

California Greenhouse Gas Inventory for 2000-2011 — by IPCC Category

million tonnes of CO₂ equivalent - (based upon IPCC Second Assessment Report's Global Warming Potentials)

Included Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1 - Energy	410.25	425.63	420.32	422.52	432.26	424.09	419.84	425.08	421.26	394.92	387.99	383.99
1A - Fuel Combustion Activities	405.20	420.86	415.48	418.11	427.79	419.14	414.61	419.90	416.05	389.49	382.10	377.34
1A1 - Energy Industries	159.07	175.90	161.51	167.76	172.71	163.86	157.59	165.69	171.46	154.23	144.40	139.06
1A1a - Main Activity Electricity and Heat Production	116.38	132.30	119.13	122.24	127.50	119.42	115.88	124.34	129.70	113.33	102.32	98.64
1A1ai - Electricity Generation	84.808	103.494	86.523	92.866	98.066	91.194	88.845	98.223	104.632	84.151	75.809	72.109
1A1aii - Combined Heat and Power Generation (CHP)	31.568	28.807	32.604	29.377	29.430	28.230	27.037	26.117	25.072	29.180	26.514	26.532
1A1b - Petroleum Refining	24.61	25.17	25.27	25.97	25.25	25.87	25.52	25.00	24.22	24.55	26.47	24.90
1A1c - Manufacture of Solid Fuels and Other Energy Industries	18.08	18.43	17.11	19.55	19.96	18.56	16.19	16.35	17.54	16.35	15.61	15.52
1A1cii - Other Energy Industries	18.084	18.428	17.108	19.546	19.963	18.562	16.191	16.352	17.536	16.350	15.610	15.523
1A2 - Manufacturing Industries and Construction	24.67	23.38	24.81	21.22	21.38	20.61	20.65	19.11	20.24	18.63	21.01	22.38
1A2c - Chemicals	4.55	4.08	3.97	2.60	3.22	3.81	3.78	3.13	3.91	3.82	5.36	6.32
1A2d - Pulp, Paper and Print	1.05	0.94	1.01	0.92	0.94	0.62	0.64	0.55	0.46	0.40	0.40	0.44
1A2e - Food Processing, Beverages and Tobacco	3.89	3.51	3.80	3.12	3.16	3.02	3.31	3.32	3.18	3.12	3.08	3.16
1A2f - Non-Metallic Minerals	5.42	5.28	5.47	5.29	5.27	5.32	5.32	4.78	4.33	2.93	2.89	2.85
1A2g - Transport Equipment	0.46	0.48	0.52	0.31	0.27	0.27	0.26	0.28	0.29	0.25	0.25	0.24
1A2h - Machinery	1.75	1.27	1.33	0.98	1.01	1.02	1.04	0.99	0.93	0.82	0.80	0.82
1A2i - Mining (excluding fuels) and Quarrying	0.86	0.31	0.31	0.34	0.36	0.34	0.11	0.16	0.19	0.14	0.15	0.15
1A2j - Wood and Wood Products	0.40	0.31	0.19	0.16	0.11	0.11	0.11	0.08	0.07	0.05	0.05	0.04
1A2k - Construction	0.41	0.61	0.62	0.64	0.78	0.74	0.62	0.50	0.44	0.43	0.50	0.59
1A2l - Textile and Leather	0.56	0.54	0.59	0.45	0.44	0.43	0.39	0.35	0.31	0.23	0.24	0.23
1A2m - Non-specified Industry.	4.51	5.27	6.09	5.67	5.11	4.32	4.62	4.45	5.61	6.08	6.81	7.04
1A3 - Transport	175.10	175.55	182.77	182.55	186.20	187.93	188.36	187.96	176.22	170.72	169.67	167.53
1A3a - Civil Aviation	4.15	4.02	4.11	4.22	4.48	4.48	4.54	4.90	4.44	3.97	3.82	3.74
1A3aii - Domestic Aviation	3.890	3.780	3.836	3.951	4.231	4.257	4.331	4.678	4.251	3.818	3.690	3.606
1A3b - Road Transportation	162.97	163.54	169.72	168.88	171.83	172.56	172.56	172.43	162.30	158.64	157.57	155.11
1A3bi - Cars	64.315	62.978	63.358	60.372	59.972	58.753	58.583	58.253	55.141	54.974	55.174	54.253
1A3bii - Light-duty Trucks	65.503	66.635	70.695	72.058	73.119	72.980	72.431	71.516	67.407	66.477	65.207	63.518
1A3biii - Heavy-duty Trucks and Buses	32.797	33.514	35.201	35.920	38.170	39.928	40.604	41.629	38.694	36.071	36.023	36.083
1A3biv - Motorcycles	0.231	0.268	0.311	0.343	0.366	0.389	0.410	0.429	0.420	0.423	0.428	0.426
1A3c - Railways	1.88	1.89	2.50	2.70	2.91	3.34	3.53	3.17	2.38	1.94	2.33	2.49
1A3d - Water-borne Navigation	3.39	3.21	3.56	3.77	3.83	4.12	4.20	4.08	3.95	3.66	3.70	3.81
1A3di - International Water-borne Navigation (International Bunkers)	1.123	1.179	1.238	1.299	1.362	1.429	1.480	1.418	1.393	1.212	1.263	1.336
1A3dii - Domestic Water-borne Navigation	2.263	2.033	2.325	2.475	2.471	2.691	2.716	2.658	2.556	2.448	2.437	2.479
1A3e - Other Transportation	2.63	2.79	2.77	2.84	3.03	3.22	3.32	3.18	2.82	2.25	2.03	2.13
1A3eii - Off-road	2.631	2.790	2.767	2.843	3.029	3.217	3.315	3.176	2.819	2.245	2.033	2.133
1A4 - Other Sectors	46.37	46.02	46.39	46.58	47.50	46.75	48.01	47.13	48.13	45.91	47.02	48.37
1A4a - Commercial/Institutional	12.90	13.48	13.12	13.79	13.53	13.94	14.14	14.64	15.19	14.61	14.83	14.87
1A4b - Residential	29.65	28.72	28.88	28.41	29.45	28.18	28.54	28.69	29.03	28.65	29.38	29.85

