CALIFORNIA AIR RESOURCES BOARD

California Greenhouse Gas Inventory for 2000-2016 — by IPCC Category

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Included Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1 - Energy	**413.7**	**428.8**	**425.4**	**424.2**	**432.3**	**423.0**	**418.2**	**423.1**	**419.9**	**392.4**	**381.0**	**372.2**	**376.4**	**375.2**	**369.6**	**366.3**	**352.3**
1A - Fuel Combustion Activities	***406.32***	***421.38***	***417.72***	***416.81***	***424.82***	***415.40***	***410.46***	***415.37***	***412.18***	***384.49***	***373.24***	***364.26***	***369.04***	***367.33***	***361.59***	***358.00***	***343.79***
1A1 - Energy Industries	**159.12**	**175.95**	**161.56**	**167.81**	**172.76**	**163.91**	**157.64**	**165.74**	**171.53**	**154.35**	**144.85**	**137.10**	**144.24**	**141.87**	**139.95**	**132.63**	**115.11**
1A1a - Main Activity Electricity and Heat Production	116.37	132.29	119.12	122.23	127.49	119.41	115.87	124.33	129.70	113.42	102.69	98.70	105.81	100.40	97.51	92.05	75.87
1A1ai - Electricity Generation	*84.804*	*103.488*	*86.517*	*92.858*	*98.058*	*91.186*	*88.839*	*98.216*	*104.626*	*84.201*	*75.849*	*72.107*	*81.080*	*75.019*	*72.533*	*69.650*	*55.219*
1A1aii - Combined Heat and Power Generation (CHP)	*31.565*	*28.804*	*32.600*	*29.375*	*29.427*	*28.227*	*27.034*	*26.115*	*25.072*	*29.215*	*26.842*	*26.597*	*24.727*	*25.383*	*24.979*	*22.399*	*20.649*
1A1b - Petroleum Refining	24.67	25.23	25.33	26.03	25.31	25.93	25.57	25.06	24.28	24.59	26.54	22.85	22.80	23.85	23.95	22.35	22.57
1A1c - Manufacture of Solid Fuels and Other Energy Industries	18.09	18.43	17.11	19.55	19.96	18.56	16.19	16.35	17.56	16.35	15.61	15.54	15.64	17.62	18.48	18.24	16.67
1A1cii - Other Energy Industries	*18.085*	*18.429*	*17.109*	*19.545*	*19.964*	*18.563*	*16.192*	*16.353*	*17.557*	*16.350*	*15.610*	*15.544*	*15.636*	*17.621*	*18.485*	*18.235*	*16.670*
1A2 - Manufacturing Industries and Construction	**22.75**	**21.58**	**22.90**	**19.28**	**19.52**	**18.63**	**18.71**	**17.01**	**18.11**	**16.62**	**18.72**	**19.54**	**19.78**	**20.29**	**20.22**	**19.86**	**19.21**
1A2c - Chemicals	4.55	4.08	3.97	2.60	3.22	3.81	3.79	3.13	3.91	3.82	5.36	6.32	5.71	5.67	6.47	6.02	6.23
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	0.44	0.43	0.41	0.44	0.45
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	3.26	3.27	3.30	3.32	3.29
1A2f - Non-Metallic Minerals	5.42	5.28	5.47	5.29	5.27	5.32	5.32	4.78	4.34	2.94	2.90	2.86	3.07	3.05	3.12	3.20	3.23
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	0.24	0.28	0.27	0.27	0.28
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	0.81	0.79	0.77	0.76	0.76
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	0.17	0.16	0.15	0.15	0.16
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	0.03	0.03	0.04	0.04	0.04
