), as further described in Section D below, will be the technical basis for initial sub-regional targets.

Any target developed at this stage will be tentative, and will be subject to intensive discussion between and among the 14 sub-regions. Sub-regional targets are to be considered as a goal for each sub-region in approaching its own planning process, in that each sub-region should endeavor to achieve the target, if it is possible to do so.

C2. Sub-regional role

Those sub-regions that develop a Sustainable Communities Strategy (SCS) will do so with the intent of achieving the sub-regional share of the regional emission reduction target. This strategy will consist of all the factors identified in the law, focused on a land use pattern and growth distribution, paired with existing and planned transportation infrastructure.

The precise sub-regional role will become further defined based on discussions with the sub-regions prior to September 2009. It is anticipated that the sub-regions will serve as a convener/facilitator among its member jurisdictions and other stakeholders within the sub-region's planning area. The sub-regions will host and facilitate workshops for SCS development, will collaborate with SCAG on developing an information base for use in planning tools, and will seek consensus on an SCS for its area. The sub-region's governing board will adopt an SCS prior to submittal to SCAG. The sub-region's role includes complying with terms established in the sub-regional framework and guidelines.

C3. SCAG role in sub-regional process

SCAG will assist the sub-regions by making available technical tools for scenario development. SCAG will compile resultant regional strategies, measure the results, and submit a regional SCS to ARB. These roles and options for SCAG's involvement in the sub-regional process will be further developed and negotiated with sub-regions as part of the framework and guidelines preparation. In addition, the framework will address intraregional land use, transportation, economic, air quality and climate policy relationships as required in SB 375. Upon submittal of sub-regional strategies, SCAG will compile and integrate those strategies with the regional SCS for submittal to ARB. SCAG will assure that the sub-regional process is consistent with the overall regional approach established in the framework and guidelines.

C4. SCAG role without sub-regional process

In sub-regions that do not prepare an SCS, SCAG will prepare the strategy. In these cases, SCAG, in collaboration with the sub-region, will convene iterative workshops, engage in scenario planning exercises, and develop and vet alternatives that lead to the best growth distribution, transportation network, and set of policies for the sub-region. In so doing, SCAG will work directly with cities, counties, CTCs, and stakeholders to identify opportunities to reduce GHG emissions.

C5. CTC role in sub-regional process

SB 375 states that sub-regions preparing an SCS and/or APS may collaborate with the CTC in their county. SCAG encourages full and active participation of CTCs in order to best match the land use and transportation components of the sub-regional strategy.

C6. Sub-regional commitment and timeline

SCAG will require the commitment by approximately September 2009 for any given sub-region wishing to develop its own strategy. The regional guidelines will establish a detailed timeline for sub-regional work to proceed. The core component of the sub-regional effort will consist of an interactive, consensus building process to develop the SCS. This is anticipated to begin in October 2009.

D. Preliminary Strategy(ies) ("Conceptual Land Use Scenario")

SCAG can begin the process of compiling the components of a conceptual scenario using currently available planning scenarios as a starting point. SCAG developed several growth distribution scenarios for the 2008 RTP and its associated Programmatic Environmental Impact Report (PEIR). SCAG will use this past experience and lessons learned as the starting point in the process to develop a Conceptual Land Use Scenario for informational purposes. Initial scenarios prepared at this time serve three purposes, 1) to demonstrate the range of possible reductions from land use as one element of an SCS, 2) to establish a technical basis for regional and sub-regional targets, and 3) to encourage the region in a dialogue on policy options to comply with SB375..

Any scenario developed for use in the eventual regional SCS will be considered draft and will be subjected to numerous rounds of review, input, and revision. At this time SCAG intends to develop a scenario that will demonstrate the extent of GHG reductions possible through an aggressive, though feasible, regional strategy. The scenario developed at this stage will be available in March, and will use growth scenarios developed for the 2008 RTP and PEIR as a starting point. The preliminary scenario will not redistribute growth across county lines, and will shift growth at the local level by a maximum of 10%. If necessary, additional scenarios can be developed.

E. Sustainable Communities Strategy

The SCS is the centerpiece of SB 375. It calls for eight elements, described in statute, and is required to be part of the RTP.

