

Proposed SB 375 Greenhouse Gas Targets: Documentation of the Resulting Emission Reductions based on MPO Data

This spreadsheet provides documentation of the MPO data and the calculations used to derive the greenhouse gas reductions of over 3 MMTCO₂/year in 2020 and 15 MMTCO₂/year in 2035 cited in ARB's August 9, 2010 staff report on the Proposed Greenhouse Gas Emission Reduction Targets Pursuant to SB 375.

2005	SCAG	MTC	SANDAG	SACOG	Fresno	Kern	SJCOG	StanCOG	Tulare	Merced	Kings	Madera	AMBAG	SLOCOG (2008)	SBCAG	Shasta	Butte (2006)	Tahoe	18 MPOs
Population	17,763,285	7,094,823	3,034,388	2,057,200	897,416	765,750	650,458	511,617	390,950	243,000	145,463	146,101	740,048	269,300	417,500	165,430	217,209	41,211	35,551,149
Baseline CO ₂ /capita in 2005 (lbs/weekday)	21.2	20.8	26.0	22.4	16.1	14.8	17.2	17.4	16.2	16.4	13.4	19.8	14.1	16.5	16.8	17.9	15.5	14.4	
Annual CO ₂ Emissions in 2005 (MMTCO ₂ /year)	59.3	23.2	12.4	7.3	2.3	1.8	1.8	1.4	1.0	0.6	0.3	0.5	1.6	0.7	1.1	0.5	0.5	0.1	116.3

2020	SCAG	MTC	SANDAG	SACOG	Fresno	Kern	SJCOG	StanCOG	Tulare	Merced	Kings	Madera	AMBAG	SLOCOG	SBCAG	Shasta	Butte (2018)	Tahoe	18 MPOs
Population	21,033,336	8,018,000	3,635,855	2,536,000	1,131,430	1,010,800	809,685	632,623	547,423	331,000	205,914	224,567	840,366	288,000	459,600	214,734	267,599	48,042	42,234,974
Baseline CO ₂ /capita in 2020 (lbs/weekday)	20.1	20.1	23.7	21.5	15.7	14.6	16.6	16.7	15.5	18.4	12.7	19.7	15.9	15.2	17.8	19.5	15.6	13.4	
Baseline Annual CO ₂ Emissions in 2020 (MMTCO ₂ /year)	66.5	25.4	13.6	8.6	2.8	2.3	2.1	1.7	1.3	1.0	0.4	0.7	2.1	0.7	1.3	0.7	0.7	0.1	131.8
Proposed SB375 Targets - % Change in CO₂/capita from 2005	-8%	-7%	-7%	-7%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	-5%	13%	-8%	6%	0%	1%	-7%	
Proposed Target CO ₂ /capita in 2020 (lbs/weekday)	19.5	19.3	24.2	20.8	15.3	14.1	16.3	16.5	15.4	15.6	12.7	18.8	15.9	15.2	17.8	17.9	15.7	13.4	
Annual CO ₂ Emissions in 2020 based on Proposed Target CO ₂ /capita (MMTCO ₂ /year)	64.6	24.4	13.8	8.3	2.7	2.2	2.1	1.6	1.3	0.8	0.4	0.7	2.1	0.7	1.3	0.6	0.7	0.1	128.5
Change in 2020 Annual CO ₂ Emissions due to Proposed Targets (MMTCO ₂ /year)	-2.0	-1.0	0.3	-0.3	-0.1	-0.1	0.0	0.0	0.0	-0.1	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.0	-3.4

2035	SCAG	MTC	SANDAG	SACOG	Fresno	Kern	SJCOG	StanCOG	Tulare	Merced	Kings	Madera	AMBAG	SLOCOG	SBCAG	Shasta (2030)	Butte	Tahoe	18 MPOs
Population	23,563,107	9,073,700	3,984,753	3,081,000	1,418,887	1,321,000	989,774	767,836	700,840	465,000	275,476	313,250	920,714	330,800	487,000	245,904	346,818	55,447	48,341,306
Baseline CO ₂ /capita in 2035 (lbs/weekday)	20.4	20.5	24.6	19.6	16.0	16.2	17.0	16.6	16.6	20.4	12.3	21.2	16.0	15.2	17.5	19.7	15.5	15.3	
Baseline Annual CO ₂ Emissions in 2035 (MMTCO ₂ /year)	75.7	29.3	15.4	9.5	3.6	3.4	2.6	2.0	1.8	1.5	0.5	1.0	2.3	0.8	1.3	0.8	0.8	0.1	152.6
Proposed SB375 Targets - % Change in CO₂/capita from 2005	-13%	-15%	-13%	-16%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	-10%	14%	-8%	4%	0%	1%	6%	
Proposed Target CO ₂ /capita in 2035 (lbs/weekday)	18.4	17.7	22.6	18.8	14.5	13.3	15.5	15.7	14.6	14.8	12.1	17.8	16.1	15.2	17.5	17.9	15.7	15.3	
Annual CO ₂ Emissions in 2035 based on Proposed Target CO ₂ /capita (MMTCO ₂ /year)	68.4	25.3	14.2	9.1	3.2	2.8	2.4	1.9	1.6	1.1	0.5	0.9	2.3	0.8	1.3	0.7	0.9	0.1	137.5
Change in 2035 Annual CO ₂ Emissions due to Proposed Targets (MMTCO ₂ /year)	-7.3	-4.0	-1.2	-0.4	-0.3	-0.6	-0.2	-0.1	-0.2	-0.4	0.0	-0.2	0.0	0.0	0.0	-0.1	0.0	0.0	-15.1

