

California Carbon Dioxide Inventory for 2000-2021 — 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 2017 2018 2019 2020 2021

1 - Energy	390.8	406.9	402.8	401.9	411.7	401.9	399.3	405.4	400.4	373.4	363.5	356.1	352.1	347.7	343.3	342.7	329.6	324.6	324.4	318.4	283.7	297.0	
1A - Fuel Combustion Activities	389.1	405.2	401.1	400.2	410.0	400.2	397.6	403.7	398.7	371.5	361.7	354.1	350.1	345.7	341.2	340.4	327.2	322.6	322.4	316.3	281.8	295.2	
1A1 - Energy Industries	157.6	174.0	161.5	164.3	168.8	160.5	156.4	165.2	169.8	152.4	142.9	137.1	143.0	138.8	137.0	131.4	114.2	108.2	108.8	102.3	97.2	100.5	
1A1a - Main Activity Electricity and Heat Production	115.8	131.7	118.6	121.7	126.9	118.8	115.3	123.8	129.1	113.0	102.3	98.0	105.7	100.2	96.6	92.0	75.8	69.7	71.1	65.6	65.0	67.8	
1A1ai - Electricity Generation	84.4	103.0	86.1	92.4	97.6	90.7	88.4	97.8	104.2	83.9	75.5	72.3	81.8	75.5	73.1	70.0	55.2	50.0	51.2	47.4	47.7	50.8	
1A1aii - Combined Heat and Power Generation (CHP)	31.4	28.7	32.5	29.3	29.3	28.1	26.9	26.0	25.0	29.1	26.7	25.7	23.9	24.7	23.4	22.0	20.7	19.7	19.9	18.2	17.3	17.0	
1A1b - Petroleum Refining	23.8	24.5	24.7	25.2	24.0	24.8	24.7	24.3	23.3	23.1	24.8	23.3	23.1	22.9	23.0	22.2	23.3	23.6	23.4	22.2	20.0	20.3	
1A1c - Manufacture of Solid Fuels and Other Energy Industries	18.0	17.8	18.2	17.4	17.9	16.9	16.4	17.1	17.5	16.4	15.8	15.8	14.2	15.7	17.4	17.3	15.0	14.9	14.3	14.4	12.2	12.4	
1A1cii - Other Energy Industries	18.0	17.8	18.2	17.4	17.9	16.9	16.4	17.1	17.5	16.4	15.8	15.8	14.2	15.7	17.4	17.3	15.0	14.9	14.3	14.4	12.2	12.4	
1A2 - Manufacturing Industries and Constructio	17.7	17.4	16.1	17.1	15.1	15.6	14.1	14.4	12.8	13.7	14.0	13.3	13.7	13.7	13.1	13.2	13.1	13.0	13.5	12.4	12.5		
1A2d - Pulp, Paper and Print	1.0	1.2	0.8	0.7	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.4	0.3	0.3	
1A2e - Food Processing, Beverages and Tobacco	3.8	3.5	3.2	3.0	3.8	3.1	3.5	3.3	3.2	3.1	3.1	3.2	2.9	2.8	3.1	3.1	3.0	2.9	2.9	3.0	3.0	3.1	
1A2f - Non-Metallic Minerals	5.4	5.3	5.3	5.3	5.6	5.4	5.4	4.7	4.3	2.9	2.9	3.2	3.4	3.4	3.6	3.5	3.6	3.6	3.6	3.6	3.5	3.8	
1A2g - Transport Equipment	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	
1A2h - Machinery	1.3	1.2	1.1	1.0	1.1	1.0	1.1	1.0	0.8	0.7	0.7	0.7	0.6	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
1A2i - Mining (excluding fuels) and Quarrying	0.2	0.3	0.3	0.3	0.3	0.3	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	
1A2j - Wood and Wood Products	0.4	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1A2k - Construction	0.4	0.6	0.6	0.6	0.7	0.6	0.6	0.5	0.4	0.4	0.6	0.5	0.6	1.2	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.4	0.8
1A2l - Textile and Leather	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
1A2m - Non-specified Industry.	2.7	3.5	4.1	3.8	3.5	2.7	2.9	2.6	3.6	4.1	4.7	4.6	4.2	4.1	4.1	4.1	4.2	4.3	4.3	4.8	3.6	2.8	
1A3 - Transport	169.6	170.3	177.7	175.2	177.1	179.2	179.5	179.5	168.8	162.4	159.4	156.3	154.0	154.0	154.5	158.2	162.1	163.7	163.3	160.7	133.9	143.9	
1A3a - Civil Aviation	4.2	4.0	4.1	4.2	4.4	4.5	4.5	4.9	4.5	4.0	3.8	3.7	3.7	3.9	3.9	4.1	4.3	4.6	4.6	4.3	2.9	3.5	
1A3aii - Domestic Aviation	3.9	3.7	3.9	3.9	4.2	4.2	4.3	4.7	4.3	3.8	3.7	3.6	3.6	3.8	3.7	4.0	4.3	4.5	4.6	4.3	2.9	3.5	
1A3b - Road Transportation	157.2	158.1	164.5	161.4	162.7	163.9	163.8	164.2	154.8	150.4	146.6	143.7	141.5	141.5	142.4	146.3	150.3	151.8	150.2	148.0	123.5	132.9	
1A3bi - Cars	65.6	64.5	66.1	62.0	60.7	59.4	58.7	58.3	55.2	55.1	53.6	52.5	52.2	52.6	52.9	55.5	58.3	55.9	54.8	53.9	43.2	47.5	
1A3bii - Light-duty Trucks	53.0	55.1	58.5	59.6	60.5	61.8	61.9	61.9	59.0	57.9	56.2	54.7	53.8	53.4	53.8	55.5	55.3	58.1	58.5	59.0	48.1	53.7	
1A3biii - Heavy-duty Trucks and Buses	38.3	38.1	39.5	39.4	41.1	42.0	42.4	43.0	39.6	36.4	35.8	35.4	34.6	34.5	34.6	34.1	35.4	36.3	35.4	33.5	30.8	30.2	
1A3biv - Motorcycles	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	
1A3c - Railways	1.9	1.9	2.5	2.9	2.9	3.3	3.5	3.1	2.4	1.9	2.3	2.6	2.4	2.1	1.9	1.7	1.5	1.3	1.9	1.4	1.3	1.3	
1A3d - Water-borne Navigation	2.9	2.7	3.0	3.1	3.1	3.3	3.3	3.3	3.2	3.0	3.7	3.6	3.6	3.8	3.9	3.5	3.5	3.6	3.6	3.7	3.8	3.8	
1A3di - International Water-borne Navigation (International Bunkers)	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1	0.9	1.4	1.3	1.3	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	
1A3dii - Domestic Water-borne Navigation	2.1	1.8	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.3	2.2	2.3	2.3	2.3	2.0	2.0	2.0	1.9	1.9	2.0	1.9	
1A3e - Other Transportation	2.6	2.8	2.8	2.8	3.0	3.2	3.3	3.2	2.8	2.2	2.0	2.1	2.1	2.1	1.7	1.8	1.8	1.9	2.4	2.6	1.9	1.9	
1A3eii - Off-road	2.6	2.8	2.8	2.8	3.0	3.2	3.3	3.2	2.8	2.2	2.0	2.1	2.1	2.1	1.7	1.8	1.8	1.9	2.4	2.6	1.9	1.9	