E1. Major Components of SCS

In essence the SCS is built around three components, that would typically be included in an RTP, and that work in concert to reduce GHG emissions. These components are

- Growth Distribution and Land Use

The growth distribution, for SCS purposes, is the adopted growth forecast used for the RTP. SB 375 requires that this forecast be developed in such a way that it incorporates policy elements, or interventions, that reduce trips and emissions compared to the baseline scenario.

- Transportation Network

The transportation network consists of the existing and planned transportation projects. SB 375 requires that these projects be "consistent" (with some exceptions based on grand fathering provisions in the law) with the SCS. In other words, the development of the future transportation network should proceed in such a way that it serves the anticipated growth strategy and distribution reflected in the SCS.

- Transportation Policies

In addition to transportation projects, the RTP contains policies such as Transportation Demand Management (these include ride sharing, smart shuttles, preferential parking, etc). Theses policies can be layered with the other two major elements of the SCS in order to achieve additional reductions. It is anticipated that TDM will be of particular use in locales that do not have substantial existing or planned transit infrastructure.

E2. Sustainable Communities Projects (CEQA Streamlining Provisions)

The SCS will reference the statutory provisions for Sustainable Communities Projects that may access California Environmental Quality Act (CEQA) streamlining provisions. In addition, the SCS will identify specific locations where Sustainable Communities Projects may be located.

E3. Transportation Provisions

SB 375 creates an implicit requirement that transportation projects be consistent with the newly developed SCS. At the same time, a number of projects are grandfathered, meaning they do not need to be consistent. While the grandfathering provisions are

clearly spelled out in the law, making these provisions operational in the SCS and RTP development processes will be difficult.

Many transportation projects submitted for the 2012 RTP will not be covered by grandfathering provisions, and therefore, it will be necessary to determine and define consistency with the SCS. SCAG must work with CTCs to create a workable definition of consistency and a process for evaluating projects, either individually or as part of a larger system. This may involve SCAG providing guidance to the CTCs for their own project selection processes. Consistency will likely be based around broad principles such as a transportation project provides service to the projected growth and development pattern embedded in the SCS. It should be clearly noted that, at this stage, it is unclear whether SB 375 requires the consistency evaluation of individual projects as opposed to the whole transportation network or a subset of the network. SCAG is hopeful that this issue can be clarified as part of the discussions of the Regional Targets Advisory Committee described above.

E4. Alternatives

As with the 2004 and 2008 RTP and PEIR processes, the development of the growth distribution for the SCS will be compiled to produce a range of alternatives based on the relative aggressiveness of land use and related policies. These alternatives will be integrated through the RTP development and PEIR process for the 2012 RTP. The recommended or preferred alternative will be selected based on the ability to meet the GHG emission reduction target and on feasibility.

F. Methodology

Methodologies for SB 375 implementation consist of the following elements, which are described briefly below. A more detailed description of these elements has been prepared by SCAG staff and will be circulated for review and discussion (attached here as appendix), over the same time frame for finalizing the approach and process.

F1. Framework

SB 375 methodologies exist in tandem with outreach, procedures, and the iterative scenario development process described in this paper. The purpose of the methodologies is to provide a sound and usable analytical framework for planning and scenario development, taking into account the need for a broad range of parties to be meaningfully engaged.

F2. Methodology Overview

The regional methodology for SB 375 processes relies on measuring and analyzing the emissions impacts of the regional SCS, which is composed of a combination of regional and sub-regional strategies. In order to accomplish this overarching requirement, SCAG must pursue enhancements to existing processes, data, and methodologies used for

growth forecasting and RTP development. These improvements include (but are not limited to) new tools described below, additional public process based around workshops, updated data sets particularly for General Plans, and newly established sub-regional strategy development procedures.

F3. Assumptions

Assumptions include the description of the base year, baseline, and various inputs to the transportation model and other technical tools. Assumptions are distinct from actual elements of the strategy, but will impact the results in terms of emission reductions.

Base year and baseline are the most critical assumptions for SB 375 purposes. The base year for the 2012 RTP will be 2008. From this base year, a baseline of growth forecast and associated land use and transportation projects must be first developed.

Assumptions relative to the policy scenario (SCS) would be developed based on:

- existing general plans (reflecting Blueprint-type policies and projects);
- additional SB375 Blueprint-type projects (not reflected in currently adopted general plans, but anticipated by local governments);
- future transportation investments (not in baseline);
- RHNA; and
- regional strategies (transportation demand management (TDMs); pricing, etc.)

