



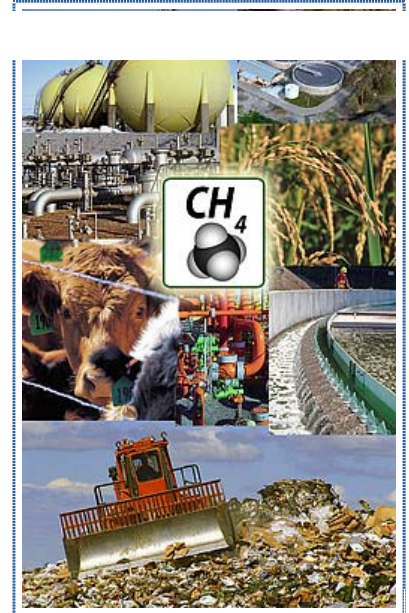
Last reviewed on May 13, 2014

## Greenhouse Gas Inventory Data - 2000 to 2012

### Overview

The California greenhouse gas (GHG) emissions inventory compiles statewide anthropogenic GHG emissions and sinks. It includes estimates for carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), nitrogen trifluoride (NF<sub>3</sub>), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs). The current inventory covers years 2000 to 2012.

A summary of GHG emissions from 2000 to 2012 is linked below. Annual statewide emission inventories provide the basis for establishing historical emission trends. Trends are useful in tracking progress towards a specific goal or target. There are many factors affecting GHG emissions, including the state of the economy, changes in demography, improved efficiency, and changes in environmental conditions such as drought. A discussion of emission trends for the 2000 to 2012 period and factors affecting different sectors is also provided below.



*Main sources of methane*

[2000-2012 Inventory by Scoping Plan category - Summary \[PDF-99 KB\]](#)

[2000-2012 Emissions Trends \[PDF-293 KB\]](#)

Data sources include California and federal agencies, international organizations, and industry associations. The calculation methodologies are consistent with the [2006 IPCC guidelines](#). The current inventory uses global warming potential (GWP) values from the IPCC Fourth Assessment Report, consistent with [ARB Scoping Plan Update](#) and USEPA's next [national inventory](#). Full [documentation of data sources and methods](#) is available on this web site.

In preparation for each new edition of the inventory, recalculations are made to correct errors, incorporate new methodologies or, most commonly, to reflect changes in statistical data supplied by other agencies. Emission estimates are recalculated for all years in order to maintain a consistent time-series of estimates within the inventory. This approach follows the recommendation for developing GHG inventories discussed in [Chapter 7 of the IPCC Good Practice Guidance](#) document: "In order to assess emission trends it is important that the entire time series of emissions, not just the most recent years, be calculated using the changed or refined methods. It is good practice to recalculate historic emissions when methods are changed or refined, when new source categories are included in the national inventory, or when errors in the estimates are identified and corrected." Thus the new inventory may report a different amount of emission/removal for an earlier year than earlier inventories. The results of all methodology changes and historical data updates are discussed in the "Changes in Estimates" section of each chapter of the 2000-2012 Technical Support Document (available in the [Publications section](#)).

### 2000-2012 Inventory Data

The current California GHG inventory covers the years 2000 to 2012. GHG emissions for the years 1990 through 1999 are included in the archived 1990-2004 GHG inventory published in November 2007 (available in [the archive section](#) of this site).

The California GHG inventory is categorized in three ways:

1. Scoping Plan; follows the categories identified in the [ARB 2008 Scoping Plan](#).
2. Process-oriented categories; follows the IPCC categorization to ensure comparability with international inventories.
3. Economic sectors; allows for comparison with other ARB emission inventories, which are similarly categorized.

## Select a subset of the inventory

► [Query the inventory by economic sector and/or by activity](#). This interactive query tool allows you to select a subset of the inventory in a table, view it or download it to your computer, find out how each of the emissions values was estimated, and plot the data. More details on the [query tool's help page](#).