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1A4 - Other Sectors	44.7	43.2	44.6	44.6	47.1	45.4	46.0	44.9	45.8	43.8	45.8	46.7	39.8	39.2	36.0	37.6	37.7	37.7	37.3	39.9	38.3	38.3	
1A4a - Commercial/Institutional	11.9	11.3	11.8	12.4	13.2	12.9	12.6	12.8	13.0	12.9	13.6	13.7	12.0	11.6	11.4	12.5	12.4	12.4	12.1	12.8	11.6	12.1	
1A4b - Residential	29.2	28.1	28.6	27.8	29.3	28.0	28.3	28.4	28.7	28.4	29.1	29.5	24.2	24.4	21.3	21.9	22.5	23.1	22.5	24.9	24.4	23.8	
1A4c - Agriculture/Forestry/Fishing/Fish Farms	3.7	3.8	4.2	4.3	4.6	4.6	5.1	3.7	4.0	2.5	3.1	3.5	3.6	3.2	3.4	3.2	2.8	2.2	2.7	2.2	2.3	2.4	
1B - Fugitive Emissions from Fuels	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.9	1.8	2.0	2.1	2.0	2.1	2.3	2.5	2.0	2.1	2.1	1.9	1.9
1B2 - Oil and Natural Gas	0.5	0.5	0.5	0.6	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.9	1.2	1.2	1.3	1.3	1.1	1.1	1.3	1.4	1.2	1.2
1B2a - Oil	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.7	0.9	0.8	0.9	0.8	0.7	0.7	0.8	0.7	0.7	0.7
1B2ai - Venting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.4	0.5
1B2aii - Flaring	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
1B2aiii - All Other	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
1B2b - Natural Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1B3 - Geothermal Energy Production	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.3	1.1	1.0	0.8	0.8	0.8	1.1	1.4	0.8	0.8	0.7	0.7	0.7
1B4 - Pollution control devices	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 - Industrial Processes and Product Use	12.9	12.3	12.8	12.8	13.3	13.2	13.1	13.0	12.6	11.2	11.7	12.8	12.8	13.2	13.7	13.4	13.5	13.6	13.7	13.6	12.4	12.5	
2A - Mineral Industry	5.6	5.3	5.9	5.9	6.1	6.0	5.9	5.7	5.3	3.6	3.5	3.7	4.3	4.5	4.8	4.8	4.7	4.9	5.0	5.0	4.8	4.7	
2A1 - Cement Production	5.5	5.3	5.8	5.9	6.0	6.0	5.8	5.7	5.3	3.6	3.5	3.7	4.2	4.5	4.8	4.7	4.7	4.9	5.0	4.9	4.7	4.7	
2A2 - Lime Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
2C - Metal Industry	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2C5 - Lead Production	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2D - Non-Energy Products from Fuels and Solvent Use	2.5	2.3	2.2	2.1	2.1	2.1	2.1	2.1	2.0	1.8	2.2	2.0	1.9	2.0	2.0	2.2	2.1	2.0	2.0	1.9	1.7	1.8	
2D1 - Lubricant Use	2.1	1.9	1.9	1.8	1.8	1.8	1.7	1.8	1.7	1.5	1.9	1.7	1.6	1.7	1.7	1.9	1.8	1.7	1.6	1.6	1.4	1.5	
2D3 - Solvent Use	0.4	0.4	0.3	0.4	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
2G - Other Product Manufacture and Use	1.0	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.0	0.9	0.9	1.0	1.1	1.1	1.0	1.0	0.9	1.0	1.0	1.0	1.0
2G4 - CO2, Limestone or Soda Ash consumption	1.0	0.9	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.0	1.0	0.9	0.9	1.0	1.1	1.1	1.0	1.0	0.9	1.0	1.0	1.0	1.0
2H - Other	3.7	3.7	3.6	3.7	4.0	4.0	4.0	4.0	4.2	4.7	5.0	6.0	5.7	5.6	5.8	5.3	5.6	5.7	5.8	5.7	5.0	5.0	
2H3 - Hydrogen Production	3.7	3.7	3.6	3.7	4.0	4.0	4.0	4.0	4.2	4.7	5.0	6.0	5.7	5.6	5.8	5.3	5.6	5.7	5.8	5.7	5.0	5.0	
3 - Agriculture, Forestry and Other Land Use	0.3	0.2	0.2	0.2	0.2	0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3C - Aggregate Sources and Non-CO2 Emissions Sources on Land	0.3	0.2	0.2	0.2	0.2	0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
3C2 - Liming	0.3	0.2	0.2	0.2	0.2	0.3	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1

