Building Industry Association of Southern California

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September 20, 2010

Hon. Mary D. Nichols
c/o Clerk of the Board
Air Resources Board
1001 I Street
Sacramento, CA 95814

Submitted electronically at:

http://www.arb.ca.gov/lispub/comm/bclist.php

Building Industry Association of Southern California, Inc. Opposition to the Proposed SB 375 Greenhouse Gas Emission Reduction Targets for the Southern California Association of Governments' Region.

Dear Chairperson Nichols:

The comments below and attached charts and figures are respectfully submitted by the Building Industry Association of Southern California, Inc. ("BIA/SC") in advance of the September 23, 2010 meeting of the California Air Resources Board ("ARB") at which ARB will consider regional greenhouse gas (GHG) emissions reductions pursuant to SB 375. BIA/SC is a nonprofit trade association representing more than 1,200 member companies in the Southern California region.

For many months, representatives of the homebuilding community have been asking ARB staff to reconcile the emissions reduction targets that it was considering pursuant to SB 375 against the AB 32 Scoping Plan's 5 $MMTCO_2E$ placeholder target for land use and transportation (the "Placeholder Target"). Those of us who were asking did so because it is extremely important for all concerned to be informed about whether the emissions reduction targets that ARB eventually proposed on August 9, 2009 (the "Proposed Targets") are immoderate in comparison to the Placeholder Target.

Notwithstanding the repeated requests for the comparative analysis, to our knowledge, ARB staff never provided the requested analysis. If ARB's staff did perform the analysis, it apparently kept it to itself.

BIA/SC nonetheless felt that the comparison should be undertaken; so it has undertaken such a comparison itself – as best BIA/SC could (given some unknown but likely insignificant nuances in modeling assumptions). This letter discusses the results of that comparative analysis, which are attached hereto as Figures 1-8 and Tables 1 and 2. ***The attached charts and figures show graphically that the Proposed Targets are plainly immoderate in relation to the Placeholder Target***, as explained below.

A. **The AB 32 Scoping Plan analysis is itself internally inconsistent such that any comparison between the AB 32 Scoping Plan's Placeholder Target and the Proposed Target (August 9th) must be undertaken twice.**

In order to undertake the comparison referred to above, BIA/SC looked closely at the AB 32 Scoping Plan for the assumptions that underpinned the analysis that led ARB to adopt the Placeholder Target. When it did, BIA/SC found that there are some serious inconsistencies within the AB 32 Scoping Plan itself.

Specifically, in the AB 32 Scoping Plan, and again in the Updated Economic Impacts Analysis released by ARB in April 2010, ARB states that that the "business as usual" ("BAU") projection for aggregate, statewide GHG emissions for land use and transportation was based on an assumed annual aggregate vehicle miles traveled ("VMT") growth of 2.2% per year, and an assumed annual population growth of 1.2% per year. *See* AB 32 Scoping Plan at 50-51; Climate Change Proposed Scoping Plan Appendices, page H-7; Comments on the ARB's Updated Economic Impacts Analysis, found at http://www.climatechange.ca.gov/eaac/documents/eaac_reports/2010-04-19_EAAC_REPORT_Appendix.pdf at page 5-6. Logically, the stated assumptions would necessarily result in an exponential increase in per capita emissions assuming static fleet efficiency and carbon fuel standards. The resulting BAU projection of aggregate emissions by year using the stated assumptions from the AB 32 Scoping Plan and ARB's Updated Economic Impacts Analysis (The "Stated Assumptions BAU Projection") is depicted by the higher of the two curves shown on Figure 1 attached hereto.[1]

[1] Table 1 (attached) shows the calculations of the Stated Assumptions BAU Projection, the Figure 4 BAU Projection, and all other data points related to statewide, aggregate GHG emissions from land use and transportation from 2005 to 2050. The data were calculated using ARB's stated assumptions about prospective VMT and population growth statewide from the AB 32 Scoping Plan, and application of the 5 $MMTCO_2E$ Placeholder Target thereto.

The AB 32 Scoping Plan also included a chart (Figure 4 on page 50), which also purportedly depicts the BAU projection of aggregate emissions by year from 2010 to 2050 (the "Figure 4 BAU Projection"). The Figure 4 BAU Projection is shown as the lower of the two curves shown on Figure 1 attached hereto. Importantly, the Figure 4 BAU Projection is not exponential in character, but instead is the result of merely drawing two connected line segments (showing a 40 $MMTCO_2E$ increase in aggregate emissions between 2010 and 2030 and 50 $MMTCO_2E$ increase in aggregate emissions between 2030 and 2050). The BAU equation depicted in Figure 4 was apparently constructed without basis – at least none that is disclosed; and it is inconsistent with the stated assumptions set forth in the AB 32 Scoping Plan and ARB's Updated Economic Impacts Analysis. The Stated Assumptions BAU Projection indicates substantially higher aggregate and per capita GHG emissions in the years ahead than does the unsubstantiated Figure 4 BAU projection.

B. **The Proposed Targets call for aggregate emissions reductions much greater than the Placeholder Target, considering either of the two measures of BAU indicated in the AB 32 Scoping Plan.**

Attached as Figure 2 is a chart showing the Stated Assumptions BAU Projection (as indicated by the AB 32 Scoping Plan) and a lower trend line which would achieve the Placeholder Target (5 $MMTCO_2E$ reduction in 2020) from the Stated Assumption BAU Projection, assuming improvement beginning 2011.

Attached as Figure 3 is a chart showing the Figure 4 BAU Projection (as alternatively indicated by the AB 32 Scoping Plan) and a lower trend line which would achieve the Placeholder Target (5 $MMTCO_2E$ reduction in 2020) from the Figure 4 BAU Projection, again assuming improvement beginning 2011.

Finally, Figure 4 attached shows all four such lines (i.e., both the two different AB 32 Scoping Plan BAU projections and the two trend lines that would achieve a 5 $MMTCO_2E$ reduction in 2020 from each respective BAU projection). Figure 4 also shows where the ARB's Proposed Target for both 2020 and 2035 for the SCAG region would lie (if extrapolated statewide) in comparison to all four such equations, the two BAU projections and the two Placeholder Target compliant trend lines.[2] As Figure 4

[2] When making these comparisons, it was necessary for expedience to make certain assumptions and extrapolations to approximate the conversion of VMT to emissions and to avoid an unduly detailed analysis of the difference of Proposed Targets from one region of the state to another. Accordingly, the analysis shown in the attachment hereto assumes that there is a direct lineal relation between VMT and emissions, and that ARB's Proposed Targets for SCAG may be used as a proxy for comparison to the BAU

shows, the Proposed Targets call for the achievement of aggregate, statewide GHG emissions from land use and transportation which are far below the levels needed to achieve the Placeholder Target – no matter whether the Placeholder Target is measured against the Stated Assumptions BAU Projection or the Figure 4 BAU Projection.

C. **Viewed as well on the basis of per capita GHG emissions reductions (from 2005 to 2020 and then beyond to 2035), the Proposed Targets call for emissions reductions much greater than the Placeholder Target, using either of the two measures of BAU indicated in the AB 32 Scoping Plan.**

Attached as Figures 5-8 are charts that show the respective ***per capita GHG emissions*** that would be associated with Figures 1-4.[3] Tables 1 and 2 attached indicate the calculations and resulting data, which is based – for this comparison purpose – on the population increases set forth in the stated assumptions in the AB 32 Scoping. Again, any hypothetical changes in those assumptions should not result in significant changes in the *relative* comparisons shown by the data.