1A2k - Construction	0.41	0.60	0.62	0.62	0.75	0.72	0.60	0.48	0.42	0.41	0.48	0.47	0.64	1.26	0.71	0.33	0.21
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	0.22	0.22	0.21	0.20	0.20
1A2m - Non-specified Industry.	2.60	3.46	4.17	3.75	3.27	2.36	2.70	2.36	3.49	4.08	4.55	4.32	4.67	4.60	4.24	4.67	3.86
1A3 - Transport	**179.78**	**180.25**	**187.15**	**184.48**	**186.17**	**187.73**	**187.61**	**187.51**	**176.64**	**169.55**	**164.12**	**160.61**	**160.40**	**160.03**	**161.37**	**165.15**	**168.39**
1A3a - Civil Aviation	4.21	4.02	4.17	4.25	4.49	4.49	4.56	4.97	4.50	4.03	3.84	3.73	3.75	3.93	3.90	4.22	4.44
1A3aii - Domestic Aviation	*3.949*	*3.781*	*3.895*	*3.983*	*4.254*	*4.281*	*4.360*	*4.755*	*4.318*	*3.883*	*3.717*	*3.630*	*3.601*	*3.787*	*3.733*	*4.030*	*4.353*
1A3b - Road Transportation	164.76	165.30	171.57	168.36	169.41	170.20	169.64	169.64	159.79	155.07	151.20	148.03	147.71	147.07	148.04	151.52	154.64
1A3bi - Cars	*69.046*	*67.672*	*69.230*	*64.911*	*63.421*	*61.818*	*60.945*	*60.295*	*56.921*	*56.664*	*55.178*	*53.964*	*54.534*	*54.884*	*55.144*	*57.478*	*58.508*
1A3bii - Light-duty Trucks	*55.836*	*57.795*	*61.101*	*62.279*	*63.017*	*64.102*	*63.991*	*63.787*	*60.699*	*59.505*	*57.717*	*56.134*	*55.960*	*55.382*	*55.738*	*57.344*	*58.939*
1A3biii - Heavy-duty Trucks and Buses	*39.513*	*39.371*	*40.730*	*40.607*	*42.368*	*43.335*	*43.684*	*44.449*	*40.998*	*37.684*	*37.071*	*36.651*	*35.932*	*35.545*	*35.835*	*35.188*	*35.615*
1A3biv - Motorcycles	*0.243*	*0.316*	*0.362*	*0.380*	*0.392*	*0.430*	*0.478*	*0.509*	*0.530*	*0.519*	*0.494*	*0.483*	*0.486*	*0.484*	*0.486*	*0.511*	*0.520*
1A3c - Railways	2.53	2.58	2.66	2.80	2.91	3.03	3.11	2.88	2.61	2.14	2.24	2.38	2.38	2.38	2.38	2.38	2.37
1A3d - Water-borne Navigation	4.86	4.75	5.14	5.38	5.46	5.79	5.93	6.02	5.78	5.25	3.66	3.52	3.43	3.42	3.49	3.42	3.24
1A3di - International Water-borne Navigation (International Bunkers)	*1.982*	*2.079*	*2.181*	*2.287*	*2.398*	*2.514*	*2.616*	*2.661*	*2.560*	*2.227*	*1.352*	*1.327*	*1.220*	*1.240*	*1.291*	*1.276*	*1.316*
1A3dii - Domestic Water-borne Navigation	*2.883*	*2.675*	*2.957*	*3.088*	*3.063*	*3.278*	*3.309*	*3.356*	*3.218*	*3.025*	*2.309*	*2.189*	*2.214*	*2.179*	*2.196*	*2.145*	*1.920*
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	2.23	2.33	2.43	2.53	2.63
1A3eii - Off-road	*2.631*	*2.790*	*2.768*	*2.843*	*3.029*	*3.217*	*3.315*	*3.176*	*2.819*	*2.246*	*2.033*	*2.133*	*2.234*	*2.334*	*2.434*	*2.533*	*2.633*
1A4 - Other Sectors	**44.67**	**43.60**	**46.11**	**45.23**	**46.37**	**45.14**	**46.50**	**45.11**	**45.90**	**43.97**	**45.55**	**47.01**	**44.62**	**45.14**	**40.05**	**40.35**	**41.08**
1A4a - Commercial/Institutional	11.47	11.31	13.11	12.84	12.70	12.55	12.83	12.82	12.99	12.89	13.58	13.71	13.41	13.30	12.51	12.67	12.92

