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April 2010

**To: California Air Resources Board**

**From: Richard Lyon**

**Subject: Updated CBIA Study of Recession Impacts on Housing-  
Related GHG Reduction**

The Building Industry strongly urges the California Air Resources staff and Board to correct overstated housing projections assumed in the AB 32 Scoping Plan, and assumed to date in setting state and regional targets for SB 375 implementation. Overstated housing growth projections, if uncorrected, will skew state and regional GHG emission reductions expected from land use and transportation, as required by SB 375. Revised housing projections are needed now.

By May 30<sup>th</sup>, Metropolitan Planning Organizations must submit Sustainable Community Strategy conceptual scenarios to CARB to demonstrate each region's potential for greenhouse gas emission reductions through land use and transportation measures. Based on this information, CARB staff will recommend to the Board the appropriate methodology and assumptions for setting state and regional greenhouse gas emission reduction targets, along with recommended targets. In September 2010, the Board will set final state and regional GHG reduction targets for the land use and transportation sector. It is essential to the success of SB 375 that state and regional targets be based on revised housing growth projections. To date, CARB has not released corrected housing projections for the 2010-2020 period to inform these targets that reflect the evident impact of the housing downturn and recession on housing production, going back to 2005 when AB 32 was adopted.

This report is intended to assist CARB in making critical corrections to the AB 32 and SB 375 housing growth assumptions by clearly articulating the effect of the recession on the magnitude of housing growth and associated Vehicle Miles Traveled (VMT) and GHG emissions. The following summary presents our key finding that the prolonged economic downturn will result in significantly lower-than-assumed housing production, VMT and GHG emissions from the residential sector:.

**GHG emissions of 8.1 to 10.1 MMTCO<sub>2</sub>E per year from new housing and associated Vehicle Miles Traveled (VMT) –which were assumed to occur between 2010 and 2020 in the base data that underpins the AB 32 Scoping Plan and SB 375 placeholder target --will not occur due to reduced housing production levels caused by the recession. These overestimated GHG emissions exceed the 5 MMTCO<sub>2</sub>E preliminary “placeholder” transportation/land use sector target imbedded in the Scoping Plan and SB 375 process.**

*How should overestimated GHG emissions, the result of lower housing production, be reflected in SB 375 transportation and land use sector targets?*

- **Account for overestimation of housing growth and associated GHG emissions going back to 2005 and beyond.** Our research indicates overestimation of housing production extends all the way back to the recommended base year of 2005. This overestimation suggests that the initial AB 32 Scoping Plan and SB 375 “placeholder” target was based on expectations of housing and residential VMT GHG contributions that are consistently overstated.
- **Examine the full range of development growth decreases resulting from the economic slowdown.** Although our study does not examine commercial or institutional development, the same lingering recession impacts will result in emission reductions from the levels built into the assumptions for the AB 32 Scoping Plan, and SB 375 targets..
- **Reflect housing growth expectations in the target setting process** The CARB Board and staff should factor the current, medium- and long-term effects of the recession and state funding crisis into the final state and regional SB 375 targets to be determined by the Board in September 2010. Even the best models and Best Management Practices will not compensate for a failure to acknowledge economic circumstances different from those assumed at the outset of the AB 32 and SB 375 processes.
- **Insure regional target adjustments for decreased future housing production, and related VMT in the SB 375 sketch-planning process.** CARB must consider an accurate 2010-2020 projection of housing production for the state and its regions in setting SB 375 targets. The housing growth projections for each region should reflect reduced future housing growth from levels assumed in the AB 32 Scoping Plan. This should be a standard adjustment factor in Steps 1-3 of the CARB/MPO sketch planning process designed to allow regional input to the final targets.
- **Include building and construction experts in evaluating Best Management Practices (BMPs) and their effectiveness.** Building and construction industry representatives need to participate in developing the BMP list and spreadsheet recommended by the Regional Targets Advisory Committee, to insure that realistic expectations about housing production inform the final product. BMPs could be expected to produce smaller GHG benefits due to the smaller amount of housing growth and related VMT growth.
- **Consider contractions in the economy in determining what constitutes an “ambitious, achievable” regional target.** We urge the California Air Resources Board to take the statewide economic slowdown, and housing production slowdown in particular, into consideration in setting appropriate targets for each region. Regions will experience lower than anticipated GHG emissions in the future as a result of lower housing and other development than previously assumed in setting AB 32 Scoping Plan and SB 375 targets.

***How has the recession impacted the share of GHG emissions resulting from housing growth through 2020?***

Substantial housing-related greenhouse gas emissions will not occur as assumed due to lower housing production resulting from the current recession. CBIA examined housing production from 1990 through 2020, comparing actual housing permits and two forecasts of housing growth to the amount of housing production assumed by the California Air Resources Board and the California Energy Commission Energy Demand Forecast in preparing the AB 32 Scoping Plan and preliminary SB 375 target for the transportation/land use sector.

CBIA compared two housing growth projections to the CARB/CEC housing assumptions:

- **LAO-Based Housing Projection.** The Legislative Analyst Office (LAO) prepared 2010-2015 housing projections as the basis for its November 2009 Financial Outlook report. CBIA extrapolated this short-term projection, continuing the trend to 2020.
- **CBIA Housing Projection.** CBIA developed a 2010-2020 housing projection based on actual housing permit activity. Starting in 2010, the projection reflects the rate of housing industry housing recovery exhibited after prior recessions.