Figure 5 is remarkable in that it shows the very large difference in per capita emissions growth under the two, inconsistent BAU projections which are both indicated by the AB 32 Scoping Plan (one by the Scoping Plan's stated assumptions, and the other shown on the Scoping Plan's Figure 4, p. 50). The difference is due to the facts that the stated assumptions (a 2.2% annual increase in aggregate VMT and a 1.2% annual increase in state population) would naturally result in substantial annual per capita GHG emission increases (assuming a static fleet mix and carbon-yielding fuels). Both projections (i.e., both the projected aggregate VMT annual increase of 2.2% and the

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projection and Placeholder Target trend lines which are shown in the charts attached to this letter. The use of the assumptions and extrapolations admittedly results in some imprecision, but not substantial inaccuracy – particularly on a relative basis. Specifically, changes and improvements in the assumptions (for example, better or different population growth projections) would not change significantly the *relative* comparisons shown on the attached charts and tables. ARB should therefore view the resulting figures and comparisons as the best available approximation of the problem.

[3] Table 2 (attached) shows the calculations of the Stated Assumptions BAU Projection, the Figure 4 BAU Projection, and all other data points related to *per capita GHG emissions* from land use and transportation from 2005-2050. The data were calculated similarly using ARB's stated assumptions about prospective VMT and population growth statewide from the AB 32 Scoping Plan, and application of the 5 $MMTCO_2E$ Placeholder Target thereto.

projected annual population increase of 1.2%) appear to be too high. Accordingly, ARB should correct these projections *some* – based on better estimates.

The homebuilding community is concerned that the Proposed Targets are aimed too high (i.e., the emissions allowed would be too low) to accommodate the likely housing needs of California's growing population. The negative economic and practical ramifications of setting SB 375 emissions limits too low for eventual population growth could be devastating, whereby transportation planning and land use planning would pursue a fictitious outcome rather than a reality that demands more housing and appropriate mobility. Therefore, ARB should err – if it were to risk erring – on the side of more robust population growth estimates. There are strong indications, however, that ARB is proposing to do the opposite. For example, SCAG's staff has acknowledged that its SB 375 analysis assumed the lower end of the range of population growth estimates.

Attached as Figure 6 is a chart showing per capita GHG emissions using the Stated Assumptions BAU Projection (as indicated by the AB 32 Scoping Plan) and a lower trend line which would achieve the Placeholder Target (5 $MMTCO_2E$ reduction in 2020) from it, assuming improvement beginning 2011.

Attached as Figure 7 is a chart showing per capita GHG emissions using the Figure 4 BAU Projection (as alternatively indicated by the AB 32 Scoping Plan) and a lower trend line which would achieve the Placeholder Target (5 $MMTCO_2E$ reduction in 2020) from it, assuming improvement beginning 2011.

Finally, Figure 8 attached shows all four such lines (i.e., both the two BAU projections and the two trend lines that would achieve a 5 $MMTCO_2E$ reduction in 2020 from each respective BAU projection), again on a per capita GHG emission basis. Figure 8 also shows where the ARB's Proposed Target (for both 2020 and 2035) for the SCAG region would lie in comparison to all four such equations (the two BAU projections and the two Placeholder Target compliant trend lines).[4] As Figure 8 shows, the Proposed

[4] Here again, when making these comparisons, it was again necessary for expedience to make certain assumptions and extrapolations – here to approximate the conversion of VMT to emissions and to avoid an unduly detailed analysis of the difference of Proposed Targets from one region of the state to another. Accordingly, the analysis shown in the attachment hereto assumes, for expedience, that there is a direct lineal relation between VMT and emissions, and that ARB's Proposed Targets for SCAG may be used as a proxy for comparison to the BAU projection and Placeholder Target trend lines which are shown in the Figure attached to this letter. The use of such assumptions and extrapolations result in admittedly imprecision but not substantial inaccuracy – particularly on a relative basis. Specifically, changes and improvements in the

Targets call for the achievement of per capita GHG emissions reductions from land use and transportation which are far below the levels needed to achieve the Placeholder Target – no matter whether the Placeholder Target is measured from the Stated Assumptions BAU Projection or the Figure 4 BAU Projection.

For example, using the lower of the two BAU projections from the AB 32 Scoping Plan (the Figure 4 BAU Projection), to achieve the Placeholder Target applied thereto, ARB would need to require only a **.38%** reduction in per capita GHG emissions between 2005 and 2020. Instead, ARB has proposed an **8%** reduction in per capita GHG emissions between 2005 and 2020 for the SCAG region.[5]

Concerning the 2035 targets, again using the lower of the two BAU projections from the AB 32 Scoping Plan (the Figure 4 BAU Projection), to achieve the Placeholder Target applied thereto in 2020 and extending a trend line which departs from the BAU beginning 2011, ARB would need to require only a **3.26%** reduction in per capita GHG emissions between 2005 and 2035. Instead, ARB has proposed a **13%** reduction in per capita GHG emissions between 2005 and 2035 for the SCAG region.

D. **ARB and the interested public need to recognize that the Proposed Targets are several times larger than required to meet the AB 32 Scoping Plan's Placeholder Target for land use and transportation.**

To date, ARB's staff and ARB have refused to address whether the Proposed Targets in fact are immoderate in relation to the Placeholder Target. It is therefore most disappointing ARB's staff report issued on August 9th misleads the relevant public concerning the question. Specifically, the staff report states, "When these [proposed] reductions are applied to the most recent statewide 2020 emissions forecast, the emissions target for passenger vehicles in California's 2008 Climate Change Scoping Plan is met." (August 9, 2010 Staff Report at 22)

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assumptions (for example, incorporating a more correct formula for relating per capita VMT to per capita GHG emissions) would not change the significantly the *relative* comparisons shown on the attached charts and tables. ARB should therefore view the resulting figures and comparisons as the best available approximation of the problem.

[5] Consistent with ARB's recent treatment of the proposed targets, all of BIA/SC's calculation are based on the assumption that emissions in future years will be generated as if though the populace will be driving a fleet of vehicles based on the 2005 fleet mix and consuming fuels based on 2005 fuel standards.

This is highly misleading to even the most the interested members of the public, because the Proposed Targets not only meet but exceed the Scoping Plan's targeted outcome several or many times over. The Scoping Plan was not seeking to reduce emissions 5 MMTCO$_2$E from "the most recent statewide 2020 emissions forecast," as the above-stated misleading sentence from the August 9th staff report suggests. The Scoping Plan instead targeted the need to achieve emissions reductions of 5 MMTECO$_2$E statewide in 2020 from one of two mutually-exclusive and inconsistent BAU projections (the Stated Assumption BAU Projection which is described in the Scoping Plan and the inconsistent Figure 4 BAU Projection which is graphed on p. 50 of the Scoping Plan). Using either such BAU projection, applying the Placeholder Target to it, and comparing the result to the Proposed Target for the SCAG region (as a proxy for a statewide imposition), the Proposed Targets would exceed the Placeholder Target by the following very large spreads:

- Assuming the application of the ***Stated Assumptions*** BAU Projection in the Scoping Plan, the Proposed Targets would exceed the Placeholder Target by very large degrees, as follows:

Per Capita Change in GHG Emission	Scoping Plan BAU Projection	Scoping Plan 2020 Placeholder (and 2035 Trend Line Extension)	Proposed Target for SCAG
2005 to 2020	+ 16.09%	+ 12.75%	- 8%
2005 to 2035	+ 34.54%	+ 18.57%	- 13%

- Assuming the application of the ***Figure 4*** BAU Projection in the Scoping Plan, the Proposed Targets would exceed the Placeholder Target by much smaller amounts but still very large degrees, as follows:

Per Capita Change in GHG Emission	Scoping Plan BAU Projection	Scoping Plan 2020 Placeholder (and 2035 Trend Line Extension)	Proposed SCAG Target
2005 to 2020	+ 2.84%	- 0.38%	- 8%
2005 to 2035	+ 3.46%	- 3.26%	- 13%

As representatives of the homebuilding community, BIA/SC respectfully asks ARB to recognize these stark comparisons and pause to consider them. Our state's economy cannot withstand the burden of pursuing land use and transportation plans

which are themselves in hot pursuit of immoderate goals. BIA/SC respectfully asks ARB to temper the Proposed Targets to levels closer to the Scoping Plan's Placeholder Target (even using the stricter of the two BAU projections – the one indicated by the relatively strict Figure 4 equation). It would be irresponsible and undesirable to now aim for a 5 $MMTCO_2E$ reduction from "the most recent statewide 2020 emissions forecast," given that the most recent statewide 2020 emissions forecast is affected by understated population growth estimates, relative out-migration, and the current extremely deep economic recession, none of which should be embraced as a reliable or tolerable trend or an acceptable *status quo* from which to project our prospects.