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million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Included Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1A4b - Residential	29.38	28.47	28.62	28.14	29.17	27.98	28.36	28.50	28.82	28.47	29.19	29.64	27.34	28.14	22.87	23.29	24.20
1A4c - Agriculture/Forestry/Fishing/Fish Farms	3.81	3.82	4.38	4.25	4.50	4.60	5.30	3.78	4.09	2.61	2.77	3.65	3.88	3.71	4.66	4.39	3.95
1B - Fugitive Emissions from Fuels	***7.39***	***7.42***	***7.69***	***7.41***	***7.48***	***7.60***	***7.72***	***7.68***	***7.75***	***7.88***	***7.80***	***7.97***	***7.36***	***7.84***	***8.06***	***8.30***	***8.49***
1B1 - Solid Fuels	**0.04**	**0.04**	**0.04**	**0.04**	**0.04**	**0.03**	**0.03**	**0.03**	**0.03**	**0.02**	**0.02**	**0.02**	**0.02**	**0.01**	**0.02**	**0.01**	**0.01**
1B2 - Oil and Natural Gas	**6.12**	**6.16**	**6.44**	**6.17**	**6.22**	**6.33**	**6.47**	**6.42**	**6.53**	**6.44**	**6.61**	**6.67**	**6.49**	**6.89**	**7.11**	**7.13**	**6.96**
1B2a - Oil	0.48	0.46	0.47	0.46	0.44	0.46	0.48	0.47	0.46	0.45	0.49	0.52	0.47	0.61	0.64	0.54	0.44
1B2ai - Venting	*0.067*	*0.069*	*0.069*	*0.071*	*0.069*	*0.071*	*0.073*	*0.072*	*0.071*	*0.066*	*0.053*	*0.072*	*0.061*	*0.160*	*0.214*	*0.151*	*0.152*
1B2aii - Flaring	*0.057*	*0.058*	*0.058*	*0.059*	*0.058*	*0.060*	*0.061*	*0.061*	*0.060*	*0.055*	*0.055*	*0.128*	*0.106*	*0.104*	*0.093*	*0.085*	*0.032*
1B2aiii - All Other	*0.358*	*0.331*	*0.338*	*0.330*	*0.315*	*0.334*	*0.341*	*0.338*	*0.330*	*0.324*	*0.377*	*0.322*	*0.305*	*0.343*	*0.337*	*0.303*	*0.256*
1B2b - Natural Gas [1]	3.64	3.70	4.03	3.78	3.85	3.89	4.03	4.00	4.08	4.12	4.08	4.07	3.98	3.98	4.00	4.06	4.06
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**	**1.22**	**0.83**	**0.93**	**0.92**	**1.15**	**1.51**
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**	**0.02**	**0.00**	**0.00**	**0.00**	**0.00**
2 - Industrial Processes and Product Use	**19.7**	**19.4**	**20.3**	**20.8**	**21.7**	**22.4**	**23.4**	**24.1**	**24.3**	**22.6**	**23.9**	**28.7**	**30.0**	**29.7**	**31.2**	**33.0**	**35.0**
2A - Mineral Industry	***5.60***	***5.35***	***5.88***	***5.93***	***6.11***	***6.04***	***5.88***	***5.71***	***5.33***	***3.63***	***3.49***	***4.11***	***4.69***	***4.97***	***5.32***	***5.23***	***5.21***
2A1 - Cement Production	**5.52**	**5.28**	**5.82**	**5.87**	**6.03**	**5.96**	**5.81**	**5.66**	**5.28**	**3.60**	**3.46**	**4.08**	**4.65**	**4.93**	**5.27**	**5.17**	**5.15**
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**	**0.04**	**0.04**	**0.05**	**0.06**	**0.06**
2B - Chemical Industry	***0.06***	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***	***0.05***	***0.06***	***0.05***	***0.04***	***0.05***	***0.03***	***0.05***	***0.05***	***0.01***	***0.03***	***0.00***
2B2 - Nitric Acid Production	**0.06**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.05**	**0.06**	**0.05**	**0.04**	**0.05**	**0.03**	**0.05**	**0.05**	**0.01**	**0.03**	**0.00**
2C - Metal Industry	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.07***	***0.06***	***0.07***	***0.07***	***0.06***	***0.07***	***0.06***	***0.05***	***0.00***
2C5 - Lead Production	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.06**	**0.07**	**0.07**	**0.06**	**0.07**	**0.06**	**0.05**	**0.00**
2D - Non-Energy Products from Fuels and Solvent Use	***3.30***	***2.99***	***2.83***	***2.73***	***2.65***	***2.66***	***2.61***	***2.65***	***2.50***	***2.27***	***2.47***	***2.35***	***2.22***	***2.30***	***2.37***	***2.51***	***2.52***
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**	**1.44**	**1.52**	**1.59**	**1.73**	**1.73**
2D3 - Solvent Use	**1.20**	**1.07**	**0.94**	**0.98**	**0.87**	**0.89**	**0.89**	**0.87**	**0.85**	**0.79**	**0.82**	**0.79**	**0.78**	**0.77**	**0.78**	**0.79**	**0.79**
2E - Electronics Industry	***0.20***	***0.14***	***0.12***	***0.14***	***0.14***	***0.14***	***0.14***	***0.10***	***0.08***	***0.06***	***0.08***	***0.08***	***0.06***	***0.08***	***0.14***	***0.14***	***0.16***
2F - Product Uses as Substitutes for Ozone Depleting Substances	***5.62***	***6.01***	***6.52***	***7.20***	***7.95***	***8.75***	***9.64***	***10.43***	***11.27***	***11.96***	***13.20***	***14.21***	***15.25***	***16.38***	***17.42***	***18.37***	***19.24***
2G - Other Product Manufacture and Use	***1.52***	***1.42***	***1.45***	***1.38***	***1.39***	***1.37***	***1.39***	***1.39***	***1.38***	***1.28***	***1.20***	***1.16***	***1.12***	***1.14***	***1.17***	***1.41***	***1.37***
2G1 - Electrical Equipment	**0.51**	**0.49**	**0.44**	**0.42**	**0.40**	**0.37**	**0.33**	**0.29**	**0.30**	**0.27**	**0.24**	**0.25**	**0.24**	**0.18**	**0.14**	**0.42**	**0.37**
2G1b - Use of Electrical Equipment	0.51	0.49	0.44	0.42	0.40	0.37	0.33	0.29	0.30	0.27	0.24	0.25	0.24	0.18	0.14	0.42	0.37
2G4 - CO2, Limestone or Soda Ash consumption	**1.01**	**0.93**	**1.00**	**0.96**	**0.99**	**1.00**	**1.06**	**1.10**	**1.08**	**1.01**	**0.96**	**0.91**	**0.88**	**0.95**	**1.03**	**0.99**	**1.00**
2H - Other	***3.31***	***3.35***	***3.39***	***3.33***	***3.31***	***3.34***	***3.58***	***3.67***	***3.67***	***3.27***	***3.36***	***6.68***	***6.54***	***4.69***	***4.73***	***5.26***	***6.52***
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**	**6.68**	**6.54**	**4.69**	**4.73**	**5.26**	**6.52**

