MEMORANDUM

TO:	**California Air Resources Board**
FROM:	**John Doughty, Executive Director; AMBAG**
SUBJECT:	**Scenario Testing for Regional GHG Target Setting Pursuant to RTAC Recommendations under SB 375**
DATE:	**August 2, 2010**

Introduction

What follows is the first of two documents which AMBAG is submitting to CARB preceding the September 23rd regional GHG targets adoption deadline.

This first document contains scenario modeling results, methodology and responses to the questions CARB presented to MPO planning directors at the June 1st, 2010 meeting.

The second document will be a formal, AMBAG Board approved comment on the final target issued by CARB staff in the August 9th report. The August 9th deadline for submittal of regional GHG targets poses a challenge for AMBAG in that our next Board meeting is not scheduled until August 11th. This final comment from AMBAG will be issued prior to the September 23, 2010 hearing.

While AMBAG recognizes CARB will not be revising regional GHG targets until 2018 or 2014 at the earliest, AMBAG staff may recommend a revised target to the AMBAG Board in January of 2011 based upon further model sensitivity analysis in fall of 2010 which will allow staff to employ key model improvements. It is our expectation that we will be in a position at that time to open a discussion with our Board regarding a more ambitious target for the Monterey Bay Area than what our current modeling results suggest.

AMBAG's MTP/SCS Timeline

AMBAG staff are currently planning for a June 2012 MTP/SCS adoption deadline, and plan to begin work on the Sustainable Communities Strategy in October of 2010.

Responses to Questions Presented on June 1, 2010

The following comments respond to the questions CARB presented to MPO planning directors at the June 1, 2010 meeting.

1. If you were to fully account for the impact of the recession in your region, how would the % reductions in GHG per capita numbers change for each scenario in 2020?

As the Monterey Bay Area Regional Forecast was recently completed in 2008, the methodology incorporated an anticipated economic slowdown for the region. Each of the scenarios is based upon this forecast and account for the impact of the recession to a certain degree. Additionally, our MTP was completed in the past few months such that forecasted revenues also account for impacts of the recession. Since the recession is not over, there is no way to "fully account" for it. Given that the forecast is long-term, there will be variations over time in economic activity in the region. AMBAG's forecast is predicated on slow to moderate growth with significant quarterly volatility in employment but generally modest growth over the long-term.

a. In what ways has the recession affected your region (eg. population, jobs, unemployment, new development, foreclosures, vacancy rates, etc)?

The Monterey Bay Area's economy is built on two major foundations: agriculture and tourism. While there are other industries in our area, agriculture is a fundamental component of activity, with largely steady demand for commodities. The Monterey Bay Area's tourism economy is largely influenced by our neighbor to the north - the Bay Area. For example, a rigorous analysis between the AMBAG and ABAG regional retail sales activity from 2003 to 2008 showed a very strong correlation between the two regions ($r = 0.91$). Both have shown a 6% decline in retail sales activity from 2007-2008 with an estimated 9% decline from 2008-2009.

Other economic indicators for the Monterey Bay Area are as follows:

The region has seen a decline in net job flow in recent years – from 15,000 in 2007 to less than 7,000 in 2008. By industry, notable losses in earnings are seen in the Public Administration Industry ($5m per quarter on average in 2008), which constitutes 6% of total employment in the region. In terms of new development, housing permits issued have dropped considerably from over 5,000 in 2007 to 1,500 in 2008 to just over 500 in 2009. A trend toward the construction of single family homes has accompanied this overall decrease in permits issued. Additionally, while fair market rents surged from 2007-2008, real estate listings throughout this region have shown substantial price cuts in both coastal and inland areas. Finally, most recently the region has clocked a 15% unemployment rate.

b. If you have already included the impact of the recession, where is it reflected in your scenario data?

As mentioned above, it is reflected in our 2008 Forecast, which is the foundation for each of our scenarios.

2. What factors cause the reductions in 2020 to be different from 2035, and where do they show up in your data?

The Monterey Bay Area's growth from 2005 to 2035 will occur primarily in the first half of that period of time, leading up to 2020. By 2020, the region's total Vehicle Miles Traveled is forecasted to increase by 43%, and by 2035, by 60%. The region's population is forecasted to grow 14% by 2020 and 25% by 2035. As, such, the largest increase in per capita GHG will occur on the earlier end and will slow down from 2020 to 2035. Additionally, major benefits reaped from long term land use changes will take some time and can realistically only be expected to take effect in the latter half of the 2005-2035 time period.