In addition, the analysis set forth above indicates that much of the work of ARB's staff concerning land use and transportation, including its work underpinning ARB's Updated Economic Impacts Analysis released in April (which references the stated assumptions in the AB 32 Scoping Plan (rather than the Figure 4 equation), may be set upon a faulty analytical foundation. In light of the unexplained difference between any BAU projection based on the Scoping Plan's stated assumptions and one based on the Scoping Plan's Figure 4 equation, it seems clear that sufficient, credible analyses have not yet been performed by ARB's staff concerning GHG emissions projections.

There are many additional reasons why ARB should set the targets substantially lower than proposed, including the following few:

- The targets cannot be achieved unless there is both the public's willingness to change its collective behavior and sufficient funding for transportation alternatives materializes. Concerning the former, meeting such high reduction targets would depend upon the public's willingness to bicycle long distances to work instead of driving, or to take a bus to the grocery store, among other strategies. It is imprudent to set targets so high without assurance that the public can adapt its behavior *en masse* and overnight, when any such shifts are likely to be slow and gradual.

- Concerning funding issues, the public needs to be better informed now – before target adoption – regarding the realistic outlook for government finances. Presumably, ARB's staff has been furloughed intermittently lately, which should be a good indication to ARB that government finances are in very bad shape. This fact should also cause ARB to lean toward moderation. In addition, ARB should not set targets that can be met only through the imposition of new taxes and fees for using the roads or based on VMT without far more debate about and understanding of the economic and equitable ramifications.

- ARB has failed to put forth any meaningful assessment of how much it will cost each region and the State to achieve the Proposed Targets. As noted above,

ARB's Updated Economic Impacts Analysis from April concerning AB 32 assumed that the Placeholder Target would be applied to the more robust of the two BAU assumptions suggested by the AB 32 Scoping Plan. It would be imprudent, therefore, to move toward much higher targets without substantially more economic analysis.

- Historically, reducing emissions from automobiles through land use planning has produced only modest benefits in the context of air quality planning for criteria pollutants because travel behaviors are complex and based on myriad factors. Far more likely are the significant emission reductions that will be achieved through the Pavley standards and the low carbon fuel standards. The negative economic consequences of distorting land uses could greatly outweigh the modest and uncertain benefit in terms of emissions. Therefore, ARB should revisit the *cost-effectiveness* of achieving the Proposed Targets in comparison to other possible ways to reduce GHG emissions. In addition, the relative impacts to the California economy, the cost of housing, and job creation should be determined and compared.

- ARB has provided no rational basis for increasing SCAG's 2035 target beyond that recommended by SCAG. Instead, the sole reason for the ARB staff recommendation seems to be that other metropolitan planning organizations recommended a larger percent reduction than SCAG. SB 375 was intended to allow for reasonable differences among the regions; and ARB should not disregard the special characteristics of the SCAG region.

- If ARB moves ahead with the Proposed Targets without examining these issues, then it is setting up the SCAG region for failure. Land use and transportation plans would then be show-horned into unrealistic shapes; and unjust and inequitable differential treatment under the California Environmental Quality Act (CEQA) would be the very likely outcome. Moderating the targets now would temper these foreseeable negative effects.

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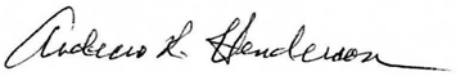
Respectfully, the state's economy, future jobs, and future communities deserve more moderation than ARB's staff has shown through the Proposed Targets. BIA/SC asks that ARB act carefully and prudently.

Sincerely,



Andrew R. Henderson
Vice President and General Counsel
Building Industry Association of Southern California, Inc.

Attachments

FIGURE 1
Business as Usual Comparison of the Change in Aggregate GHG Emissions from Land Use and Transportation Based Upon AB 32 Scoping Plan (Stated Assumptions vs. Fig. 4 Graph)

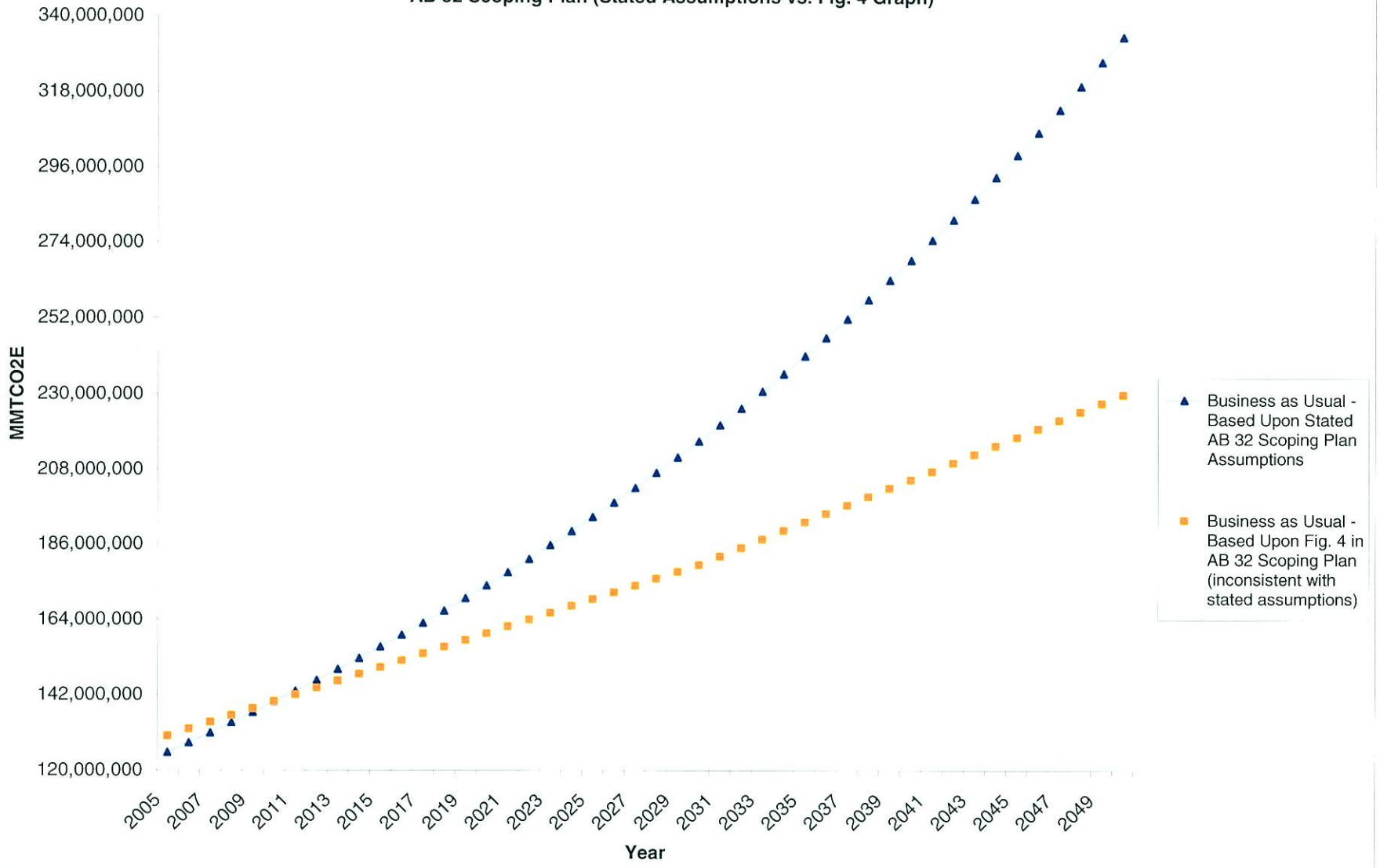


FIGURE 2
Change in Aggregate GHG Emissions from Land Use and Transportation Based Upon AB 32 Scoping Plan (Stated Assumptions)