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3 - Agriculture, Forestry and Other Land Use	**29.0**	**29.2**	**30.7**	**31.2**	**30.2**	**31.0**	**31.4**	**33.3**	**33.0**	**32.2**	**32.9**	**32.6**	**33.6**	**32.3**	**32.7**	**31.4**	**31.3**
3A - Livestock	***19.62***	***19.89***	***21.17***	***21.61***	***20.81***	***21.46***	***21.81***	***24.13***	***24.13***	***23.41***	***24.00***	***23.84***	***24.47***	***23.49***	***23.81***	***23.10***	***22.99***
3A1 - Enteric Fermentation	**10.36**	**10.25**	**10.91**	**11.00**	**10.77**	**11.08**	**11.13**	**12.31**	**12.04**	**11.65**	**12.13**	**11.98**	**12.10**	**11.78**	**11.85**	**11.40**	**11.35**
3A1a - Cattle	10.01	9.89	10.54	10.60	10.34	10.60	10.66	11.84	11.57	11.17	11.65	11.49	11.61	11.29	11.36	10.91	10.87
3A1ai - Dairy Cows	*6.743*	*6.665*	*7.331*	*7.417*	*7.217*	*7.392*	*7.547*	*8.461*	*8.360*	*7.995*	*8.496*	*8.436*	*8.488*	*8.225*	*8.240*	*8.048*	*8.003*
3A1aii - Other Cattle	*3.264*	*3.221*	*3.210*	*3.185*	*3.125*	*3.212*	*3.110*	*3.376*	*3.210*	*3.173*	*3.154*	*3.054*	*3.121*	*3.070*	*3.124*	*2.867*	*2.867*
3A1c - Sheep	0.16	0.16	0.15	0.15	0.14	0.14	0.13	0.12	0.12	0.13	0.12	0.12	0.12	0.12	0.12	0.12	0.12
3A1d - Goats	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
3A1f - Horses	0.18	0.19	0.20	0.24	0.27	0.31	0.32	0.32	0.32	0.33	0.34	0.35	0.35	0.35	0.35	0.35	0.35
3A1h - Swine	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3A2 - Manure Management	**9.26**	**9.64**	**10.25**	**10.60**	**10.04**	**10.39**	**10.68**	**11.82**	**12.09**	**11.75**	**11.86**	**11.86**	**12.38**	**11.71**	**11.96**	**11.70**	**11.64**
3A2a - Cattle	8.88	9.28	9.88	10.24	9.69	10.02	10.33	11.46	11.77	11.41	11.53	11.52	12.04	11.40	11.67	11.41	11.35
3A2ai - Dairy Cows	*8.541*	*8.931*	*9.504*	*9.837*	*9.308*	*9.625*	*9.907*	*11.033*	*11.354*	*11.016*	*11.142*	*11.140*	*11.644*	*11.003*	*11.244*	*10.982*	*10.921*
3A2aii - Other Cattle	*0.342*	*0.345*	*0.372*	*0.399*	*0.381*	*0.398*	*0.418*	*0.424*	*0.414*	*0.396*	*0.385*	*0.382*	*0.396*	*0.395*	*0.426*	*0.425*	*0.426*
3A2c - Sheep	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.04	0.03	0.03	0.03	0.03	0.03	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	0.00	0.00	0.00	0.00	0.00
3A2f - Horses	0.06	0.07	0.07	0.08	0.08	0.09	0.09	0.09	0.08	0.08	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3A2h - Swine	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.04	0.05	0.04	0.05	0.05	0.04	0.05	0.04	0.04
3A2i - Poultry	0.21	0.21	0.20	0.19	0.17	0.17	0.17	0.18	0.17	0.17	0.17	0.17	0.17	0.14	0.12	0.13	0.13