Both the LAO-based and CBIA projections project housing growth well below levels assumed in the AB 32 Scoping Plan and SB 375. The CBIA projection is 25% lower than the LAO projection. Taken together, these two projections result in the following adjustments to the GHG emissions benefits assumed in AB 32:

- A total of 377,483 fewer single-family and multifamily units were produced as a result of the economic slow-down, then assumed by CARB/CEC in the data that informed the AB 32/SB375 transportation land use sector placeholder targets.
- CARB/CEC assumptions underpinning targets in the AB 32 Scoping Plan and SB 375 process have overestimated 2010 – 2020 housing production by 671,536 to 836,254 single and multi-family units.
- These 2010-2020 overestimated units represent approximately .31 to .46 MMTCO<sub>2</sub>E – 20% to 30% less than 2010-2020 projected GHG emissions from new residential solid waste, water, electricity, and natural gas use assumed by CARB and CEC in the AB 32 Scoping Plan.
- The overestimated housing units would have resulted in an estimated 43.6 to 54.3 million Daily VMT during the 2010-2020 period, based on 2020 MPO VMT/household factors compiled by CARB.
- Estimates of GHG emission reductions due to VMT associated with overestimated housing units range from 7.8 to 9.7 MMTCO<sub>2</sub>E per year, based on EMFAC 2007. These emissions will not occur as a result of diminished housing production.
- The overestimated VMT-related GHG emissions are equivalent to eliminating 1.7 to 2.1 million passenger cars during the 2010-2020 period, based on CARB conversion factors

### *How did we make our housing growth, VMT and GHG estimates?*

The following summary presents the key assumptions and methods used to generate the preliminary numbers cited above.

- **Coordinated with CARB on Methods and Assumptions.** CBIA met with CARB staff to review assumptions and methods used to calculate emissions associated with overestimated housing units, as well as the methods and assumptions used to calculate estimates of VMT and GHG due to overestimated housing units.
- **Reviewed ARB/CEC housing growth estimates.** Housing growth assumptions used in the AB 32 Scoping Plan target-setting, based on the CEC Energy Demand Forecast, were verified with CARB and the CEC.
- **Compiled actual housing permits 2000 to present.** Housing permits issued for the first eight years of the decade were plotted. Permits normally outpace actual construction, making this data a conservative estimate of housing unit and emission growth. All data were provided by the Construction Industry Research Board.
- **Adjusted future housing unit growth to reflect economic slowdown.** Future housing growth to 2020 assumed in the CEC Energy Demand Forecast, and used in the AB32 Scoping Plan, was adjusted based on housing production recovery following two previous recessions in the 1980s and 1990s. The rate and type of housing growth emulates these earlier recoveries. Considering the severity of the current housing recession in comparison to prior recessions, *the overestimation of 836,254 units should be considered conservative.*
- **Estimated GHG emissions associated with the “box.”** GHG emissions associated with solid waste, water, electricity and natural gas use were calculated for the LAO-based and CBIA 2010- 2020 housing projections and compared to CARB/CEC’s original assumptions used in the AB 32 Scoping Plan. CARB assumptions of annual natural gas, electricity, water, and solid waste-related GHG emission savings associated with implementation of the mandatory Green Building Code, plus third-party Green Building rating systems that go beyond the Code, were used to calculate the overestimated GHG emissions associated with the two housing projections.
- **Estimated GHG emissions due to VMT associated with new units.** Our VMT-related GHG emissions calculations use CARB factors to establish the magnitude of the recession’s potential impact.

MPO Household and Daily VMT/Household projections for 2020 (Compiled by CARB for RTAC, June 1, 2009) were factored together to derive a 2020 weighted average Daily VMT/Household rate. Specific estimates of housing overestimation by region are not available at this time. This method distributed overestimated units among the state’s MPOs in proportion to their projected 2020 households, as reported to CARB.

- The weighted average of 64.94 Daily VMT/Household factor was multiplied by 671,536 to 836,254 units not likely to be constructed between 2010 and 2020 to calculate the range of 1 43,607,784 to 54,304,138 Daily VMT associated with the overestimated

units projected by the LAO-based and CBIA projections. The resulting estimates represent total VMT associated with each new unit.

- CARB’s EMFAC 2007 was used to generate CO2/year emission factors , which were combined with the daily VMT estimate to provide CO2 emissions/year. • Data from the California Climate Action Registry Protocol was used to augment CO2 emission estimates to CO2E estimates that include N2O and CH4 emissions. The adjustments are less than one percent.

- Greenhouse gas estimates were converted to equivalent vehicles based on CARB’s Fact Sheet ([www.arb.ca.gov/cc/factsheets/1mmtconversion.pdf](http://www.arb.ca.gov/cc/factsheets/1mmtconversion.pdf)), which indicates that 1 MMTCO2E is the equivalent of 216,000 passenger cars or 179,000 passenger cars and light trucks.

**Comparison of AB 32/SB 375 GHG Emissions Associated with CARB/CEC, LAO-Based and CBIA Housing Projections**

	<b>2010-2020 Units</b>	<b>2020 Overestimated GHG MMT/Yr for New Units</b>	<b>2020 VMT for Overestimated Units</b>	<b>2020 VMT GHG MMT/Yr</b>
<b>CARB/CEC</b>	2,061,066		(1)	160.8 (2)
<b>LAO-Based</b>	-671,536(-33.3%)	-.31	-43,607,784	-7.79 (-4.9%)
<b>CBIA</b>	-836, 254(-40.6%)	-.46	-54,304,138	-9.7 (-6.1%)

**Notes:**

(1) No 2020 Business As Usual passenger vehicle and light duty truck VMT is documented in the AB 32 Scoping Plan.

(2) Land Use/Transportation sector 2020 Business as Usual GHG per Figure 4, Potential Impacts of Land Use and Transit Strategies on GHG Emissions in California, Final AB 32 Scoping Plan, page 50. The total universe of transportation GHG emissions for the 2020 Business As Usual scenario is 225.4 MMTCO2E/Yr. , as described in Appendix F-4 and Table 3, F-7.