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Included Emissions

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Summary for Included Emissions

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021

California CO2 Emissions **404.0 419.4 415.8 414.9 425.2 415.4 412.8 418.7 413.2 384.8 375.4 369.1 365.2 361.0 357.2 356.2 343.2 338.3 338.3 332.1 296.3 309.7**

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1 - Energy	54.0	48.2	52.8	47.2	51.2	53.5	55.7	58.6	55.0	54.1	55.0	50.4	48.2	46.9	46.6	51.4	55.6	58.4	58.0	53.3	31.1	35.1
1A - Fuel Combustion Activities	54.0	48.2	52.8	47.2	51.2	53.5	55.7	58.6	55.0	54.1	55.0	50.4	48.2	46.9	46.6	51.4	55.6	58.4	58.0	53.3	31.1	35.1
1A3 - Transport	50.2	43.9	48.7	43.0	47.4	50.2	52.6	55.7	52.3	51.4	52.0	47.7	45.0	44.2	43.7	48.8	53.3	56.0	55.8	51.1	29.0	32.9
1A3a - Civil Aviation	34.8	32.3	34.8	33.5	35.9	35.5	36.5	38.1	34.6	33.9	33.2	34.0	32.4	34.9	37.3	40.1	42.3	43.5	42.9	37.2	19.4	23.4
1A3ai - International Aviation (International Bunkers)	16.6	15.1	15.6	14.4	15.6	16.0	16.7	17.4	16.5	16.3	16.1	17.0	16.3	17.9	19.7	21.8	23.0	23.4	22.4	18.9	8.8	9.3
1A3a ⁱⁱ - Domestic Aviation	18.2	17.2	19.3	19.1	20.2	19.5	19.8	20.7	18.1	17.6	17.1	16.9	16.1	17.0	17.6	18.3	19.3	20.1	20.4	18.3	10.7	14.1
1A3d - Water-borne Navigation	15.4	11.6	13.9	9.5	11.5	14.6	16.2	17.5	17.7	17.5	18.7	13.8	12.6	9.3	6.4	8.8	11.0	12.5	13.0	13.9	9.5	9.5
1A3di - International Water-borne Navigation (International Bunkers)	15.4	11.6	13.9	9.5	11.5	14.6	16.2	17.5	17.7	17.5	18.7	13.8	12.6	9.3	6.4	8.8	11.0	12.5	13.0	13.9	9.5	9.5
1A5 - Non-Specified	3.8	4.3	4.1	4.1	3.9	3.4	3.1	2.9	2.8	2.7	3.1	2.7	3.3	2.6	2.9	2.6	2.3	2.4	2.2	2.2	2.2	2.2
1A5b - Mobile	3.7	4.0	3.6	3.6	3.3	3.3	3.0	2.8	2.7	2.5	2.6	2.3	2.8	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
1A5bi - Mobile (Aviation Component)	3.7	4.0	3.6	3.6	3.3	3.3	3.0	2.8	2.7	2.5	2.6	2.3	2.8	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1

Summary for Excluded Emissions
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Excluded CO2 Emissions 54.0 48.2 52.8 47.2 51.2 53.5 55.7 58.6 55.0 54.1 55.0 50.4 48.2 46.9 46.6 51.4 55.6 58.4 58.0 53.3 31.1 35.1

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This section of the inventory is currently under development