3C - Aggregate Sources and Non-CO2 Emissions Sources on Land	***9.40***	***9.28***	***9.54***	***9.55***	***9.41***	***9.51***	***9.62***	***9.19***	***8.91***	***8.83***	***8.86***	***8.77***	***9.11***	***8.82***	***8.89***	***8.33***	***8.32***
3C1 - Emissions from Biomass Burning	**0.08**	**0.06**	**0.06**	**0.07**	**0.07**	**0.07**	**0.07**	**0.07**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**	**0.08**
3C1b - Biomass Burning in Croplands	0.08	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	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**	**0.23**	**0.22**	**0.21**	**0.19**	**0.18**
3C4 - Direct N2O Emissions from Managed Soils	**6.42**	**6.45**	**6.59**	**6.57**	**6.44**	**6.42**	**6.39**	**6.15**	**6.01**	**5.92**	**5.99**	**5.85**	**6.08**	**5.78**	**5.91**	**5.49**	**5.51**
3C5 - Indirect N2O Emissions from Managed Soils	**1.81**	**1.79**	**1.83**	**1.85**	**1.82**	**1.84**	**1.84**	**1.81**	**1.80**	**1.80**	**1.79**	**1.80**	**1.85**	**1.83**	**1.81**	**1.75**	**1.71**
3C7 - Rice Cultivations	**0.83**	**0.81**	**0.82**	**0.83**	**0.85**	**0.88**	**0.85**	**0.90**	**0.85**	**0.87**	**0.83**	**0.87**	**0.88**	**0.90**	**0.88**	**0.83**	**0.83**
4 - Waste	**9.3**	**9.4**	**9.4**	**9.5**	**9.5**	**9.7**	**9.8**	**9.9**	**10.0**	**10.2**	**10.3**	**10.4**	**10.4**	**10.4**	**10.5**	**10.7**	**10.7**
4A - Solid Waste Disposal	***7.22***	***7.36***	***7.31***	***7.43***	***7.42***	***7.59***	***7.65***	***7.71***	***7.88***	***8.02***	***8.11***	***8.19***	***8.20***	***8.22***	***8.28***	***8.40***	***8.47***
4A1 - Managed Waste Disposal Sites	**7.22**	**7.36**	**7.31**	**7.43**	**7.42**	**7.59**	**7.65**	**7.71**	**7.88**	**8.02**	**8.11**	**8.19**	**8.20**	**8.22**	**8.28**	**8.40**	**8.47**
4B - Biological Treatment of Solid Waste	***0.13***	***0.15***	***0.16***	***0.17***	***0.18***	***0.20***	***0.21***	***0.22***	***0.24***	***0.25***	***0.26***	***0.27***	***0.29***	***0.30***	***0.31***	***0.33***	***0.34***
4D - Wastewater Treatment and Discharge	***1.93***	***1.91***	***1.93***	***1.91***	***1.92***	***1.91***	***1.91***	***1.93***	***1.90***	***1.88***	***1.94***	***1.92***	***1.92***	***1.92***	***1.94***	***1.92***	***1.92***
4D1 - Domestic Wastewater Treatment and Discharge	**1.60**	**1.59**	**1.60**	**1.59**	**1.59**	**1.58**	**1.59**	**1.59**	**1.58**	**1.57**	**1.63**	**1.61**	**1.61**	**1.61**	**1.63**	**1.62**	**1.62**
4D2 - Industrial Wastewater Treatment and Discharge	**0.33**	**0.31**	**0.34**	**0.32**	**0.32**	**0.32**	**0.33**	**0.34**	**0.32**	**0.31**	**0.31**	**0.31**	**0.31**	**0.31**	**0.30**	**0.30**	**0.30**

