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To: Terry Roberts, California Air Resources Board

From: Andy Henderson, Building Industry Association of Southern California, Inc.

Date: July 26, 2010

Re: Additional Concerns about the Draft Emission Reduction Target Ranges Issued on June 30, 2010 – and Request for a Comparison between the Ranges and the AB 32 Scoping Plan Placeholder Target for Land Use and Transportation (5 MMTCO2E).

The purpose of this memorandum is emphasize the building industry's request that the California Air Resources Board ("ARB") provide information concerning the differences between (i) the AB 32 Scoping Plan placeholder emissions reduction target of 5 MMTCO2E for land use and transportation, and (ii) the ranges of emissions reduction targets which ARB publicized on June 30, 2010 in connection with Senate Bill 375 (Steinberg, 2008) – or SB 375.

Our belief in the need for such a comparison springs from analyses prepared in May 2010 for the Building Industry Association of Southern California, Inc. ("BIA/SC") and the California Building Industry Association ("CBIA"). The analyses (totaling four pages) are attached to this memorandum. Set forth below are some explanations, caveats and qualifications that should be borne in mind when considering the analyses.

There are two accompanying analyses. The first is a three page analysis that was prepared in order to compare what we thought at the time might be a scenario being considered by the Southern California Association of Governments ("SCAG") in which per capita vehicle miles traveled ("VHT") might be reduced in the SCAG region by 6.1% between 2005 and 2020. (Eventually, SCAG recommended to ARB that it should consider targets based on either one of two out of five scenarios that SCAG modeled – the five being denominated GA-1 through GA-5. SCAG suggested that either of two scenarios – either GA-2 or GA-3 – might be best regarded as ambitious but achievable. Whereas the attached, three-page, BIA/SC analysis attempted to consider the approximate MMTCO2E reduction if a 6.1% per capita VMT reduction where achieved statewide between 2005 and 2020, the VMT reduction assumption was close to the assumptions that eventually underpinned the GA-5 scenario, in which a 6.3% per capita VMT reduction over that same time frame was modeled.)

The second analysis a one-page summary that builds on the above-described analysis, and estimates the state-wide MMTCO2E emissions reductions which would occur under each of the five scenarios presented by SCAG (GA-1 through GA-5) using certain rough assumptions (e.g., that each of the five SCAG scenarios could be extrapolated statewide). Based on our assumptions, the analysis indicates that ***each of the five scenarios modeled by SCAG would result in emissions reductions from land use and transportation in excess of 20 MMTCO2E*** (assuming that if per capita VMT reductions between 2005 and 2020 were extrapolated statewide). This range of estimated emissions reductions are therefore ***all more than four times***

the 5 MMTCO2E placeholder target that was specified in ARB's AB 32 Scoping Plan and the economic analysis that accompanies it.

The accompanying analyses are not precise for at least three reasons – and there may be some others. First, the analyses assumed that the 5 MMTCO2E set forth in the AB 32 Scoping Plan was an exact number. Presumably, however, the 5 MMTCO2E figure set forth in the AB 32 Scoping Plan was a rounded-off number. We did not possess, and therefore did not use, any more precise, un-rounded number. Using of a more precise, unrounded number would, of course, change the analyses a bit and make the conclusions more precise.

Second, there are some non-linear relationships between (i) per capita and aggregate *VMT* reductions, one the one hand, and (ii) per capita and aggregate *emissions* reductions (MMTCO2E), on the other hand. The non-linear relationships are due to complicated interplay among vehicle hours of delay (VHD), average speed assumptions, congestion assumptions, etc. SCAG and presumably ARB possess the computer modeling capability to improve the analyses to take into account these non-linear relationships.

Third, as noted above, the analyses drew upon the assumption that the scenarios analyzed (e.g., the eventual SCAG scenarios GA-1 through GA-5) could be extrapolated for statewide application. We know, however, that ARB has since issued draft ranges of targets which show differences in emissions reduction targets among the different metropolitan planning organizations ("MPOs"). For example, some MPOs in the San Joaquin Valley (apart from SACOG) were given a draft range of targeted emissions reductions which is significantly lower than the range indicated for the larger MPOs. The accompanying analyses do not take into account such differences. Correcting the analyses for such differences might not significantly alter the conclusion because the bulk of the state's population resides in either the SCAG region or the regions of the three other major MPOs which received draft emissions reduction ranges at least as high as that which SCAG received.

Notwithstanding the above-indicated known imperfections in the assumptions, we have been informed by subject matter experts that the analyses appear to be "generally accurate, even though they are not precise." First, we believe and are informed that the analyses are correct in terms of all of the algebra that was performed. (We remain open, however, to any and all corrections that may be found to be needed.) More importantly, we are informed that – notwithstanding the above-described imperfect assumptions reflected in the analyses – the overall conclusion appears to be accurate: specifically, that each of SCAG's five scenarios (GA-1 through GA-5) would, if extrapolated for statewide application, result in emissions reductions in excess of 20 MMTCO2E – compared to the 5 MMTCO2E "placeholder" reduction that was shown in both the AB 32 Scoping Plan and the economic analysis that accompanies it.