F4. Data

Extensive data is required for strategy development and modeling under SB 375. Much of this data is required for SCAG's typical process in RTP, RHNA, and growth forecast development, including population, employment and housing. For SB 375 purposes, it is of additional importance to have full and up-to-date information on existing zoning, land use, general plans, resource areas, and Compass Blueprint projects.

F5. Technical tools

For SB 375 purposes, SCAG intends to use both existing tools, with several enhancements, and newly developed tools. SCAG currently uses a Trip-Based Regional Transportation Demand Model and ARB's EMFAC model for emissions purposes. For purposes of identifying additional emission reductions associated with smaller scale land use strategies, SCAG will conduct analysis using a 4-D tool. SCAG is committed to developing two additional tools – a Land Use Model and an Activity Based Model – to assist in strategy development and measurement of outcomes under SB 375.

F6. Scenario Planning Tool

In addition to modeling tools, which are used to measure results of completed scenarios, SCAG will create a scenario planning tool, which is intended to provide real-time

feedback in a workshop setting as scenarios are being created with jurisdictions and stakeholders. The GIS-based tool developed will be made available to sub-regions and local governments for their use in sub-regional strategy development. This tool is intended to accomplish the following

1) help end users, including planners, policy makers, and the public visualize their thinking process as related to various land use strategies, and see the effects of certain policy choices "on the ground";

2) produce instant results estimating VMT and emission reductions based on combinations of policies related to land use (density, intensity, etc), transportation infrastructure, and transportation policy.

3) be scalable to various geographic levels, and capture/maximize the GHG benefits at much small geographic areas as result of community design, mode choice changes, and any other decisions made by stakeholders in a given location.

F7. Calculating VMT and GHG Emissions Reductions

SCAG will use the tools described above in combination to estimate VMT and GHG emissions reductions.

F8. Additional Reports / Impact Analysis

- Economic Impact Analysis

As in the previous RTP development process, SCAG will conduct and provide an economic impact analysis for the RTP and its major policy components. For the 2012 RTP and SCS, the economic impact analysis/report will focus on the regionwide employment, income, economic output, and productivity impacts from major policy components. SCAG will also prepare analysis to measure the impact of the RTP and SCS on local government finance.

- Environmental Justice Analysis

An EJ analysis/report has been prepared for each RTP since 1988. The goal of the Environmental Justice Analysis is to ensure that RTP and its major policies will not cause disproportionate impacts, both negative and positive, to minorities, low income people, and other EJ populations at a range of geographic levels.

- Environmental Impact Report

As required by CEQA, a Programmatic Environmental Impact Report will be prepared on the 2012 RTP, including an analysis of the potential impacts of the Sustainable Communities Strategy.

G. Outreach process

SCAG will create, as required by the law, amendments to its Public Participation Plan in order to incorporate the workshops and hearings called for.

SCAG's outreach approach will include the following additional elements:

G1. Forecast development and local input

As in prior RTP planning cycles, SCAG will conduct extensive outreach in the development of a baseline and regional policy forecast. This outreach will include opportunities for each local jurisdiction to review data, make corrections, and to inform SCAG and sub-regional staff on local circumstances affecting growth.

G2. Outreach team

SCAG will convene and facilitate a series of outreach teams comprised of elected officials and experts. One team will be created for each County, as well as a regional umbrella team. The role of this team will be to work with sub-regions, cities, counties and stakeholders to promote dialogue on the development of strategies.

G3. Stakeholder groups

SCAG will convene independent groups for the purpose of providing a consistent flow of information to interested parties. At this time, SCAG intends to form a business/private sector roundtable for this purpose, and other groups may be considered as need arises.

G4. Presentations/dialogue on request

SCAG will make every attempt to give presentations and attend meetings with members and stakeholders throughout the region.

G5. Scenario planning/Workshops

The development of an SCS requires optimization of three major variables – the growth and development pattern, the transportation network, and transportation policies. As such, SCAG intends, in convening workshops as required in the statute (and above and beyond as necessary), for scenario planning exercises that will demonstrate the interplay and potential results of policy changes in each of these three areas. This will lead to tentative strategy decisions as an outcome of each workshop, and will prompt an iterative process that allows for alternative strategies to be developed, tested, and adjusted based on the concerns of participants.