CALIFORNIA AIR RESOURCES BOARD

California Greenhouse Gas Inventory for 2000-2016 — by IPCC Category

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Included Emissions	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***
Summary for Included Emissions	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***
Included Inventory Emissions	**471.7**	**486.8**	**485.8**	**485.7**	**493.7**	**486.1**	**482.7**	**490.3**	**487.3**	**457.3**	**448.1**	**443.9**	**450.4**	**447.6**	**444.1**	**441.4**	**429.4**

[1] The exceptional Aliso Canyon natural gas leak event released 1.96 MMTCO$_2$e of unanticipated emissions in calendar year 2015 and an additional 0.53 MMTCO$_2$e in 2016. These emissions will be mitigated in the future according to legal settlement and are presented alongside but tracked separately from routine inventory emissions

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million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Excluded Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1 - Energy	**56.9**	**51.1**	**55.7**	**50.0**	**54.1**	**56.1**	**58.4**	**61.3**	**57.9**	**56.6**	**58.6**	**54.0**	**51.8**	**50.5**	**50.6**	**55.3**	**59.3**
1A - Fuel Combustion Activities	***54.11***	***48.34***	***52.93***	***47.26***	***51.33***	***53.31***	***55.63***	***58.47***	***55.07***	***53.80***	***55.84***	***51.18***	***49.03***	***47.73***	***47.83***	***52.48***	***56.53***
1A3 - Transport	**50.30**	**43.98**	**48.81**	**43.10**	**47.44**	**49.90**	**52.51**	**55.54**	**52.29**	**51.10**	**52.74**	**48.50**	**45.73**	**45.05**	**44.53**	**49.72**	**54.21**
1A3a - Civil Aviation	35.12	32.55	35.14	33.80	36.18	35.84	36.79	38.44	34.87	34.20	33.50	34.26	32.70	35.21	37.65	40.42	42.64
1A3ai - International Aviation (International Bunkers)	*16.763*	*15.194*	*15.701*	*14.555*	*15.779*	*16.187*	*16.830*	*17.546*	*16.619*	*16.468*	*16.203*	*17.179*	*16.445*	*18.096*	*19.852*	*21.955*	*23.161*
1A3aii - Domestic Aviation	*18.356*	*17.359*	*19.441*	*19.245*	*20.396*	*19.650*	*19.958*	*20.899*	*18.250*	*17.733*	*17.297*	*17.078*	*16.253*	*17.110*	*17.799*	*18.463*	*19.477*
1A3d - Water-borne Navigation	15.18	11.43	13.67	9.30	11.27	14.06	15.73	17.09	17.42	16.90	19.24	14.24	13.03	9.85	6.88	9.30	11.57
1A3di - International Water-borne Navigation (International Bunkers)	*15.180*	*11.427*	*13.666*	*9.299*	*11.268*	*14.063*	*15.726*	*17.094*	*17.421*	*16.895*	*19.239*	*14.241*	*13.035*	*9.846*	*6.880*	*9.296*	*11.568*
1A5 - Non-Specified	**3.81**	**4.36**	**4.13**	**4.16**	**3.88**	**3.41**	**3.11**	**2.93**	**2.77**	**2.71**	**3.10**	**2.68**	**3.30**	**2.68**	**3.30**	**2.76**	**2.32**
1A5b - Mobile	3.74	4.07	3.64	3.66	3.34	3.31	3.00	2.81	2.68	2.56	2.58	2.31	2.87	2.17	2.12	2.15	2.15
1A5bi - Mobile (Aviation Component)	*3.736*	*4.069*	*3.640*	*3.661*	*3.338*	*3.313*	*3.004*	*2.807*	*2.682*	*2.562*	*2.584*	*2.308*	*2.874*	*2.171*	*2.123*	*2.151*	*2.148*
1B - Fugitive Emissions from Fuels	***2.75***	***2.74***	***2.75***	***2.75***	***2.76***	***2.77***	***2.79***	***2.82***	***2.82***	***2.81***	***2.80***	***2.80***	***2.80***	***2.77***	***2.79***	***2.79***	***2.79***
1B2 - Oil and Natural Gas	**2.75**	**2.74**	**2.75**	**2.75**	**2.76**	**2.77**	**2.79**	**2.82**	**2.82**	**2.81**	**2.80**	**2.80**	**2.80**	**2.77**	**2.79**	**2.79**	**2.79**