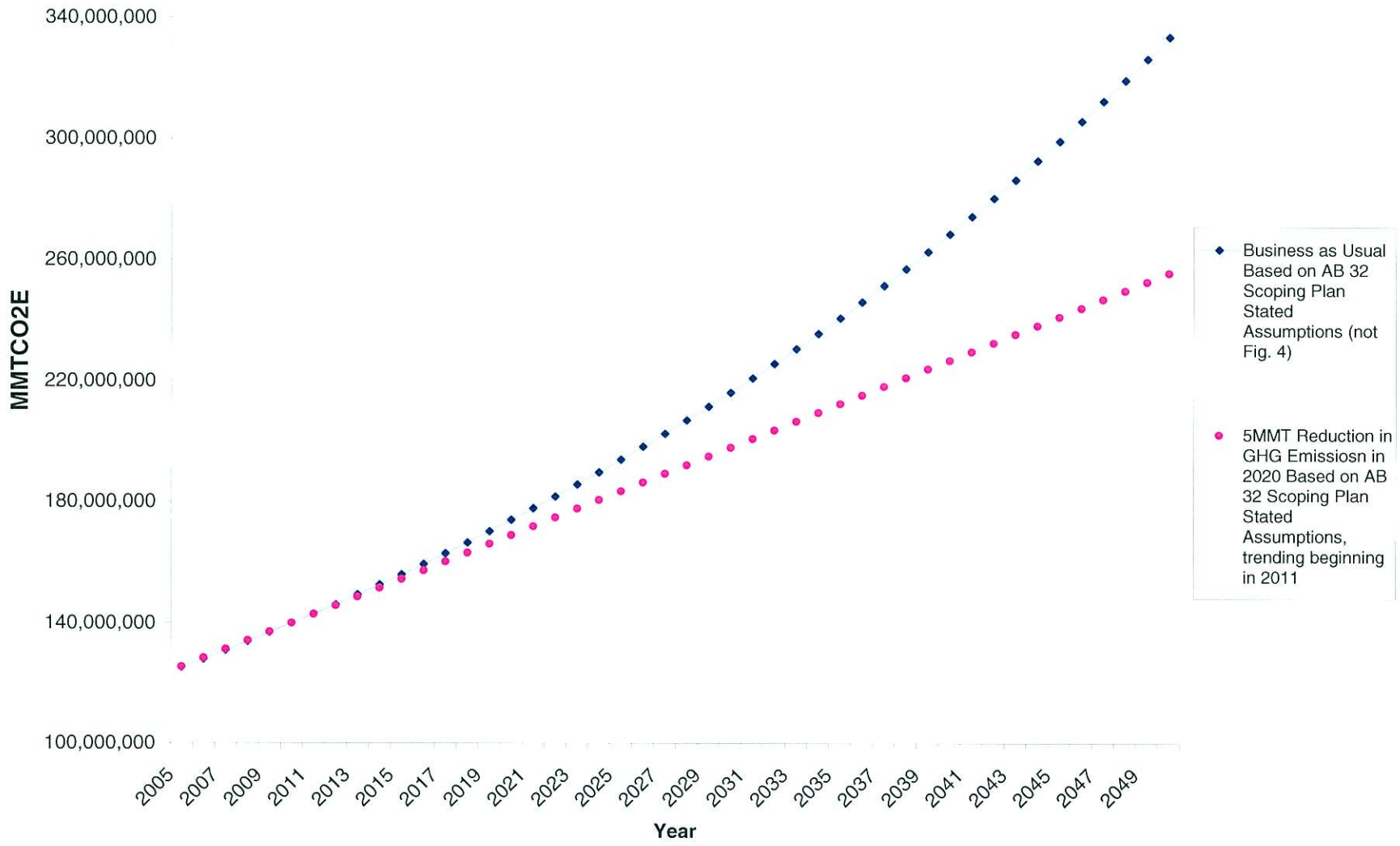


FIGURE 3

Change in Aggregate GHG Emissions from Land Use and Transportation Based Upon AB 32 Scoping Plan (Fig. 4 Graph)

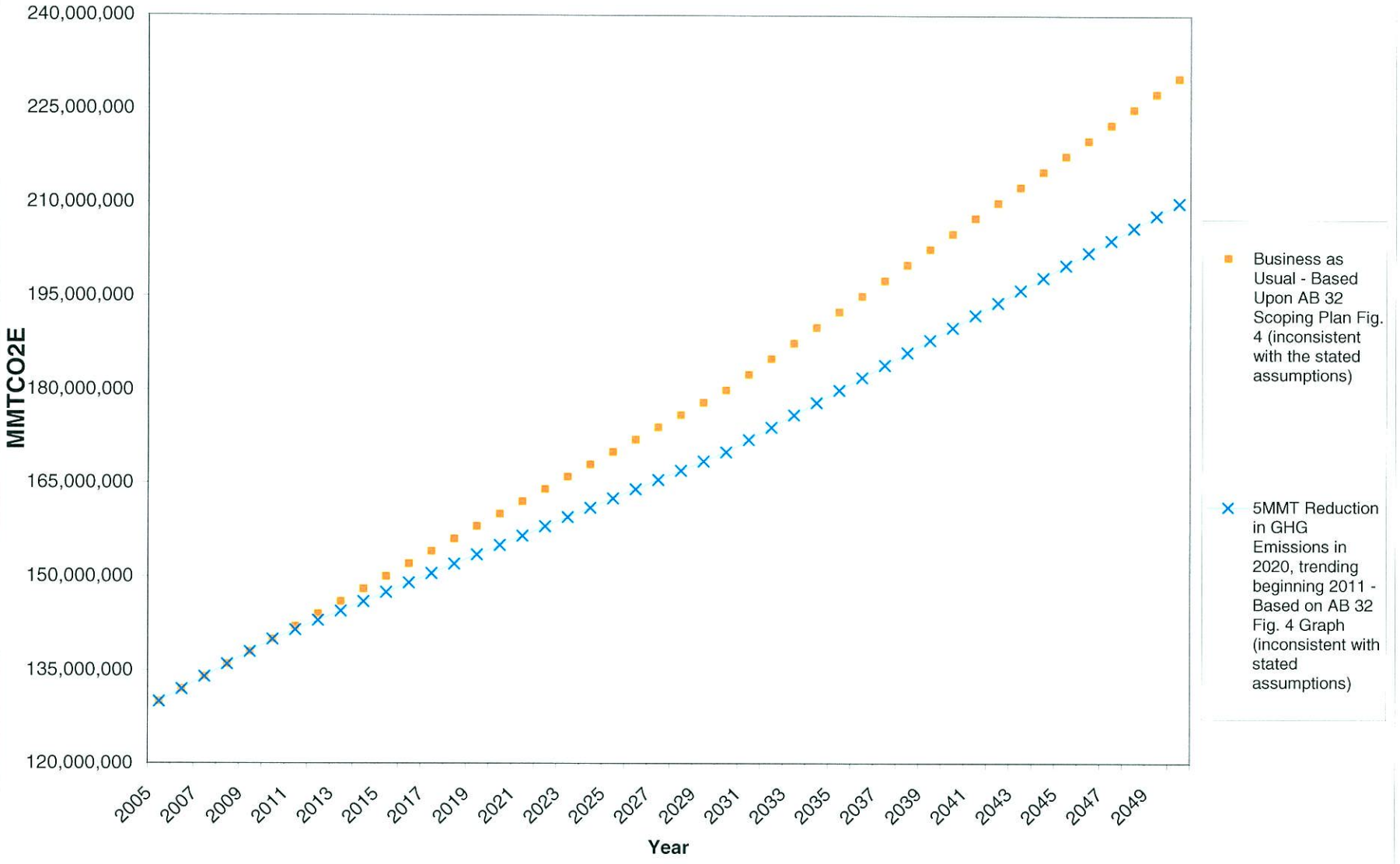


FIGURE 4

Change in Aggregate GHG Emissions from Land Use and Transporation Based Upon AB 32 Scoping Plan (Stated Assumptions vs. Fig. 4 Graph)