H. Schedule

A detailed schedule has been prepared, and will be circulated as part of the review and discussion process on the overall approach. The major milestones embedded within that schedule are:

PHASE I – PROGRAM SETUP

- 9/30/2009 – RTAC's report due to ARB
- 9/2009 – Finalization of SCAG SB 375 approach
    - Framework and guidelines
    - Methodologies
    - Approach
    - Public Participation Plan
- 9/2009 Preliminary Growth Forecast to inform regional target

PHASE II – GREENHOUSE GAS TARGET DEVELOPMENT

- 10/2009 - SCAG holds at least one public workshop
- 10/2009 to 6/2010 – Workshops to develop proposed regional target
- 9/30/2010 - ARB issues final GHG targets

PHASE III – DRAFT SCS/RTP DEVELOPMENT

- 6/2010 to 5/2011 – 16 workshops (by county) to obtain input for the draft SCS/APS
- 11/2011 - release draft RTP/SCS for public review

PHASE IV – FINAL SCS/RTP DEVELOPMENT AND APPROVALS

- 6/2011 to 2/2012 - 3 public hearings and 6-12 informational meetings for elected officials
- 4/2012 – Regional Council adopts RTP/SCS, and APS if necessary
- 6/2012 - ARB review

APPENDIX

SB 375 TECHNICAL METHODOLOGIES

WORKING DRAFT

SUB-REGIONAL SCS DEVELOPMENT

As set forth in SB 375, SCAG will develop Framework and Guidelines for sub-regional SCS development. The discussion below is intended to provide a starting point for dialogue with sub-regions and stakeholders relative to the sub-regional Framework and Guidelines.

Framework

The framework for developing sub-regional SCSs and greenhouse gas (GHG) reduction targets considers analytical methods and participatory processes. As described in more detail below, an overall framework and process for developing draft sub-regional SCSs will consider:

- Methodologies
- Sub-regional Plan/SCS
- Single Regional Model Run
- Iterative Feedback Between Regional Model Run and sub-regional Targets
- Stakeholder Participation
- Schedule

Methodologies

SCAG has in place existing methodologies for RTP development associated with growth forecasts and distribution, transportation network development, and transportation and emissions modeling. The provisions of SB 375 integrate these and other planning functions (e.g. RHNA) and require that SCAG revisit and update these methodologies as applicable in order to assess the implications of key policy options and develop an SB 375 compliant RTP.

Specifically, in order to propose regional and sub-regional GHG targets, develop a regional SCS based on aggregated sub-regional SCSs, and analyze the emissions impacts of various SCS scenarios, there are a number of assumptions, data, technical tools, and analytical methodologies that need to be refined or developed. The development of these methodologies will be part of the discussions and outreach process as described by the Public Participation Plan.

Assumptions

In order to analyze the 2020 GHG reductions attributable to an SCS, assumptions relative to land use, housing, transportation projects, and regional policies must be made. This includes determining what constitutes baseline growth and projects versus the growth and projects associated with Blueprint strategies and for which credit can be taken in an SCS. The base year for the 2012 RTP will be 2008. From this base year, a baseline of growth forecast and associated land use and transportation projects must be first developed. The methodology for developing these assumptions is to identify for each jurisdiction within a sub-region:

- existing zoning;
- build-out in 2020 without Blueprint strategies; and
- programmed transportation projects (RTIP projects)

Assumptions relative to the policy scenario (SCS) would be developed based on:

- existing general plans (reflecting Blueprint projects);
- additional SB 375 Blueprint projects (not in general plans);
- future transportation investments (not in baseline);
- RHNA; and
- regional policies (transportation demand management (TDMs); pricing, etc.)

Other relevant assumptions for analyzing GHG emissions include auto operating costs (including fuel price), employment, households, etc.

Definition of Baseline

Defining an appropriate baseline, against which emission reduction strategies will be measured, will be of critical importance. The baseline should account for likely conditions in the absence of policy intervention, allowing the region and its jurisdictions to take credit for steps already begun that reduce trips and emissions. The baseline for the 2012 RTP will be a future projection based on extrapolation of a trend established from recent years. SCAG is in the process of preparing analytical work for the purpose of determining the outcomes of the baseline scenario, as well as build-out of existing General Plans. This current effort will assist SCAG in refining our understanding of baseline-related issues and in recommending the most appropriate baseline for our region.