Summary for Excluded Emissions	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
International and Interstate Emissions	**56.9**	**51.1**	**55.7**	**50.0**	**54.1**	**56.1**	**58.4**	**61.3**	**57.9**	**56.6**	**58.6**	**54.0**	**51.8**	**50.5**	**50.6**	**55.3**	**59.3**

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million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

CO2 from biogenic materials	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1 - Energy	**16.6**	**16.8**	**15.2**	**18.2**	**19.8**	**19.4**	**19.1**	**19.0**	**19.2**	**21.1**	**23.3**	**25.1**	**25.2**	**29.3**	**29.0**	**27.1**	**29.1**
1A - Fuel Combustion Activities	***16.56***	***16.85***	***15.23***	***18.16***	***19.83***	***19.36***	***19.10***	***18.98***	***19.21***	***21.07***	***23.30***	***25.09***	***25.18***	***29.27***	***28.99***	***27.06***	***29.06***
1A1 - Energy Industries	**8.39**	**8.21**	**8.02**	**8.22**	**8.09**	**8.50**	**8.65**	**8.31**	**8.30**	**9.45**	**9.17**	**10.03**	**10.92**	**12.00**	**11.51**	**9.99**	**9.92**
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	9.45	9.17	10.03	10.92	12.00	11.51	9.99	9.92
1A1ai - Electricity Generation	*5.249*	*4.790*	*5.687*	*5.638*	*5.414*	*5.530*	*5.670*	*5.343*	*5.513*	*7.180*	*7.143*	*7.373*	*8.263*	*9.164*	*8.951*	*7.748*	*7.178*
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*	*2.266*	*2.023*	*2.654*	*2.656*	*2.834*	*2.555*	*2.237*	*2.742*
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	0.00	0.00	0.00	0.00	0.00
1A2 - Manufacturing Industries and Construction	**3.78**	**4.26**	**2.64**	**2.60**	**2.65**	**2.91**	**2.66**	**2.71**	**2.42**	**2.24**	**2.35**	**2.54**	**2.56**	**2.48**	**2.22**	**2.02**	**2.02**
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	0.14	0.19	0.23	0.15	0.21
1A2k - Construction	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.03	0.03	0.04	0.08	0.05	0.02	0.01
1A2m - Non-specified Industry.	3.72	4.20	2.58	2.52	2.56	2.82	2.59	2.64	2.35	2.16	2.22	2.42	2.37	2.21	1.94	1.85	1.80
1A3 - Transport	**0.34**	**0.46**	**0.57**	**3.14**	**4.79**	**5.11**	**5.24**	**5.18**	**5.41**	**5.38**	**8.23**	**8.88**	**8.32**	**10.25**	**10.71**	**11.45**	**13.53**
1A3a - Civil Aviation	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
1A3b - Road Transportation	0.34	0.46	0.57	3.12	4.77	5.08	5.21	5.15	5.38	5.35	8.19	8.84	8.28	10.20	10.66	11.41	13.51
1A3bi - Cars	*0.161*	*0.213*	*0.256*	*1.439*	*2.161*	*2.254*	*2.225*	*2.200*	*2.318*	*2.353*	*3.636*	*3.897*	*3.636*	*3.858*	*4.184*	*4.137*	*4.127*
1A3bii - Light-duty Trucks	*0.130*	*0.182*	*0.226*	*1.384*	*2.153*	*2.344*	*2.341*	*2.332*	*2.476*	*2.474*	*3.806*	*4.055*	*3.729*	*3.883*	*4.220*	*4.115*	*4.152*
1A3biii - Heavy-duty Trucks and Buses	*0.047*	*0.061*	*0.084*	*0.290*	*0.441*	*0.467*	*0.633*	*0.603*	*0.566*	*0.501*	*0.716*	*0.862*	*0.882*	*2.432*	*2.219*	*3.122*	*5.199*
1A3biv - Motorcycles	*0.001*	*0.001*	*0.001*	*0.008*	*0.012*	*0.014*	*0.016*	*0.017*	*0.019*	*0.019*	*0.029*	*0.031*	*0.029*	*0.030*	*0.033*	*0.032*	*0.032*
1A3d - Water-borne Navigation	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.04	0.03	0.04	0.04	0.04	0.03	0.01