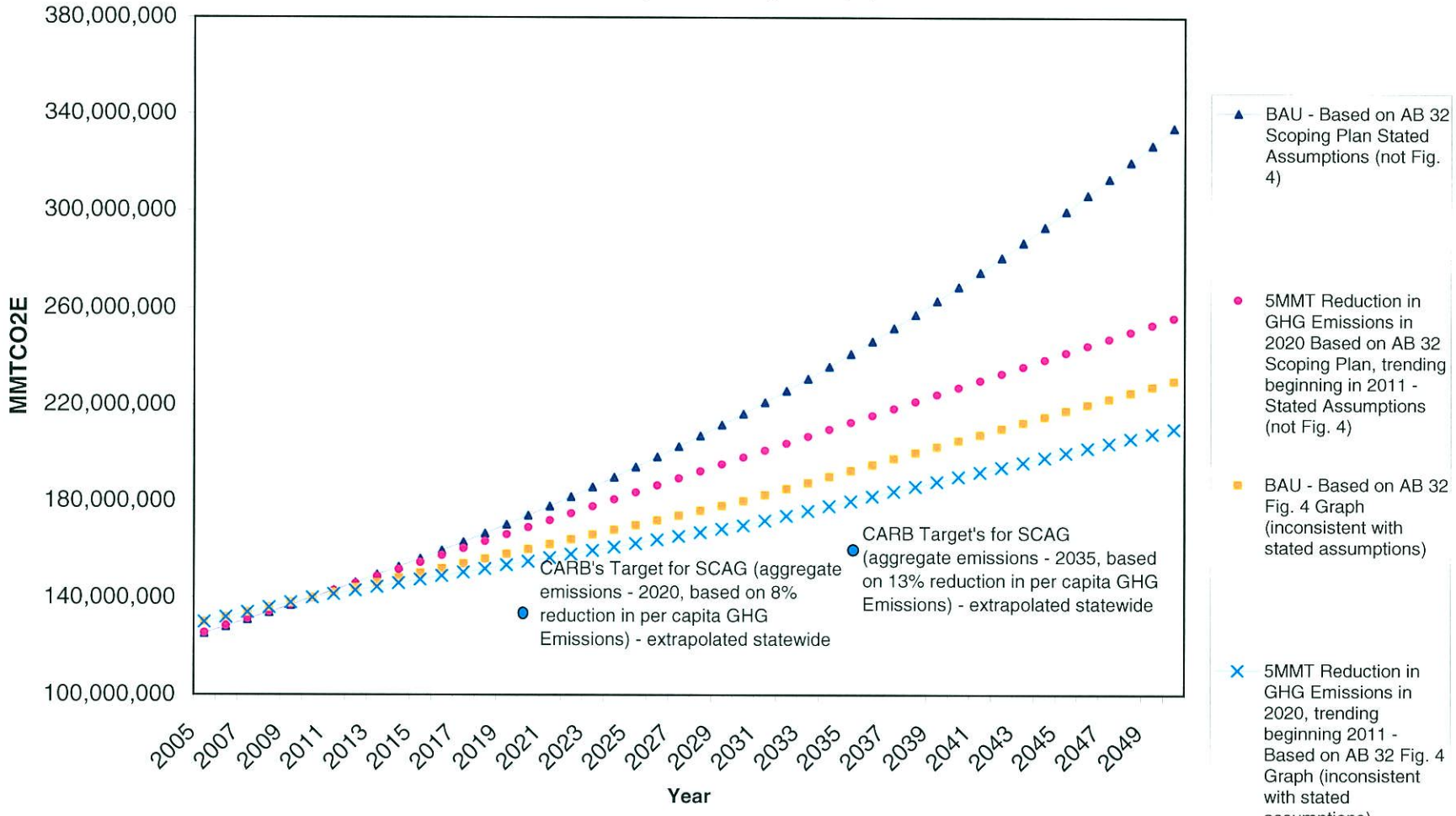


FIGURE 5
Business as Usual Comparison of the Percentage Change in Per Capita GHG Emissions - AB 32 Scoping Plan (Stated Assumptions vs. Fig. 4 Graph)

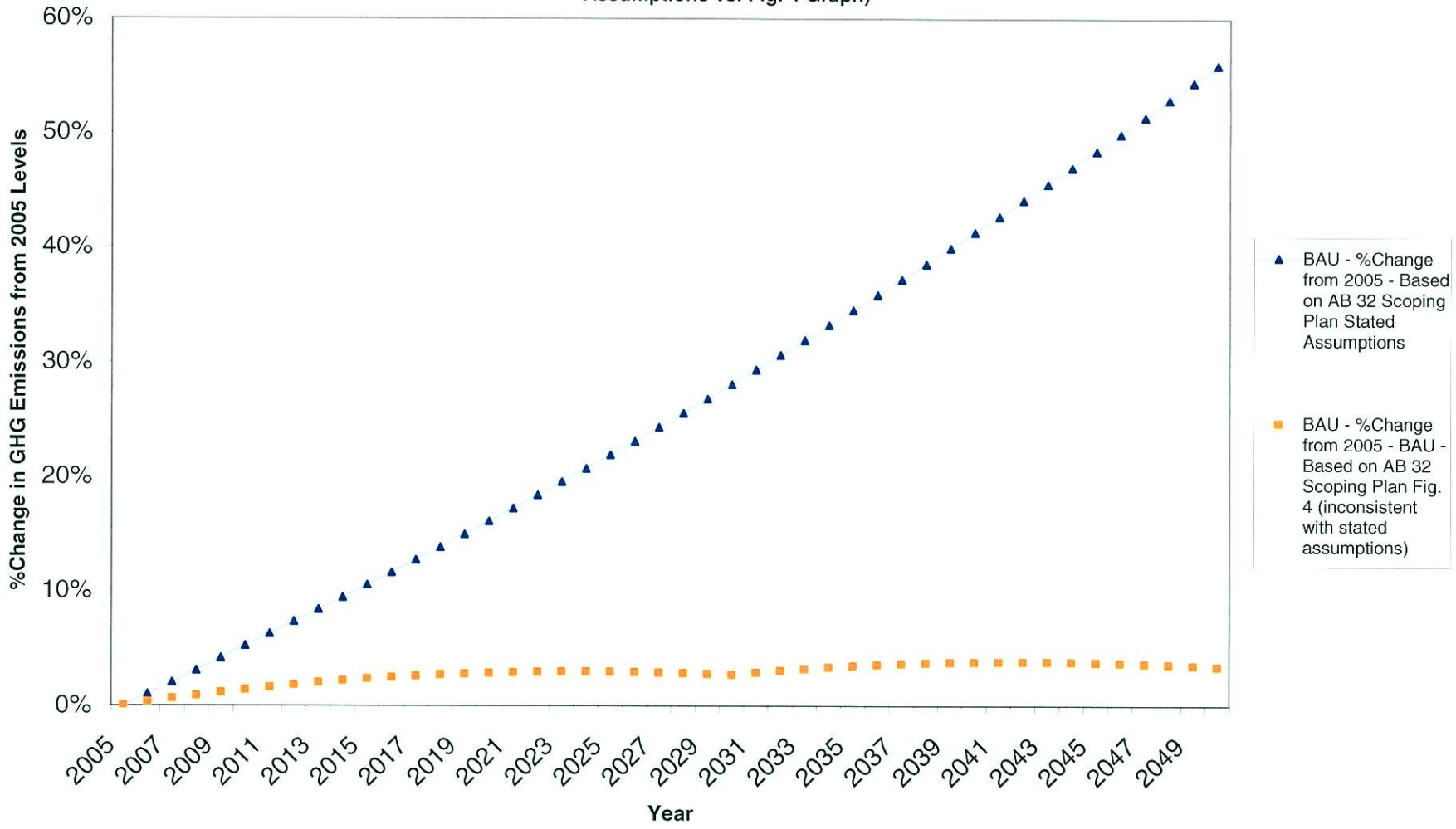


FIGURE 6
Percentage Change in Per Capita GHG Emissions - AB 32 Scoping Plan (Stated Assumptions, assuming 2005 vehicles and fuels and a direct lineal relationship between VMT and emissions)