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Included Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1A4c - Agriculture/Forestry/Fishing/Fish Farms	3.82	3.83	4.39	4.37	4.52	4.63	5.33	3.80	3.92	2.65	2.81	3.66
1B - Fugitive Emissions from Fuels	5.05	4.77	4.84	4.41	4.46	4.95	5.23	5.18	5.21	5.43	5.89	6.65
1B1 - Solid Fuels	0.08	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.03	0.03
1B2 - Oil and Natural Gas	3.74	3.51	3.59	3.16	3.20	3.68	3.98	3.92	3.98	3.99	4.71	5.36
1B2a - Oil	0.47	0.45	0.46	0.45	0.43	0.46	0.47	0.46	0.45	0.44	0.48	0.51
1B2ai - Venting	0.063	0.065	0.065	0.066	0.065	0.067	0.068	0.068	0.067	0.062	0.049	0.064
1B2aii - Flaring	0.056	0.058	0.058	0.059	0.058	0.060	0.061	0.060	0.060	0.055	0.055	0.126
1B2aiii - All Other	0.348	0.326	0.332	0.327	0.313	0.330	0.337	0.334	0.327	0.318	0.375	0.320
1B2b - Natural Gas	2.13	1.79	2.06	1.60	1.63	2.10	2.33	2.33	2.35	2.37	3.06	3.52
1B3 - Geothermal Energy Production	1.13	1.11	1.11	1.10	1.12	1.12	1.10	1.11	1.09	1.31	1.10	1.21
1B4 - Pollution control devices	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.10	0.10	0.06	0.05
2 - Industrial Processes and Product Use	19.05	18.87	19.10	19.59	20.33	21.14	21.98	22.54	23.10	21.72	23.60	26.36
2A - Mineral Industry	5.51	5.58	5.66	5.74	5.84	5.92	5.86	5.61	5.33	3.63	3.49	4.11
2A1 - Cement Production	5.43	5.52	5.60	5.68	5.77	5.85	5.80	5.55	5.28	3.60	3.46	4.08
2A2 - Lime Production	0.07	0.07	0.06	0.06	0.08	0.07	0.07	0.05	0.04	0.03	0.03	0.04
2B - Chemical Industry	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.03
2B2 - Nitric Acid Production	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.03
2D - Non-Energy Products from Fuels and Solvent Use	2.46	2.23	2.13	2.03	1.98	1.97	1.94	2.00	1.88	1.69	1.87	1.77
2D1 - Lubricant Use	2.09	1.92	1.89	1.75	1.77	1.77	1.72	1.78	1.65	1.48	1.65	1.56
2D3 - Solvent Use	0.36	0.32	0.23	0.27	0.21	0.20	0.22	0.22	0.23	0.21	0.22	0.21
2E - Electronics Industry	0.46	0.33	0.32	0.34	0.30	0.29	0.32	0.33	0.37	0.26	0.37	0.35
2F - Product Uses as Substitutes for Ozone Depleting Substances	6.30	6.44	6.61	7.22	7.93	8.65	9.25	9.89	10.83	11.92	13.52	14.57
2G - Other Product Manufacture and Use	0.97	0.87	0.94	0.88	0.92	0.91	0.97	0.99	0.98	0.89	0.94	0.89
2G1 - Electrical Equipment	0.35	0.34	0.32	0.31	0.31	0.31	0.29	0.27	0.28	0.27	0.25	0.25
2G1b - Use of Electrical Equipment	0.35	0.34	0.32	0.31	0.31	0.31	0.29	0.27	0.28	0.27	0.25	0.25
2G4 - CO ₂ , Limestone or Soda Ash consumption	0.62	0.53	0.62	0.57	0.61	0.61	0.68	0.71	0.70	0.62	0.69	0.64
2H - Other	3.31	3.35	3.39	3.33	3.31	3.34	3.58	3.67	3.67	3.27	3.36	4.63
2H3 - Hydrogen Production	3.31	3.35	3.39	3.33	3.31	3.34	3.58	3.67	3.67	3.27	3.36	4.63