1A3dii - Domestic Water-borne Navigation	*0.002*	*0.001*	*0.002*	*0.015*	*0.019*	*0.025*	*0.023*	*0.024*	*0.024*	*0.026*	*0.037*	*0.032*	*0.036*	*0.037*	*0.039*	*0.033*	*0.014*
1A4 - Other Sectors	**4.05**	**3.92**	**3.99**	**4.20**	**4.28**	**2.84**	**2.54**	**2.78**	**3.08**	**4.00**	**3.56**	**3.63**	**3.38**	**4.54**	**4.55**	**3.60**	**3.59**
1A4a - Commercial/Institutional	0.58	0.59	0.60	0.63	0.61	0.39	0.36	0.39	0.41	0.50	0.49	0.47	0.42	0.48	0.48	0.54	0.54
1A4b - Residential	3.47	3.33	3.38	3.56	3.65	2.43	2.15	2.38	2.66	3.50	3.05	3.12	2.91	4.02	4.02	3.05	3.05
1A4c - Agriculture/Forestry/Fishing/Fish Farms	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.04	0.05	0.03	0.04	0.01	0.00
3 - Agriculture, Forestry and Other Land Use	**1.4**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.2**	**1.3**	**1.4**	**1.4**	**1.4**	**1.5**	**1.5**	**1.5**	**1.5**	**1.5**	**1.6**
3C - Aggregate Sources and Non-CO2 Emissions Sources on Land	***1.39***	***1.16***	***1.17***	***1.20***	***1.21***	***1.20***	***1.22***	***1.28***	***1.38***	***1.41***	***1.44***	***1.49***	***1.49***	***1.52***	***1.47***	***1.49***	***1.55***
3C1 - Emissions from Biomass Burning	**1.39**	**1.16**	**1.17**	**1.20**	**1.21**	**1.20**	**1.22**	**1.28**	**1.38**	**1.41**	**1.44**	**1.49**	**1.49**	**1.52**	**1.47**	**1.49**	**1.55**
3C1b - Biomass Burning in Croplands	1.39	1.16	1.17	1.20	1.21	1.20	1.22	1.28	1.38	1.41	1.44	1.49	1.49	1.52	1.47	1.49	1.55
4 - Waste	**7.1**	**7.5**	**7.8**	**7.9**	**8.0**	**8.3**	**8.5**	**8.7**	**8.9**	**9.1**	**9.3**	**9.4**	**9.6**	**9.7**	**9.8**	**10.0**	**10.1**
4A - Solid Waste Disposal	***6.28***	***6.62***	***6.88***	***6.86***	***6.90***	***7.08***	***7.28***	***7.39***	***7.47***	***7.57***	***7.68***	***7.73***	***7.87***	***7.91***	***7.95***	***8.00***	***8.05***
4A1 - Managed Waste Disposal Sites	**6.28**	**6.62**	**6.88**	**6.86**	**6.90**	**7.08**	**7.28**	**7.39**	**7.47**	**7.57**	**7.68**	**7.73**	**7.87**	**7.91**	**7.95**	**8.00**	**8.05**
4B - Biological Treatment of Solid Waste	***0.80***	***0.87***	***0.95***	***1.03***	***1.11***	***1.19***	***1.26***	***1.34***	***1.42***	***1.50***	***1.57***	***1.65***	***1.73***	***1.81***	***1.88***	***1.96***	***2.04***

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California Greenhouse Gas Inventory for 2000-2016 — by IPCC Category

million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

CO2 from biogenic materials	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***
Summary for CO2 from biogenic materials	***2000***	***2001***	***2002***	***2003***	***2004***	***2005***	***2006***	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***	***2014***	***2015***	***2016***
Carbon dioxide from Biogenic sources	**25.0**	**25.5**	**24.2**	**27.3**	**29.0**	**28.8**	**28.9**	**29.0**	**29.5**	**31.5**	**34.0**	**36.0**	**36.3**	**40.5**	**40.3**	**38.5**	**40.7**

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million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's 100-yr Global Warming Potentials)

Forested Lands & Wood Products	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

This section of the inventory is currently under development