## Download the entire inventory

[2000-2012 inventory by Scoping Plan category - Summary \[PDF-99 KB\]](#)

[2000-2012 inventory by IPCC category - Full Detail \[PDF-386 KB\]](#)

[2000-2012 inventory by IPCC category - Full Detail \[Excel-355 KB\]](#)

[2000-2012 inventory by IPCC category - Summary \[PDF-127KB\]](#)

[2000-2012 inventory by economic sector - Full Detail \[PDF-454 KB\]](#)

[2000-2012 inventory by economic sector - Full Detail \[Excel-387 KB\]](#)

[2000-2012 inventory by economic sector - Summary \[PDF-86 KB\]](#)

**California Greenhouse Gas Inventory for 2000-2012**  
 — by Category as Defined in the 2008 Scoping Plan

 million tonnes of CO<sub>2</sub> equivalent - (based upon IPCC Fourth Assessment Report's Global Warming Potentials)

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Transportation</b>	<b>176.21</b>	<b>176.62</b>	<b>183.80</b>	<b>183.52</b>	<b>186.88</b>	<b>189.08</b>	<b>189.18</b>	<b>189.27</b>	<b>178.02</b>	<b>171.47</b>	<b>170.46</b>	<b>168.13</b>	<b>167.38</b>
<b>On Road</b>	<b>162.88</b>	<b>163.46</b>	<b>169.64</b>	<b>168.81</b>	<b>171.48</b>	<b>172.68</b>	<b>172.37</b>	<b>172.41</b>	<b>163.00</b>	<b>158.46</b>	<b>157.38</b>	<b>154.91</b>	<b>154.06</b>
Passenger Vehicles	130.10	129.97	134.46	132.91	133.34	132.75	131.79	130.80	124.27	122.41	121.39	118.85	118.28
Heavy Duty Trucks	32.78	33.50	35.19	35.90	38.13	39.92	40.58	41.61	38.73	36.04	36.00	36.06	35.78
<b>Ships &amp; Commercial Boats</b>	<b>3.39</b>	<b>3.21</b>	<b>3.56</b>	<b>3.78</b>	<b>3.84</b>	<b>4.12</b>	<b>4.20</b>	<b>4.31</b>	<b>4.04</b>	<b>3.68</b>	<b>3.71</b>	<b>3.72</b>	<b>3.83</b>
<b>Aviation (Intrastate)</b>	<b>4.15</b>	<b>4.07</b>	<b>4.12</b>	<b>4.25</b>	<b>4.50</b>	<b>4.50</b>	<b>4.57</b>	<b>4.98</b>	<b>4.51</b>	<b>4.04</b>	<b>3.85</b>	<b>3.75</b>	<b>3.72</b>
<b>Rail</b>	<b>1.88</b>	<b>1.89</b>	<b>2.50</b>	<b>2.70</b>	<b>2.91</b>	<b>3.34</b>	<b>3.53</b>	<b>3.17</b>	<b>2.38</b>	<b>1.94</b>	<b>2.33</b>	<b>2.49</b>	<b>2.48</b>
<b>Off Road [1]</b>	<b>2.63</b>	<b>2.79</b>	<b>2.77</b>	<b>2.84</b>	<b>3.03</b>	<b>3.22</b>	<b>3.32</b>	<b>3.18</b>	<b>2.82</b>	<b>2.25</b>	<b>2.03</b>	<b>2.13</b>	<b>2.23</b>