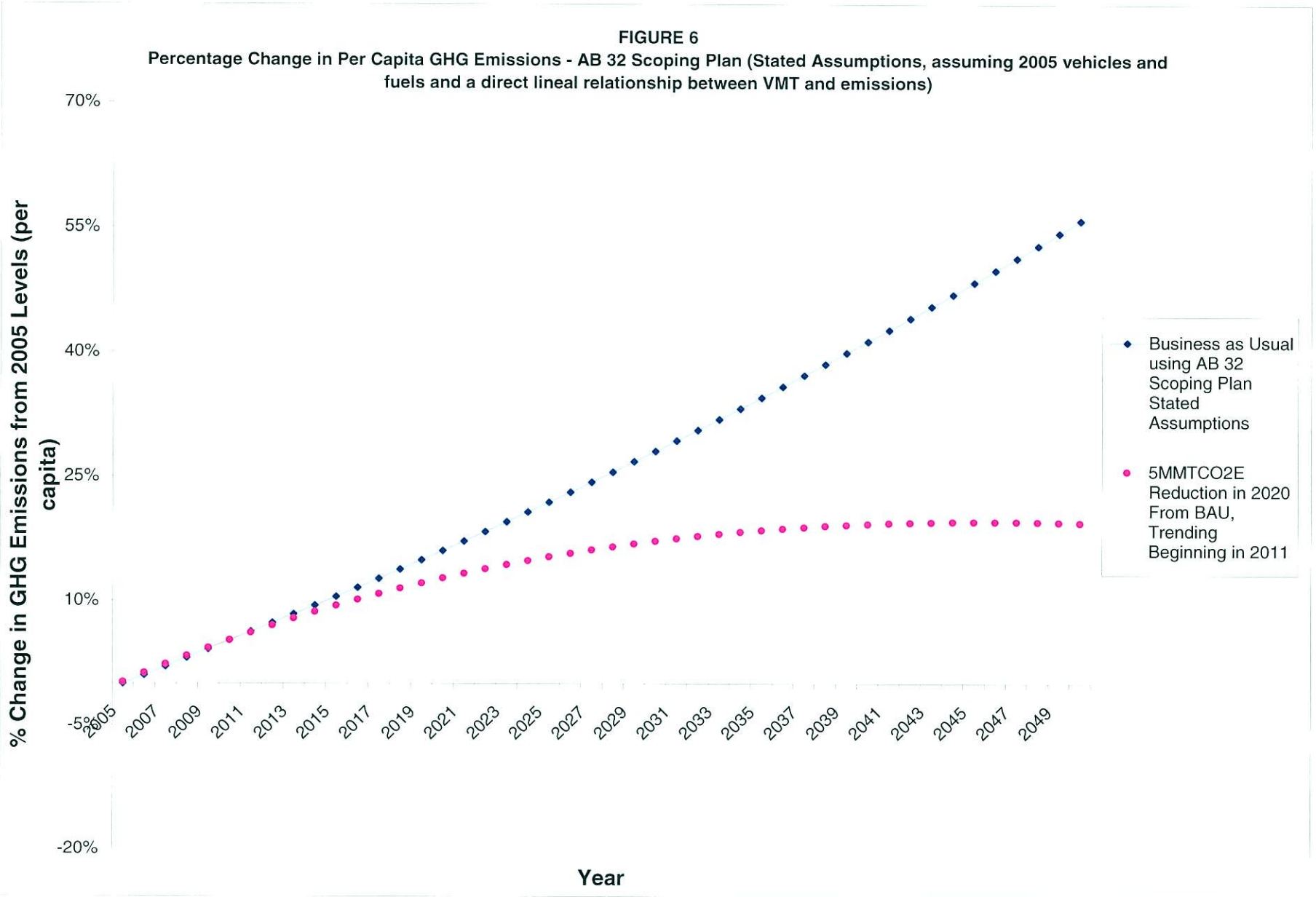


FIGURE 7
Percentage Change in Per Capita GHG Emissions - AB 32 Scoping Plan (Fig. 4 Graph)

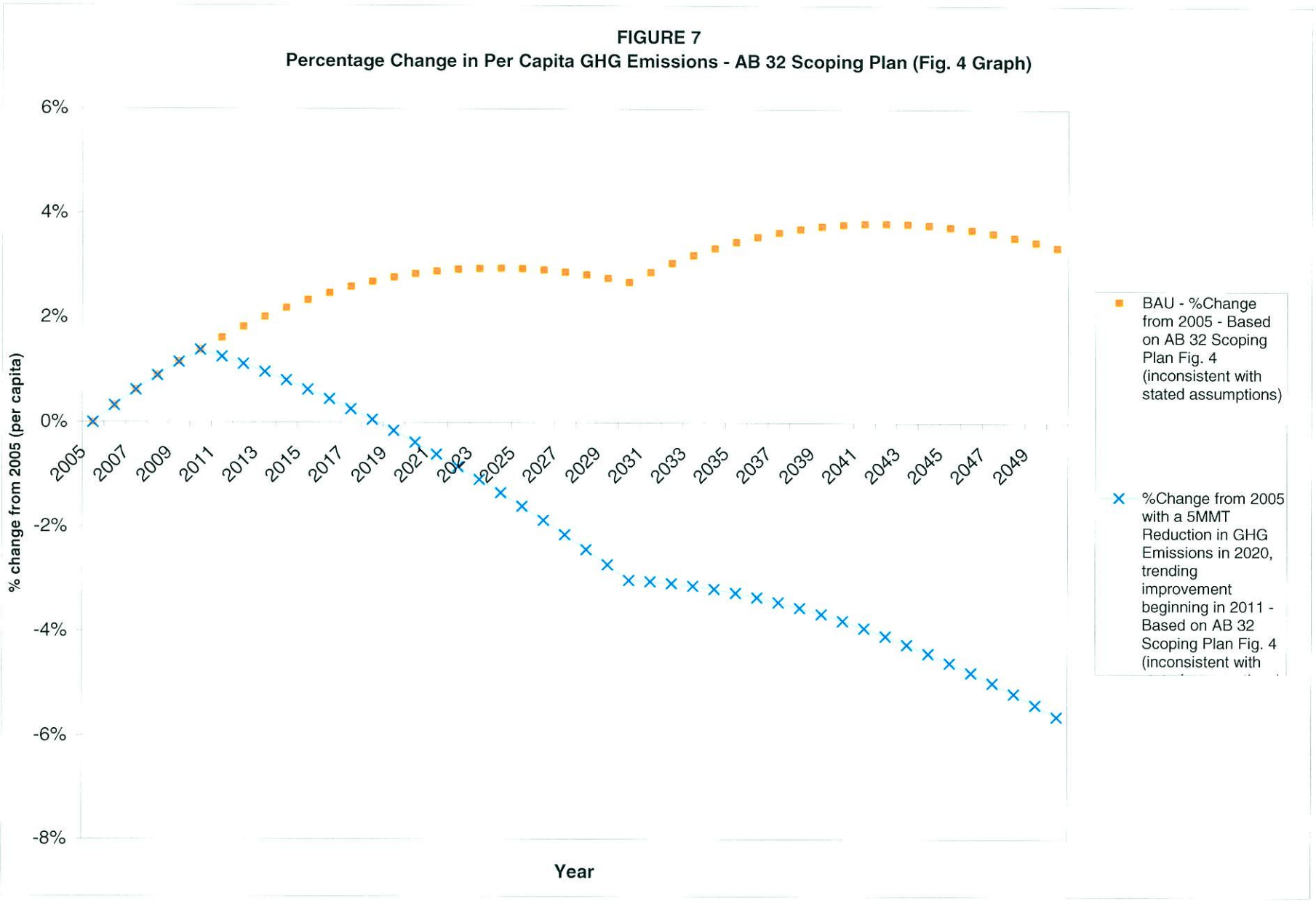


FIGURE 8
Percentage Change in Per Capita GHG Emissions - AB 32 Scoping Plan (Stated Assumptions vs. Fig. 4 Graph, assuming 2005 vehicles and fuels and a direct lineal relationship between VMT and emissions)