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3 - Agriculture, Forestry and Other Land Use	25.22	25.40	28.00	28.46	28.05	28.18	28.62	29.15	29.96	29.04	28.87	28.58
3A - Livestock	16.49	17.16	17.69	18.18	17.68	18.32	18.68	19.92	20.22	20.05	19.60	19.62
3A1 - Enteric Fermentation	8.32	8.48	8.72	8.84	8.76	9.05	9.14	9.70	9.67	9.52	9.36	9.34
3A1a - Cattle	8.02	8.18	8.41	8.50	8.40	8.66	8.74	9.31	9.28	9.11	8.96	8.93
3A1ai - Dairy Cows	5.372	5.562	5.803	5.914	5.855	6.039	6.203	6.554	6.660	6.592	6.448	6.477
3A1aii - Other Cattle	2.650	2.614	2.606	2.590	2.542	2.616	2.535	2.752	2.619	2.518	2.507	2.454
3A1c - Sheep	0.14	0.14	0.13	0.12	0.11	0.12	0.11	0.10	0.10	0.11	0.10	0.10
3A1d - Goats	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
3A1f - Horses	0.15	0.16	0.17	0.20	0.23	0.26	0.27	0.27	0.27	0.28	0.29	0.29
3A1h - Swine	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3A2 - Manure Management	8.17	8.68	8.96	9.33	8.92	9.27	9.54	10.22	10.55	10.53	10.24	10.28
3A2a - Cattle	7.83	8.35	8.62	9.00	8.60	8.94	9.22	9.89	10.26	10.22	9.93	9.97
3A2ai - Dairy Cows	7.500	8.015	8.260	8.609	8.228	8.548	8.803	9.474	9.848	9.833	9.555	9.597
3A2aii - Other Cattle	0.333	0.337	0.365	0.393	0.375	0.393	0.414	0.418	0.408	0.387	0.377	0.376
3A2c - Sheep	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.04	0.03	0.03
3A2d - Goats	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3A2f - Horses	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.07	0.08	0.08	0.08
3A2h - Swine	0.05	0.04	0.06	0.05	0.06	0.05	0.05	0.06	0.03	0.04	0.04	0.04
3A2i - Poultry	0.19	0.19	0.18	0.17	0.15	0.15	0.15	0.16	0.16	0.15	0.15	0.15
3C - Aggregate Sources and Non-CO₂ Emissions Sources on Land	8.73	8.24	10.31	10.29	10.37	9.86	9.95	9.22	9.74	9.00	9.27	8.96
3C1 - Emissions from Biomass Burning	0.08	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.07	0.07	0.07	0.08
3C1b - Biomass Burning in Croplands	0.08	0.06	0.06	0.06	0.06	0.07	0.06	0.07	0.07	0.07	0.07	0.08
3C2 - Liming	0.27	0.16	0.23	0.24	0.24	0.30	0.48	0.26	0.17	0.17	0.18	0.17
3C4 - Direct N₂O Emissions from Managed Soils	6.06	5.84	7.30	7.29	7.32	6.91	6.84	6.44	6.92	6.31	6.52	6.27
3C5 - Indirect N₂O Emissions from Managed Soils	1.76	1.69	2.16	2.17	2.14	2.04	2.02	1.90	2.05	1.87	1.93	1.84
3C7 - Rice Cultivations	0.57	0.49	0.55	0.53	0.61	0.55	0.54	0.55	0.54	0.58	0.57	0.60
4 - Waste	8.37	8.46	8.40	8.51	8.55	8.68	8.73	8.78	8.90	9.01	9.13	9.18
4A - Solid Waste Disposal	6.02	6.12	6.06	6.16	6.15	6.29	6.31	6.35	6.46	6.56	6.68	6.73
4A1 - Managed Waste Disposal Sites	6.02	6.12	6.06	6.16	6.15	6.29	6.31	6.35	6.46	6.56	6.68	6.73
4B - Biological Treatment of Solid Waste	0.12	0.13	0.15	0.16	0.17	0.19	0.20	0.22	0.23	0.25	0.26	0.27
4D - Wastewater Treatment and Discharge	2.23	2.20	2.20	2.19	2.22	2.21	2.21	2.21	2.20	2.20	2.19	2.18
4D1 - Domestic Wastewater Treatment and Discharge	1.47	1.49	1.47	1.47	1.47	1.47	1.47	1.46	1.46	1.45	1.45	1.44
4D2 - Industrial Wastewater Treatment and Discharge	0.75	0.71	0.73	0.72	0.75	0.73	0.75	0.75	0.74	0.75	0.74	0.74