<b>Unspecified</b>	<b>1.28</b>	<b>1.19</b>	<b>1.21</b>	<b>1.13</b>	<b>1.13</b>	<b>1.22</b>	<b>1.20</b>	<b>1.22</b>	<b>1.27</b>	<b>1.10</b>	<b>1.16</b>	<b>1.14</b>	<b>1.06</b>
<b>Electric Power</b>	<b>104.86</b>	<b>122.01</b>	<b>108.65</b>	<b>112.62</b>	<b>115.20</b>	<b>107.86</b>	<b>104.54</b>	<b>113.94</b>	<b>120.15</b>	<b>101.32</b>	<b>90.30</b>	<b>88.04</b>	<b>95.09</b>
<b>In-State Generation</b>	<b>58.96</b>	<b>62.99</b>	<b>49.69</b>	<b>48.06</b>	<b>49.16</b>	<b>45.06</b>	<b>49.86</b>	<b>54.13</b>	<b>54.32</b>	<b>53.28</b>	<b>46.71</b>	<b>41.18</b>	<b>51.02</b>
Natural Gas	50.92	55.46	42.17	40.92	42.40	38.11	43.07	47.12	48.02	46.08	40.59	35.92	45.77
Other Fuels	6.85	6.36	6.37	5.99	5.60	5.78	5.64	5.86	5.16	5.85	5.02	4.01	4.44
Fugitive and Process Emissions	1.18	1.16	1.15	1.15	1.16	1.16	1.15	1.16	1.14	1.34	1.10	1.25	0.82
<b>Imported Electricity</b>	<b>45.90</b>	<b>59.02</b>	<b>58.96</b>	<b>64.56</b>	<b>66.04</b>	<b>62.80</b>	<b>54.68</b>	<b>59.81</b>	<b>65.82</b>	<b>48.04</b>	<b>43.59</b>	<b>46.86</b>	<b>44.07</b>
Unspecified Imports	14.27	25.42	26.92	32.05	32.92	30.01	27.95	32.73	37.92	14.99	13.45	15.52	17.48
Specified Imports	31.64	33.59	32.04	32.51	33.13	32.79	26.73	27.08	27.90	33.05	30.14	31.34	26.59
<b>Commercial and Residential</b>	<b>42.33</b>	<b>41.20</b>	<b>43.17</b>	<b>41.54</b>	<b>42.90</b>	<b>41.24</b>	<b>41.89</b>	<b>42.11</b>	<b>42.44</b>	<b>42.65</b>	<b>43.82</b>	<b>44.32</b>	<b>42.28</b>
<b>Residential Fuel Use</b>	<b>29.70</b>	<b>28.77</b>	<b>28.93</b>	<b>28.47</b>	<b>29.51</b>	<b>28.22</b>	<b>28.58</b>	<b>28.73</b>	<b>29.07</b>	<b>28.69</b>	<b>29.42</b>	<b>29.89</b>	<b>28.09</b>
Natural Gas	28.03	27.43	27.54	26.67	27.38	25.98	26.60	26.73	26.67	26.31	27.04	27.51	25.76
Other Fuels	1.67	1.34	1.39	1.80	2.12	2.25	1.98	2.01	2.40	2.38	2.39	2.38	2.33
<b>Commercial Fuel Use</b>	<b>11.54</b>	<b>11.37</b>	<b>13.18</b>	<b>12.82</b>	<b>12.77</b>	<b>12.61</b>	<b>12.89</b>	<b>12.88</b>	<b>13.00</b>	<b>13.04</b>	<b>13.48</b>	<b>13.65</b>	<b>13.44</b>
Natural Gas	10.07	10.10	11.90	11.38	11.16	10.94	11.62	11.49	11.16	11.02	11.19	11.33	11.24