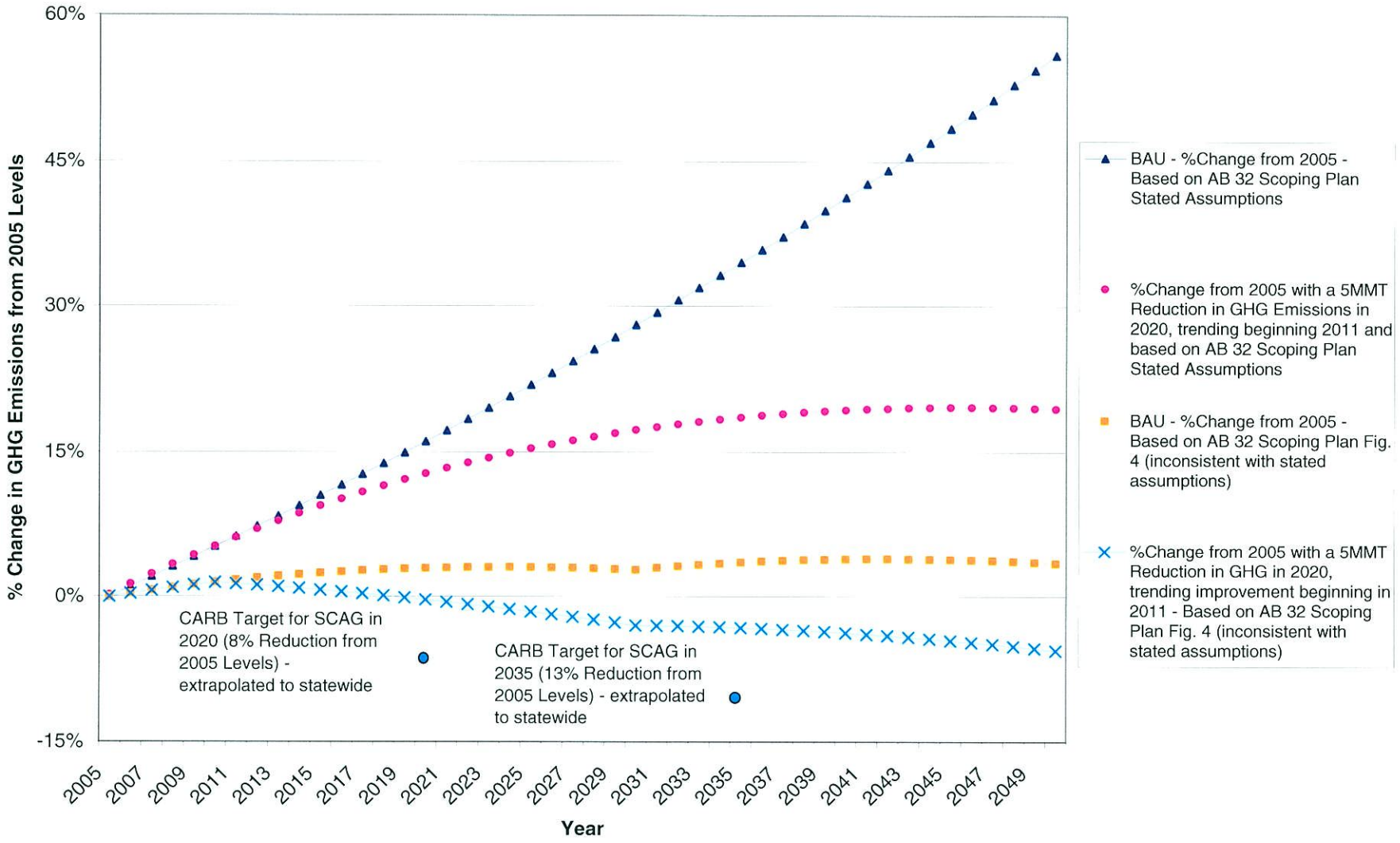


TABLE 1 AB 32 SCOPING PLAN DATA - STATED ASSUMPTIONS								
Year	Population (CA)	BAU from Scoping Plan stated assumptions - 2.2% growth in GHG)	5 MMTCO2 Reduction in 2020 (2.2% growth in GHG)	Per Capita Emissions (BAU) - Stated Asumptions	Per Capita 5MMTCO2 Reduction in 2020	% Change from 2005 - BAU assuming 2.2% Growth in VMT	%Change with a 5MMT Reduction in GHG in 2020 from 2005 levels	Aggregate Emissions (CARB Targets of 8% and 13%)
2005	35,786,730	125,262,856	125,482,420	3.500	3.506	0%	0.18%	
2006	36,221,387	128,080,630	128,385,936	3.536	3.544	1.02%	1.26%	
2007	36,661,323	130,961,789	131,289,452	3.572	3.581	2.06%	2.31%	
2008	37,106,602	133,907,760	134,192,968	3.609	3.616	3.10%	3.32%	
2009	37,557,290	136,920,000	137,096,484	3.646	3.650	4.15%	4.29%	
2010	38,013,451	140,000,000	140,000,000	3.683	3.683	5.22%	5.22%	
2011	38,469,612	143,080,000	142,903,516	3.719	3.715	6.26%	6.13%	
2012	38,931,248	146,227,760	145,807,032	3.756	3.745	7.31%	7.00%	
2013	39,398,423	149,444,771	148,710,548	3.793	3.775	8.37%	7.84%	
2014	39,871,204	152,732,556	151,614,064	3.831	3.803	9.44%	8.64%	
2015	40,349,658	156,092,672	154,517,580	3.869	3.829	10.52%	9.41%	
2016	40,833,854	159,526,711	157,421,096	3.907	3.855	11.61%	10.14%	
2017	41,323,860	163,036,298	160,324,612	3.945	3.880	12.72%	10.84%	
2018	41,819,747	166,623,097	163,228,128	3.984	3.903	13.83%	11.51%	
2019	42,321,584	170,288,805	166,131,644	4.024	3.925	14.95%	12.15%	
2020	**42,829,443**	**174,035,159**	**169,035,159**	**4.063**	**3.947**	**16.09%**	**12.75%**	**137,910,806.46**
2021	43,343,396	177,863,932	171,938,675	4.104	3.967	17.24%	13.33%	
2022	43,863,517	181,776,939	174,842,191	4.144	3.986	18.40%	13.88%	
2023	44,389,879	185,776,031	177,745,707	4.185	4.004	19.57%	14.40%	
2024	44,922,558	189,863,104	180,649,223	4.226	4.021	20.75%	14.89%	
2025	45,461,628	194,040,092	183,552,739	4.268	4.038	21.94%	15.35%	
2026	46,007,168	198,308,974	186,456,255	4.310	4.053	23.14%	15.78%	
2027	46,559,254	202,671,772	189,359,771	4.353	4.067	24.36%	16.19%	
2028	47,117,965	207,130,551	192,263,287	4.396	4.080	25.59%	16.58%	
2029	47,683,380	211,687,423	195,166,803	4.439	4.093	26.83%	16.93%	
2030	48,255,581	216,344,546	198,070,319	4.483	4.105	28.08%	17.27%	
2031	48,834,648	221,104,126	200,973,835	4.528	4.115	29.35%	17.57%	
2032	49,420,664	225,968,417	203,877,351	4.572	4.125	30.63%	17.86%	
2033	50,013,712	230,939,722	206,780,867	4.618	4.134	31.92%	18.12%	
2034	50,613,876	236,020,396	209,684,383	4.663	4.143	33.22%	18.36%	
2035	**51,221,243**	**241,212,845**	**212,587,899**	**4.709**	**4.150**	**34.54%**	**18.57%**	**155,968,684.94**