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Included Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Summary for Included Emissions												
Gross California Emissions	462.90	478.36	475.82	479.08	489.18	482.09	479.18	485.54	483.22	454.69	449.59	448.11

Archive

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Excluded Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1 - Energy	54.76	48.39	53.11	47.30	51.26	54.11	56.31	59.20	55.42	54.79	54.53	49.98
1A - Fuel Combustion Activities	54.76	48.39	53.11	47.30	51.26	54.11	56.31	59.20	55.42	54.79	54.53	49.98
1A3 - Transport	50.95	44.03	48.98	43.13	47.37	50.69	53.20	56.28	52.65	52.08	51.37	46.99
1A3a - Civil Aviation	35.19	32.52	35.20	33.81	36.19	35.85	36.80	38.46	34.88	34.21	33.51	34.01
1A3ai - International Aviation (International Bunkers)	16.799	15.176	15.727	14.559	15.784	16.192	16.835	17.551	16.625	16.473	16.208	17.054
1A3aii - Domestic Aviation	18.395	17.339	19.473	19.251	20.402	19.656	19.964	20.906	18.256	17.739	17.303	16.954
1A3d - Water-borne Navigation	15.75	11.51	13.78	9.32	11.19	14.84	16.40	17.82	17.77	17.87	17.85	12.98
1A3di - International Water-borne Navigation (International Bunkers)	15.754	11.513	13.780	9.316	11.186	14.845	16.400	17.818	17.767	17.871	17.855	12.980
1A5 - Non-Specified	3.81	4.36	4.13	4.18	3.88	3.41	3.11	2.93	2.77	2.70	3.16	2.99
1A5b - Mobile	3.74	4.07	3.64	3.66	3.34	3.31	3.00	2.81	2.68	2.56	2.59	2.59
1A5bi - Mobile (Aviation Component)	3.737	4.070	3.641	3.662	3.339	3.314	3.005	2.808	2.683	2.563	2.585	2.585
Summary for Excluded Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
International and Interstate Emissions	54.76	48.39	53.11	47.30	51.26	54.11	56.31	59.20	55.42	54.79	54.53	49.98