Data

Relevant data for growth forecasting, scenario development, and transportation model inputs include:

- 2000 Census + annual ACS
- population (DOF)
- employment (EDD)
- existing land use
- existing zoning
- general plans
- additional Blueprint projects
- base year transportation inventories
- baseline transportation inventories

SCAG's integrated growth forecast process, along with the SB 375 outreach requirements to be set forth in the updated Public Participation Plan, will ensure these data are up-to-date and accurate. This process is based on comprehensive input from local jurisdictions and other relevant stakeholders.

Technical Tools

Existing Tools

Trip-Based Regional Transportation Demand Model

Until such time that activity-based models are developed and validated to be used for RTP purposes, SCAG's existing trip-based regional transportation demand model represents the current state-of-the art. Though SCAG's existing trip-based model is the most comprehensive in use, SCAG has a work plan to institute model improvements and enhancements over the next

two years. The major efforts include updates to the mode choice model, heavy duty truck model, and transportation networks.

The trip-based regional transportation demand model includes four steps:

- Trip Generation - how often to people travel; how many workers are drawn to a given employment center
- Trip Distribution - where persons travel to work, school or shopping
- Mode Choice - how many persons drive alone, share a ride or take transit
- Trip Assignment - what routes travelers use and how much congestion results

The model calculates VMT, speeds, and other performance variables at the transportation analysis zone (TAZ) level. The TAZ system is consistent with both the 2000 census geography and existing sub-regional TAZs. There are 4,109 TAZs in the SCAG region (compared to 3,310 census tracts in the region).

4-D Analytical Tool

To account for travel behavior below the TAZ level of analysis used in the trip-based regional transportation model, the 4-D analytical tool is used to calculate the effects of land use on auto ownership and household trip-making at small geographic areas. 4-D refers to: density (households per acre); diversity (jobs/housing ratio); design (pedestrian environment factor); and destination (regional transit accessibility). Adjustment factors based on the 4-D analysis can be applied to the regional model outputs prior to running the emissions model. The separate step applying the 4-Ds procedure is necessary to estimate non-motorized trips (walk and bike) within TAZs, which will help demonstrate reduced GHG emissions.

Scenario Planning Tools

One of the innovative tools in SCAG's Compass Blueprint Suite of Services available to member jurisdictions is a land use scenario building tool. This tool is an ArcGIS-based modeling and evaluation application that enables visualization and evaluation of growth scenarios. SCAG is currently updating this tool, including integration with the 4-D analytical tool, with the goal of providing a comprehensive yet easy-to-use method for local jurisdiction scenario planning and GHG/VMT impact analysis. The tool is intended to be used in a workshop setting as scenarios are being created with jurisdictions and stakeholders. This tool is intended to accomplish the following:

1) Help end users, including planners, policy makers, and the public to visualize their thinking process as related to land use strategies;

2) Determine approximate real-time results in emission and VMT reductions based on combinations of policies related to land use (density, intensity, etc), transportation infrastructure, and transportation policy.

3) Be scalable to various geographic levels, and capture/maximize the GHG reduction benefits at small areas as result of community design, mode choice changes, and any other decisions made by stakeholders in a given location.

EMFAC 2007

The ARB's EMFAC model (short for Emission FACtor) is a computer model capable of estimating both current year, as well as back-cast and forecasted inventories for calendar years 1970 to 2040. EMFAC estimates the emission rates of 1965 and newer vehicles, powered by gasoline,

diesel or electricity. Emissions inventory estimates are made for over one hundred different technology groups and are reported for ten broad vehicle classes segregated by usage and weight.

EMFAC calculates the emission rates of HC, CO, NOx, PM, lead, SO2 and CO2 for 45 model years for each vehicle class within each calendar year, for twenty four hourly periods, for each month of the year, for each district, air basin, county and subcounty in California. EMFAC can report the gram per mile emission rates of a single technology group or the ton per day inventory for the entire 28,000,000 vehicle California fleet.

To determine regional and air basin emissions, SCAG runs the ARB's EMFAC model using the outputs from the trip-based regional transportation demand model.