2036	51,835,898	246,519,527	215,491,415	4.756	4.157	35.87%	18.77%	
2037	52,457,928	251,942,957	218,394,931	4.803	4.163	37.21%	18.94%	
2038	53,087,424	257,485,702	221,298,447	4.850	4.169	38.57%	19.09%	
2039	53,724,473	263,150,387	224,201,963	4.898	4.173	39.94%	19.22%	
2040	54,369,166	268,939,696	227,105,478	4.947	4.177	41.32%	19.34%	
2041	55,021,596	274,856,369	230,008,994	4.995	4.180	42.72%	19.43%	
2042	55,681,855	280,903,209	232,912,510	5.045	4.183	44.13%	19.50%	
2043	56,350,038	287,083,080	235,816,026	5.095	4.185	45.55%	19.56%	
2044	57,026,238	293,398,908	238,719,542	5.145	4.186	46.99%	19.59%	
2045	57,710,553	299,853,684	241,623,058	5.196	4.187	48.44%	19.61%	
2046	58,403,080	306,450,465	244,526,574	5.247	4.187	49.91%	19.62%	
2047	59,103,917	313,192,375	247,430,090	5.299	4.186	51.39%	19.60%	
2048	59,813,164	320,082,607	250,333,606	5.351	4.185	52.89%	19.57%	
2049	60,530,922	327,124,425	253,237,122	5.404	4.184	54.40%	19.52%	
2050	61,257,293	334,321,162	256,140,638	5.458	4.181	55.92%	19.46%	

TABLE 2 AB 32 SCOPING PLAN - FIG 4. GRAPH								
Year	Population (CA)	BAU Based on Fig. 4	5MMT Reduction in 2020 - Fig. 4	Per Capita - BAU - (Fig4)	Per Capita - 5MMT Reduction - (Fig 4)	BAU - %Change in Per Capita GHG	% Change in Per Capita GHG Emissions (Fig. 4)	Aggregate Emissions (CARB Targets of 8% and 13%)
2005	35,786,730	130,000,000	130,000,000	3.632631388	3.632631388	0%		
2006	36,221,387	132,000,000	132,000,000	3.644255808	3.644255808	0.32%	0.32%	
2007	36,661,323	134,000,000	134,000,000	3.655078144	3.655078144	0.62%	0.62%	
2008	37,106,602	136,000,000	136,000,000	3.66511597	3.66511597	0.89%	0.89%	
2009	37,557,290	138,000,000	138,000,000	3.674386558	3.674386558	1.15%	1.15%	
2010	38,013,451	140,000,000	140,000,000	3.682906874	3.682906874	1.38%	1.38%	
2011	38,469,612	142,000,000	141,500,000	3.691225128	3.678227856	1.61%	1.26%	
2012	38,931,248	144,000,000	143,000,000	3.698828275	3.673141968	1.82%	1.12%	
2013	39,398,423	146,000,000	144,500,000	3.705732105	3.667659515	2.01%	0.96%	
2014	39,871,204	148,000,000	146,000,000	3.711952133	3.661790617	2.18%	0.80%	
2015	40,349,658	150,000,000	147,500,000	3.717503605	3.655545211	2.34%	0.63%	
2016	40,833,854	152,000,000	149,000,000	3.722401501	3.648933051	2.47%	0.45%	
2017	41,323,860	154,000,000	150,500,000	3.726660542	3.641963711	2.59%	0.26%	
2018	41,819,747	156,000,000	152,000,000	3.730295189	3.634646594	2.69%	0.06%	
2019	42,321,584	158,000,000	153,500,000	3.73331965	3.626990926	2.77%	-0.16%	
2020	**42,829,443**	**160,000,000**	**155,000,000**	**3.735747886**	**3.619005765**	**2.84%**	**-0.38%**	**137,910,806.46**
2021	43,343,396	162,000,000	156,500,000	3.737593611	3.610700001	2.89%	-0.60%	
2022	43,863,517	164,000,000	158,000,000	3.738870299	3.602082361	2.92%	-0.84%	
2023	44,389,879	166,000,000	159,500,000	3.739591184	3.593161409	2.94%	-1.09%	
2024	44,922,558	168,000,000	161,000,000	3.739769268	3.583945549	2.95%	-1.34%	
2025	45,461,628	170,000,000	162,500,000	3.739417323	3.574443029	2.94%	-1.60%	
2026	46,007,168	172,000,000	164,000,000	3.738547893	3.564661945	2.92%	-1.87%	
2027	46,559,254	174,000,000	165,500,000	3.737173301	3.554610237	2.88%	-2.15%	
2028	47,117,965	176,000,000	167,000,000	3.735305648	3.5442957	2.83%	-2.43%	
2029	47,683,380	178,000,000	168,500,000	3.732956821	3.53372598	2.76%	-2.72%	
2030	48,255,581	180,000,000	170,000,000	3.730138494	3.522908578	2.68%	-3.02%	
2031	48,834,648	182,500,000	172,000,000	3.737100764	3.522089487	2.88%	-3.04%	
2032	49,420,664	185,000,000	174,000,000	3.743373444	3.520794483	3.05%	-3.08%	
2033	50,013,712	187,500,000	176,000,000	3.748971909	3.519034965	3.20%	-3.13%	
2034	50,613,876	190,000,000	178,000,000	3.753911266	3.516822133	3.34%	-3.19%	
2035	**51,221,243**	**192,500,000**	**180,000,000**	**3.758206359**	**3.514166985**	**3.46%**	**-3.26%**	**155,968,684.94**

2036	51,835,898	195,000,000	182,000,000	3.761871772	3.511080321	3.56%	-3.35%	
2037	52,457,928	197,500,000	184,000,000	3.764921835	3.507572748	3.64%	-3.44%	
2038	53,087,424	200,000,000	186,000,000	3.767370626	3.503654683	3.71%	-3.55%	
2039	53,724,473	202,500,000	188,000,000	3.769231975	3.499336353	3.76%	-3.67%	
2040	54,369,166	205,000,000	190,000,000	3.77051947	3.494627801	3.80%	-3.80%	
2041	55,021,596	207,500,000	192,000,000	3.771246457	3.489538891	3.82%	-3.94%	
2042	55,681,855	210,000,000	194,000,000	3.771426049	3.484079302	3.82%	-4.09%	
2043	56,350,038	212,500,000	196,000,000	3.771071125	3.478258543	3.81%	-4.25%	
2044	57,026,238	215,000,000	198,000,000	3.770194335	3.472085946	3.79%	-4.42%	
2045	57,710,553	217,500,000	200,000,000	3.768808107	3.465570673	3.75%	-4.60%	
2046	58,403,080	220,000,000	202,000,000	3.766924645	3.458721719	3.70%	-4.79%	
2047	59,103,917	222,500,000	204,000,000	3.764555935	3.451547914	3.63%	-4.98%	
2048	59,813,164	225,000,000	206,000,000	3.761713752	3.444057924	3.55%	-5.19%	
2049	60,530,922	227,500,000	208,000,000	3.758409655	3.436260256	3.46%	-5.41%	
2050	61,257,293	230,000,000	210,000,000	3.754655	3.428163261	3.36%	-5.63%	