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Conversion Factors:

2,000 lbs/short ton
347 average weekdays/year
1,000,000 Million
2.20462262 lbs/kg
0.90718474 metric tonne/short ton

Notes:

1. The CO2 emissions presented in this table do not include reductions from Pavley and LCFS regulations.
2. The CO2/capita data presented in the table represent RTAC recommended trips only, and does not include through trips.
3. Annual CO2 Emissions were calculated using the formula:

$$\text{Annual CO2 Emissions (MMTCO2/year)} = \frac{\text{Population} \times \text{CO2/capita (lbs/average weekday)} \times 347 \text{ (average weekdays/year)} \times 0.90718474 \text{ (metric tonne/short ton)}}{1,000,000 \text{ (Million)} \times 2,000 \text{ (lbs/short ton)}}$$

Data Source:

1. SCAG's Population and CO2/capita data were obtained from their "Alternative Scenario Summary" document (received 6/08/10)
2. MTC's Population and CO2/capita data were obtained from email sent by Harold Brazil (MTC) to Dmitri Smith (ARB) on August 5, 2010, confirming latest MTC data presented by MTC staff at the July 9, 2010 MTC Planning Committee Meeting
3. SANDAG's CO2/capita were obtained from their "Responses to ARB Questions" document (received 6/7/10); Population data were obtained from Attachment B of the "Preliminary Report on Target Setting from MTC, SACOG, SANDAG and SCAG" document (received 5/19/10)
4. SACOG's CO2/capita were obtained from their "RTAC Scenarios" document (received 7/12/10); Population data were obtained from email sent by Bruce Griesenbeck (SACOG) to Jason Crow (ARB) on August 6, 2010, clarifying prior submittals.
5. Fresno Population and CO2/capita data correspond to Approach #1 data presented in Table 3 and Table 13 of their "Proposed target submittal" document, respectively (received 5/19/10)
6. Kern's Population and CO2/capita data were obtained from data provided in their "Alternative Scenario Summary" document (received 7/14/10); CO2/capita were calculated to reflect 100% II and 50 % IX/XI trips (consistent with RTAC's Recommendation)
7. SJCOG's Population and CO2/capita data were obtained from Method C calculation of "SJV MPO Step 1 Data Submittal (Excel format)" document (received 5/24/10)
8. StanCOG's Population and CO2/capita data were obtained from Method C calculation of "SJV MPO Step 1 Data Submittal (Excel format)" document (received 5/24/10)
9. Tulare's Population and CO2/capita data were obtained from Method C calculation of "SJV MPO Step 1 Data Submittal (Excel format)" document (received 5/24/10)
10. Merced's Population and CO2/capita data were obtained from Method C calculation of "SJV MPO Step 1 Data Submittal (Excel format)" document (received 5/24/10)
11. Kings's Population and CO2/capita data were obtained from Method C calculation of "SJV MPO Step 1 Data Submittal (Excel format)" document (received 5/24/10)
12. Madera's Population and CO2/capita data were obtained from Method C calculation of "SJV MPO Step 1 Data Submittal (Excel format)" document (received 5/24/10)
13. AMBAG's Population data were obtained from their "SB375 Baseyear data submission" (received May 5, 2010); CO2/capita data were obtained from their "Response to ARB Questions and Technical Memo on CO2 Targets" submission (received 8/3/10)
14. SLOCOG's Population and CO2/capita data were obtained from their "GHG Emission Simulation Results" document (received 6/23/10); CO2/capita data were converted from kg/capita to lbs/capita
15. SBCAG's Population and CO2/capita data were obtained from their "Scenarios for Target Setting" document (received 5/27/10)
16. Shasta's Population and CO2/capita data were obtained from their "Alternative Scenario Summary" document (received 7/14/10); CO2/capita were calculated to reflect 100% II and 50 % IX/XI trips (consistent with RTAC's Recommendation)
17. Butte's Population and CO2/capita data were obtained from their "Draft Targets (no Pavley)" document (received 5/24/10)
18. Tahoe's Population and CO2/capita were obtained from the Joint MPO "SB 375 Base Year Data (2005, 2020, 2035)" document (received 4/26/10); CO2/capita were calculated to reflect 100% II and 50 % IX/XI trips (consistent with RTAC's Recommendation)