Other Fuels	1.47	1.27	1.28	1.43	1.61	1.67	1.27	1.40	1.83	2.02	2.29	2.32	2.19
<b>Commercial Cogeneration Heat Output</b>	<b>1.09</b>	<b>1.05</b>	<b>1.06</b>	<b>0.26</b>	<b>0.62</b>	<b>0.40</b>	<b>0.42</b>	<b>0.49</b>	<b>0.37</b>	<b>0.92</b>	<b>0.92</b>	<b>0.78</b>	<b>0.76</b>
<b>Industrial</b>	<b>95.01</b>	<b>93.16</b>	<b>93.14</b>	<b>92.47</b>	<b>94.48</b>	<b>92.29</b>	<b>90.28</b>	<b>87.10</b>	<b>87.54</b>	<b>84.95</b>	<b>88.51</b>	<b>88.34</b>	<b>89.16</b>
<b>Refineries</b>	<b>28.47</b>	<b>29.04</b>	<b>29.20</b>	<b>29.83</b>	<b>29.08</b>	<b>29.75</b>	<b>29.65</b>	<b>29.21</b>	<b>28.42</b>	<b>28.34</b>	<b>30.39</b>	<b>30.12</b>	<b>29.88</b>
<b>General Fuel Use</b>	<b>20.20</b>	<b>19.04</b>	<b>20.28</b>	<b>16.49</b>	<b>17.03</b>	<b>16.01</b>	<b>15.96</b>	<b>14.77</b>	<b>16.00</b>	<b>15.56</b>	<b>17.98</b>	<b>19.14</b>	<b>18.87</b>
Natural Gas	16.82	14.62	15.18	11.97	12.80	12.72	12.38	11.56	12.37	11.46	13.46	14.48	14.30
Other Fuels	3.38	4.42	5.09	4.52	4.23	3.28	3.58	3.20	3.63	4.10	4.52	4.66	4.56
<b>Oil &amp; Gas Extraction [2]</b>	<b>18.71</b>	<b>19.08</b>	<b>17.65</b>	<b>20.21</b>	<b>19.90</b>	<b>18.59</b>	<b>16.94</b>	<b>17.00</b>	<b>18.22</b>	<b>17.12</b>	<b>16.18</b>	<b>16.22</b>	<b>16.86</b>
Fuel Use	17.53	17.76	16.51	19.03	19.20	17.91	15.75	15.78	17.03	15.92	15.01	14.91	15.50
Fugitive Emissions	1.18	1.32	1.14	1.17	0.71	0.69	1.19	1.21	1.20	1.20	1.17	1.31	1.36
<b>Cement Plants</b>	<b>9.41</b>	<b>9.52</b>	<b>9.62</b>	<b>9.71</b>	<b>9.81</b>	<b>9.91</b>	<b>9.74</b>	<b>9.14</b>	<b>8.63</b>	<b>5.72</b>	<b>5.56</b>	<b>6.14</b>	<b>6.92</b>
Clinker 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	4.65
Fuel Use	3.98	4.00	4.01	4.03	4.05	4.06	3.95	3.59	3.34	2.12	2.10	2.06	2.26
<b>Cogeneration Heat Output</b>	<b>11.73</b>	<b>10.48</b>	<b>10.65</b>	<b>10.60</b>	<b>12.92</b>	<b>12.41</b>	<b>12.17</b>	<b>11.16</b>	<b>10.40</b>	<b>12.55</b>	<b>12.60</b>	<b>11.14</b>	<b>10.82</b>
<b>Other Fugitive and Process Emissions</b>	<b>6.49</b>	<b>6.00</b>	<b>5.74</b>	<b>5.62</b>	<b>5.74</b>	<b>5.62</b>	<b>5.83</b>	<b>5.83</b>	<b>5.87</b>	<b>5.65</b>	<b>5.80</b>	<b>5.59</b>	<b>5.82</b>