3. What model improvements, changes in planning assumptions, or additional policies are you considering that were not used in developing your scenarios? How will they impact the direction and/or magnitude of change?

The (pre) August 9th deadline comes at a time when AMBAG, much like many other small and mid-size MPOs, has limited modeling capacity. We are currently implementing our Model Improvement Plan under a Proposition 84 grant from the Strategic Growth Council which will include substantial improvements to our modeling tools. This will include transit and mode choice model adjustments to our four step travel demand model and development of a 5D post-processor tool which will be completed by October 1, 2010. Long term model improvements include developing a parcel level socio-economic data set to allow for more granular land-use transportation modeling.

As a result, for the purposes of meeting CARB's deadline, we will be submitting regional GHG targets based upon four Regional Blueprint Scenarios. The four scenarios were developed in concert with all member agencies in Monterey, San Benito and Santa Cruz Counties. Each of the four scenarios are based upon land use measures and do not consider adjustments to the transportation system as adopted in the 2035 MTP.

As AMBAG develops a Sustainable Communities Strategy per SB 375 in late 2010 through early 2011, we will examine a variety of adjustments to the region's transportation system in conjunction with land use measures. As such, the regional GHG modeling results we are presenting at this time are modest.

Regional Travel Demand Model – Areas of Improvement

AMBAG maintains a conventional 4-step Regional Travel Demand Model (RTDM) covering Monterey, Santa Cruz and San Benito counties. The AMBAG RTDM also includes Santa Clara County's transportation model, developed and maintained by the Valley Transportation

Authority, to better predict regional travel demand. The existing AMBAG RTDM was developed and calibrated for the base year 2005 and has forecasted data for the year 2035 to meet federal, state, and regional agencies' transportation planning requirements.

AMBAG RTDM is a regional model and was developed to meet the MPO's regional travel demand forecasting and air quality conformity analysis requirements. Due to financial limitations and lack of specific transit data as well as other information required for various scenario analyses, the model's sensitivity to the following variables has not been developed and tested:

1. Land use characteristics such as mixed land uses, transit oriented development, infill development projects and pedestrian accessibility and their impact on vehicle trips, vehicle miles travel and greenhouse gases

2. HOV lane/toll roads, congestion pricing, parking cost, implementation of ITS or traffic management projects

3. Transit projects analysis such as new start/small start projects, increase/decrease service, fare changes and transit facility improvements as well as transit accessibility

4. Changes in fuel prices

5. Vehicle fleet, auto operating cost

6. Truck/freight modeling

7. External-External, External-Internal/Internal-External trips

8. TDM Strategies

9. Goods movement

Transportation modeling improvements are currently underway as outlined in our Transportation Model Improvement Plan. These include substantial improvements such as the inclusion of transit and mode choice model adjustments to our four step travel demand model, parcel level socio-economic data, and development of a 5D post-processor tool.

4. Have the sensitivities of your model changed since the 2009 Model Evaluation Survey conducted for RTAC? If yes, please explain why (ie. Are you using any new models or postprocessors to develop your scenarios that were not evaluated during the RTAC Survey?)

No, the RTDM we have used for these scenarios is the same version evaluated in 2009.

5. Did you add, remove or change the level of deployment of any transportation projects or programs in your scenarios? If so, what type of projects or programs?

No, we did not make any adjustments to our transportation projects or programs in our scenarios.

6. Please provide calculations of Vehicle Miles Traveled per capita as well as Greenhouse Gas Emissions per capita in reporting results of the evaluation of your adopted RTP and alternative scenarios.

Methodology Overview

In developing Regional Blueprint Scenarios we utilized four major tools/analyses:

1. Conducted a Population, Housing and Employment Forecast for the year 2035
    - extensive input from local planning staff
    - water constrained

2. GIS analysis – Identification of Blueprint Priority Areas
    - City and County general plans
    - spheres of influence
    - annexation areas
    - preservation of agricultural land
    - transit developments
    - extensive input from local planning staff

3. Regional Travel Demand Model
    - adjusted the housing unit, employment and automobile ownership rates by TAZ for each scenario

4. EMFAC2007 Model
    - adjusted vehicle population for each of the three counties in the North Central Coast air basin to conduct **sub-area** model runs based on scenario results from the RTDM and after accounting for interregional travel

Scenarios & Modeling Results

Of the four Blueprint Scenarios, the first is the adopted 2035 Forecast which underlies the current 2035 MTP for the Monterey Bay Area. For Scenarios 2 through 4, an increasing amount of total housing and jobs are located in Blueprint Priority Areas which were identified through a GIS intensive selection process.