New Tool Development

Land Use Model

Land use models are intended to predict economic activity over a geographic space, such that land uses associated with economic activity can also be predicted. The effects of transportation policies and land use policies interact with feedbacks in an integrated transportation and land use model set. The development of a land use model would replace the 4-D tool described above and provide for more refined analyses of SCS scenarios. SCAG is in the process of developing a land use model, as are other MPOs and entities within the State.

Activity-Based Model

Activity-based travel demand models are based on the concept that the demand for "daily-life" activities produces the demand for travel. This approach predicts passenger trip travel demand based on assumptions of travel behavior and, unlike the trip-based model, takes trip chaining (e.g. home to work to day care to home) into consideration. The development of activity-based transportation model would replace the 4-D tool described above and provide for more refined analyses of how land use strategies described in the SCS scenarios would affect behaviors in auto ownership and usage, mode choice, and trip making decisions, etc.

An activity-based model will not completely replace the trip-based model. An activity-based model will create origin and destination (O&D) tables for passenger trips that replace the trip generation, trip distribution and mode choice for these trips in the trip-based model. O&D tables for other trips such as heavy-duty trucks, airport ground access trips, and trips into and of the region, would be combined with the passenger O&D from the activity-based model and then run through the trip assignment model.

Calculating VMT and GHG Emissions Reductions

Based on the tools discussed above, the general steps for calculating VMT and GHG emissions are:

1. Prepare model inputs (socioeconomic data, transportation networks, etc.) through sub-regional SCS and regional RTP development processes.

2. Run the regional transportation model to calculate VMT, speeds, and other performance variables at the TAZ level.

3. Use the 4-D technical tool as applicable to estimate VMT changes from land use below TAZ (intra-zonal) level and apply to the regional model outputs.

4. Run EMFAC model for baseline and SCS scenarios for the appropriate milestone years. GHG emissions will be calculated based on ARB methodology for converting EMFAC emission outputs to CO2 equivalent emissions.

Sub-Regional VMT and GHG Emissions Reductions

By comparing the baseline with the preliminary Conceptual Land Use Scenario, the regional GHG emission reductions and corresponding VMT at the TAZ level can be determined. Based on this analysis, SCAG will provide draft sub-regional GHG targets and corresponding VMT by aggregating the TAZ level data to the sub-regional level. The sub-regions will use these targets as a basis for developing their respective SCSs. SCAG will assist those sub-regions that do not have the resources or choose to not prepare a sub-regional SCS.

SCAG will use the assumptions from each sub-region SCS to perform a single regional transportation demand model run and analyze the results relative to the regional GHG target. In the event that the regional target is not met, SCAG will analyze the sub-regional SCSs against the sub-regional targets and provide the results to the sub-regions for development of revised SCSs as necessary.

Regional SCS/RTP

In addition to developing sub-regional Framework and Guidelines, SCAG will also work with stakeholders to ensure that the integration of sub-regional and regional land use policies, growth forecasts, transportation demand management strategies, and transportation improvements into an overall regional smart growth strategy that meets all applicable state and federal requirements. These include state and federal transportation planning regulations, federal transportation conformity regulations, and SB 375 requirements.

Accompanying Analysis/Report for SCAG Region RTP/SCS

- **Economic Impact Analysis**

  As in the previous RTP development process, SCAG will conduct and provide an economic impact analysis for the RTP and its major policy components. For the 2012 RTP and SCS, the economic impact analysis/report will focus on the regionwide employment, income, economic output, productivity impacts, and local government finance from impacts of major policy components, such as:

  1. Infrastructure investment
  2. Growth reallocation toward transit stations/corridors and centers
  3. Fuel consumption, VMT savings
  4. Criteria pollutants and GHG emissions
  5. Time savings and congestion relief

  To accomplish this, SCAG will continue to develop and acquire the most update Input-Output Model and other socio-economic impact/projection models such as REMI.

- **Environmental Justice Analysis**

An EJ analysis/report has been prepared for each RTP since 1988. The goal of the Environmental Justice Analysis is to ensure that RTP and its major policies will not cause disproportional impacts, both negative and positive, to minorities, low income people, and other EJ populations at a range of geographic levels.

- **Environmental Impact Report**

  As required by the California Environmental Quality Act, a Programmatic Environmental Impact Report will be prepared for the 2012 RTP, including an analysis of the potential impacts of the SCS.