If this overall conclusion is correct as it appears, then we have some serious concerns. First, we need to understand better and with more confidence (i.e., with more precision) the true differences between (i) the AB 32 Scoping Plan "placeholder" emissions reduction target and the accompanying economic analysis, and (ii) the statewide MMTCO2E emissions reduction impacts of the various ranges for per capita emissions reductions which were issued in draft form by ARB on June 30th. Even more importantly, we then need to understand ***how and why*** these quantifications could be so different.

We believe that an appropriately careful consideration of the reasons will reveal large differences in the assumptions that underpin the two analyses (the AB 32 Scoping Plan, on the one hand, and the June 30th draft per capita emissions reduction ranges on the other hand). Especially, we are concerned that there may be substantial differences in population growth assumptions, which would be critically important because – we believe – per capita VMT

reductions (and therefore per capita emissions reductions from land use and transportation) are relatively unlikely to be realized if more robust population growth is foreseeable.

That is why BIA/SC and CBIA have asked repeatedly for ARB to undertake and provide publicly a transparent analysis of the state-wide quantified effect of the ranges that it proposed on June 30th – stated in terms of overall MMTCO2E savings in 2020 as compared to the AB 32 placeholder target. How do such reductions compare to the AB 32 Scoping Plan's business-as-usual (BAU) projection? How do they compare to the AB 32 Scoping Plan's "placeholder" emissions reduction target of 5 MMTCO2E? ***Most importantly, what are the major differences in the basic assumptions (such as population growth) that undergird these different projections?***

To us, the draft ranges that ARB issued on June 30th reflect a very ambitious and – if one moves up into the draft ranges – even a dangerously off-base expectation of what can be achieved from changes to transportation systems and land use. We are deeply concerned that setting targets at such levels could further harm the ability of the California economy to recover and our housing industry in particular to return to healthy production levels. Moreover, after years of housing development at levels far below population increases, we fear that the imposition of such emission reduction targets could severely impede the state's future efforts to meet the housing needs of its population.

The analysis that we ask ARB to perform and share with the public should help to address or assuage our fears among these lines. If – for example – the sum of the MPOs' projections of population growth is recognizably too low, that fact should be appreciated and taken into account. Such recognition would likely result in relatively more achievable and less ambitious emissions reduction targets – and eventually an imposition of final emissions reductions targets that are no more imposing than those at the lower end of each of the respective ranges indicated on June 30th.

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There are three important points from the AB 32 Scoping Plan which need to be considered carefully:

1) CARB assumed that the California population will continue to grow at a compound annual rate of 1.2 percent per year. (*See* Climate Change Proposed Scoping Plan Appendices, page H-7: "California population is continuing to grow at 1.2 percent per year.) Using this assumption, one can project that ***the California population would grow by a cumulative 19.59% between 2005 and 2020***. $(1.012)^{15} = 1.1959352$.

2) CARB assumed that aggregate vehicle miles traveled in the state (VMT) would grow at a compound annual rate of 2.2 percent per year. (*See* http://www.climatechange.ca.gov/eaac/documents/eaac_reports/2010-04-19_EAAC_REPORT_Appendix.pdf at page 5.) Using this assumption, one can project that ***the California statewide VMT would grow by a cumulative 38.6% between 2005 and 2020***. $(1.022)^{15} = 1.3860007$.

3) CARB imposed a 4% reduction from the projected "business as usual" (BAU) projection of 2020 VMT. (*See id*. (http://www.climatechange.ca.gov/eaac/documents/eaac_reports/2010-04-19_EAAC_REPORT_Appendix.pdf) at page 5-6.) The desired 4% reduction from the 2020 VMT projection (BAU – or "business as usual) equates to the 5 million metric ton reduction. *See* Final AB 32 Scoping Plan document, pp. 50-51, found at http://www.arb.ca.gov/cc/scopingplan/document/adopted_scoping_plan.pdf

Using these three factors alone, we can calculate the following:

4) Given the statewide VMT was assumed to be growing at 2.2% per year, and statewide population was assumed to be growing at 1.2% per year, CARB was assuming that VMT per capita will also be growing. Specifically, ***the annual rate of growth of VMT per capita (statewide) was projected to be .0098814, or .98814%*** (or almost 1%). 1.022/1.012 = 1.0098814.

5) Applying the .98814% annual VMT growth factor to a fifteen-year time period between 2005 and 2020 equates to a cumulative, 15-year growth of VMT per capita of 15.89%. $(1.0098814)^{15} = 1.1589255$. Therefore, CARB data would result in the BAU assumption that each Californian's annual VMT would be, on average, 15.89% higher in 2020 than it was in 2005.