Criteria for selecting Blueprint Priority Areas included proximity to planned light rail and bus rapid transit stops in Monterey County; proximity to potential future light rail or bus

rapid transit stops in Santa Cruz County; areas with high density General Plan Land Use designations; and other locally proposed or planned projects exhibiting compact and smart development characteristics. Each of the region's eighteen cities has an area included in the Blueprint Priority Areas; they were identified with thorough input from local planning staff. The TAZs falling within the identified Blueprint Priority Areas were then selected and adjusted to reflect an increasing number of housing units and employment for each scenario, with a focus on achieving a jobs-housing balance within the Blueprint Priority Areas.

Throughout this process, we worked very closely with local planning staff, a Blueprint Policy Group and a Technical Working Group to identify the Blueprint Priority Areas. This involved regular group meetings and one on one discussions to further refine the selection process.

Based upon AMBAG's adopted 2008 Regional Forecast, the region expects to see an additional 70,029 housing units and 77,980 jobs by 2035, bringing the region's total up to 327,877 housing units and 404,320 jobs by 2035.

As shown in the following table, in the 2035 Forecast, 47% of these additional housing units and 65% of the additional jobs will be located in Blueprint Priority Areas. Scenario 2 brings these figures to 65% and 45% respectively to achieve a jobs housing balance; Scenario 3 brings them up to 75% and 55%; and Scenario 4 brings them up to 90% and 70%, respectively. As the Blueprint Priority Areas increase in density, the daily pounds of C02 per capita decreases.

Scenarios	**% Change from 2005 in Daily Pounds Per Capita GHG (CO2)**		**Daily Pounds Per Capita GHG (CO2)** (1 ton = 2000 lbs)			**% New Housing Units in Blueprint Priority Areas**	**% New Employment in Blueprint Priority Areas**
	2020	**2035**	**2005**	**2020**	**2035**		
2035 Forecast	+12.6%	+13.7%	14.08	15.85	16.01	47%	65%
Scenario 2	+9.0%	+9.8%	14.08	15.35	15.47	65%	45%
Scenario 3	+3.7%	+4.0%	14.08	14.60	14.64	75%	55%
Scenario 4	+1.0%	+1.1%	14.08	14.22	14.23	90%	70%

Regional GHG Target Setting

In the June 24th CARB staff report, we were given a placeholder target of "the most current greenhouse gas per capita projections" for 2020 and 2035.

After accounting for interregional travel and isolating the selected vehicle classes (LDA, LDT1, LDT2, MDV), this figure stands at 15.85 daily pounds of CO2 per capita in 2020 and 16.01 in 2035, a 12.6% and 13.7% increase from 2005 per capita levels respectively.

Out of three additional Regional Blueprint Scenarios, the most aggressive brings the per capita level down to 14.22 daily pounds of CO2 per capita by 2020 and 14.23 by 2035, a 1.0% and 1.1% increase respectively.

While this scenario is the most aggressive, an analysis of build out potential of Blueprint Priority Areas based on local general plans and block level 2000 Census data suggests that at least 72,000 additional housing units can be absorbed in these areas. The most aggressive Blueprint scenario proposes an additional 62,000 housing units in Blueprint Priority Areas. While there are a wide array of challenges in the built environment that may make it difficult to add this many units to the Priority Areas, recent public survey results suggest support for higher density levels needed to achieve this scenario. AMBAG is currently applying for an SGC grant to more rigorously analyze the development potential of Blueprint Priority Areas.

Furthermore, AMBAG staff will begin an intensive model sensitivity analysis and scenario development phase in October of 2010 in preparation for the development of our Sustainable Communities Strategy, which is due to be adopted by June of 2012. This analysis will allow us to examine the impacts on GHG emissions due to a variety of transportation scenarios in addition to land use scenarios.

While we are hopeful that we will be able to achieve a more ambitious target than what our current modeling results suggest, as of August 2010, we are not in a position to quantify what that may be. As such, we ask that CARB staff take this information into consideration when issuing a regional GHG target for the Monterey Bay Area.