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<i>CO₂ from biogenic materials</i>	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
1 - Energy	16.22	16.39	14.65	14.98	14.95	14.17	13.78	13.67	13.62	14.12	13.43	15.22
1A - Fuel Combustion Activities	16.22	16.39	14.65	14.98	14.95	14.17	13.78	13.67	13.62	14.12	13.43	15.22
1A1 - Energy Industries	8.39	8.21	8.02	8.22	8.09	8.50	8.65	8.31	8.30	9.03	8.34	9.40
1A1a - Main Activity Electricity and Heat Production	8.39	8.21	8.02	8.22	8.09	8.50	8.65	8.31	8.30	9.03	8.34	9.40
1A1ai - Electricity Generation	5.249	4.790	5.687	5.638	5.414	5.530	5.670	5.343	5.513	6.738	6.323	6.763
1A1aii - Combined Heat and Power Generation (CHP)	3.137	3.419	2.338	2.581	2.679	2.966	2.983	2.968	2.783	2.290	2.018	2.638
1A1b - Petroleum Refining	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1A2 - Manufacturing Industries and Construction	3.78	4.25	2.64	2.57	2.60	2.86	2.61	2.65	2.37	2.25	2.31	2.30
1A2f - Non-Metallic Minerals	0.06	0.06	0.07	0.07	0.07	0.07	0.05	0.05	0.06	0.07	0.10	0.09
1A2m - Non-specified Industry.	3.72	4.19	2.57	2.50	2.53	2.78	2.56	2.59	2.32	2.18	2.21	2.21
1A4 - Other Sectors	4.05	3.92	3.99	4.19	4.26	2.82	2.51	2.71	2.95	2.84	2.78	3.52
1A4a - Commercial/Institutional	0.58	0.59	0.60	0.63	0.61	0.39	0.36	0.38	0.41	0.40	0.40	0.40
1A4b - Residential	3.47	3.33	3.38	3.56	3.65	2.43	2.15	2.32	2.55	2.44	2.38	3.12
3 - Agriculture, Forestry and Other Land Use	1.39	1.16	1.16	1.20	1.18	1.26	1.17	1.32	1.32	1.38	1.39	1.44
3C - Aggregate Sources and Non-CO₂ Emissions Sources on Land	1.39	1.16	1.16	1.20	1.18	1.26	1.17	1.32	1.32	1.38	1.39	1.44
3C1 - Emissions from Biomass Burning	1.39	1.16	1.16	1.20	1.18	1.26	1.17	1.32	1.32	1.38	1.39	1.44
3C1b - Biomass Burning in Croplands	1.39	1.16	1.16	1.20	1.18	1.26	1.17	1.32	1.32	1.38	1.39	1.44
4 - Waste	6.28	6.60	6.84	6.82	6.89	7.04	7.22	7.31	7.38	7.47	7.57	7.60
4A - Solid Waste Disposal	6.28	6.60	6.84	6.82	6.89	7.04	7.22	7.31	7.38	7.47	7.57	7.60
4A1 - Managed Waste Disposal Sites	6.28	6.60	6.84	6.82	6.89	7.04	7.22	7.31	7.38	7.47	7.57	7.60
Summary for CO₂ from biogenic materials	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Carbon dioxide from Biogenic sources	23.88	24.15	22.65	22.99	23.03	22.47	22.16	22.30	22.33	22.96	22.38	24.26

California Greenhouse Gas Inventory for 2000-2011 — by IPCC Category

million tonnes of CO2 equivalent - (based upon IPCC Second Assessment Report's Global Warming Potentials)

Forested Lands & Wood Products **2000** **2001** **2002** **2003** **2004** **2005** **2006** **2007** **2008** **2009** **2010** **2011**

This section of the inventory is currently under development

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