6) CARB's AB 32 Scoping Plan allocated a 4% -- or 5 million $MTCO_2E$ – reduction from Land use and transit strategies. (*See* above No. 3.) To meet this target, the growth in annual VMT per capita between 2005 and 2020 would need to be reduced from a cumulative 15.89% BAU to a cumulative 11.26%. 1.1589255 x .96 = 1.1125685.

7) The calculations set forth immediately above demonstrate that ***the annual VMT per capita would still by projected to grow by 11.26% cumulatively over the 15-year period 2005-2020***, instead of 15.89% cumulative growth inherent in CARB's BAU projection,

while still meeting the 5 million $MTCO_2E$ reduction allocated to from land use and transit strategies.

8) The desired 11.26%, 15-year (2005-2020) cumulative VMT growth per capita equates to an annual growth rate of VMT per capita of .713%: $1.1125685 = (1.00713)^{15}$.

9) Therefore, CARB's tentative mandate set forth in the AB 32 Scoping Plan could be met by lowering the annual growth rate of VMT per capita from .98814% to .713%. (*See* Nos. 4 and 8 above.)

10) ***To recap***: The AB 32 Scoping Plan mandate for Land use and transit strategies can be met by lowering the statewide annual growth rate of VMT per capita from .98814% to .713% for the period 2005-2020. This equates to allowing an 11.26% cumulative growth in statewide VMT per capita over a 2005-2020 period, which is less than the 15.89% cumulative growth in statewide VMT per capita assumed in CARB's BAU baseline over the same period.

11) Notwithstanding these data and calculations, SCAG staff has suggested that it intends to propose to CARB that VMT per capita would need to decrease by 6.1% cumulatively over that same 15-year period (2005-2020).

12) SCAG's staff also informed us that VMT growth in the SCAG region is – if fact – nearly equal to population growth. In other words, if we understood SCAG's staff correctly, SCAG is projecting annual VMT growth per capita to be near zero even without imposing any new land use and transit strategies. If so, or if SCAG is projecting that the compound annual VMT growth per capita will be anything less that .713%, then the SCAG region's current land use plans have already more than met their proportionate share of the AB 32 mandate for land use and transit strategies.

13) To summarize:

- CARB was projecting the annual VMT per capita to grow by a cumulative 15.89% between 2005 and 2020. (*See* No. 5 above.)

- The mandate that CARB set forth in the AB 32 Scoping Plan concerning land use and transit strategies can be met by lowering the cumulative growth in VMT per capita between 2005 and 2020 from 15.89% (assumed in the BAU projection) to 11.26%. (*See* Nos. 5-7 above.)

- SCAG's staff informed us that they project that the VMT per capita growth in the SCAG region will be negligible even under existing land use and transit strategies. (*See* No. 12 above.) ***If there were no growth in VMT per capita, this would constitute a 13.71% reduction from CARB's 2020 BAU projection.*** [1/1.1589255 = .86286823] and [1 - .86286823 = .13713177 or 13.71%.] ***If a 13.71% reduction from CARB 2020 BAU projection were achieved, rather than the 4% reduction that CARB tentatively mandated in the AB 32 Scoping Plan, extrapolated statewide, the emissions reductions***

based on land use and transit strategies would be 17.14 MMTCO$_2$E rather than the 5 MMTCO$_2$E indicated in the AB 32 Scoping Plan.

- As noted, SCAG's staff also informed us that they are tentatively looking at a range of possible recommendations to CARB which could include a recommendation that CARB should require a reduction of annual VMT per capita from 2005 levels of 6.1% for the year 2020. ***If there were achieved a 6.1% reduction on annual VMT per capita in 2020 when compared to 2005 levels, this would constitute an 18.98% reduction from CARB's 2020 BAU annual VMT per capita projection.*** [1 - .061 = .939]; [.939/1.1589255 = .81023327]; and [1 - .81023327823 = .18976673 or 18.98%.] ***If an 18.98% reduction from CARB 2020 BAU projection were achieved, rather than the 4% reduction that CARB tentatively mandated in the AB 32 Scoping Plan, extrapolated statewide, the emissions reductions based on land use and transit strategies would be 23.725 MMTCO$_2$E rather than the 5 MMTCO$_2$E indicated in the AB 32 Scoping Plan.***

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COMPARISON OF AB 32 SCOPING PLAN TO

SCAG'S GHG TARGET SCENARIOS – MAY 2010

	2005-2020 Change in VMT per capita:	2020 MMt Reduction from Scoping Plan 2020 "BAU"
AB 32 Scoping Plan "BAU"	15.89% Increase	n/a
AB 32 Scoping Plan Target	11.26% Increase	5 MMt
SCAG's GA-1	3.2% Decrease	20.62 MMt *
SCAG's GA-2	3.8% Decrease	21.26 MMt *
SCAG's GA-3	4.5% Decrease	22.02 MMt *
SCAG's GA-4	5.2% Decrease	22.78 MMt *
SCAG's GA-5	6.3% Decrease	23.96 MMt *

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*Assumes that the respective SCAG scenario decrease in VMT per capita would be replicated statewide (i.e., extrapolated out to the entire state).