**California Greenhouse Gas Inventory for 2000-2012**  
**— by Category as Defined in the 2008 Scoping Plan**
*million tonnes of CO2 equivalent - (based upon IPCC Fourth Assessment Report's Global Warming Potentials)*

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
<b>Recycling and Waste</b>	<b>7.35</b>	<b>7.49</b>	<b>7.43</b>	<b>7.57</b>	<b>7.57</b>	<b>7.75</b>	<b>7.80</b>	<b>7.93</b>	<b>8.09</b>	<b>8.23</b>	<b>8.34</b>	<b>8.42</b>	<b>8.49</b>
<i>Landfills [3]</i>	<i>7.11</i>	<i>7.23</i>	<i>7.14</i>	<i>7.26</i>	<i>7.24</i>	<i>7.40</i>	<i>7.42</i>	<i>7.53</i>	<i>7.66</i>	<i>7.78</i>	<i>7.86</i>	<i>7.92</i>	<i>7.97</i>
<i>Composting</i>	<i>0.24</i>	<i>0.26</i>	<i>0.29</i>	<i>0.31</i>	<i>0.33</i>	<i>0.36</i>	<i>0.38</i>	<i>0.40</i>	<i>0.43</i>	<i>0.45</i>	<i>0.47</i>	<i>0.50</i>	<i>0.52</i>
<b>High GWP</b>	<b>8.03</b>	<b>7.99</b>	<b>8.14</b>	<b>8.83</b>	<b>9.56</b>	<b>10.36</b>	<b>11.08</b>	<b>11.78</b>	<b>12.87</b>	<b>13.99</b>	<b>15.89</b>	<b>17.35</b>	<b>18.41</b>
<i>Ozone Depleting Substance (ODS) Substitutes</i>	<i>7.00</i>	<i>7.17</i>	<i>7.37</i>	<i>8.06</i>	<i>8.87</i>	<i>9.71</i>	<i>10.41</i>	<i>11.16</i>	<i>12.24</i>	<i>13.49</i>	<i>15.36</i>	<i>16.58</i>	<i>17.73</i>
<i>Electricity Grid SF6 Losses [4]</i>	<i>0.33</i>	<i>0.32</i>	<i>0.30</i>	<i>0.29</i>	<i>0.30</i>	<i>0.29</i>	<i>0.28</i>	<i>0.26</i>	<i>0.27</i>	<i>0.26</i>	<i>0.24</i>	<i>0.24</i>	<i>0.23</i>
<i>Semiconductor Manufacturing [3]</i>	<i>0.70</i>	<i>0.50</i>	<i>0.47</i>	<i>0.48</i>	<i>0.40</i>	<i>0.36</i>	<i>0.39</i>	<i>0.36</i>	<i>0.36</i>	<i>0.23</i>	<i>0.29</i>	<i>0.53</i>	<i>0.45</i>
<b>Agriculture</b>	<b>32.52</b>	<b>32.75</b>	<b>35.99</b>	<b>36.50</b>	<b>36.26</b>	<b>36.54</b>	<b>37.75</b>	<b>37.03</b>	<b>37.99</b>	<b>35.84</b>	<b>35.73</b>	<b>36.34</b>	<b>37.86</b>
<b>Livestock</b>	<b>19.66</b>	<b>20.44</b>	<b>21.06</b>	<b>21.63</b>	<b>21.06</b>	<b>21.81</b>	<b>22.22</b>	<b>23.73</b>	<b>24.09</b>	<b>23.88</b>	<b>23.35</b>	<b>23.38</b>	<b>23.92</b>
Enteric Fermentation (Digestive Process)	10.26	10.45	10.74	10.89	10.78	11.14	11.24	11.93	11.89	11.71	11.51	11.49	11.78
Manure Management	9.40	10.00	10.32	10.75	10.28	10.67	10.98	11.80	12.20	12.17	11.84	11.89	12.14
<b>Crop Growing &amp; Harvesting</b>	<b>9.05</b>	<b>8.48</b>	<b>10.54</b>	<b>10.49</b>	<b>10.67</b>	<b>10.11</b>	<b>10.20</b>	<b>9.50</b>	<b>9.98</b>	<b>9.31</b>	<b>9.57</b>	<b>9.30</b>	<b>10.22</b>
Fertilizers	7.01	6.73	8.56	8.57	8.49	8.09	8.01	7.49	8.04	7.32	7.58	7.25	8.16
Soil Preparation and Disturbances	1.96	1.69	1.91	1.86	2.11	1.95	2.12	1.94	1.87	1.92	1.91	1.98	1.98
Crop Residue Burning	0.08	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.08
<b>General Fuel Use</b>	<b>3.82</b>	<b>3.83</b>	<b>4.39</b>	<b>4.38</b>	<b>4.53</b>	<b>4.63</b>	<b>5.33</b>	<b>3.80</b>	<b>3.92</b>	<b>2.65</b>	<b>2.81</b>	<b>3.66</b>	<b>3.72</b>
Diesel	2.52	2.70	3.05	3.11	3.18	3.41	3.87	2.68	3.00	1.79	1.99	2.37	2.47
Natural Gas	0.98	0.75	0.94	0.85	0.82	0.70	0.88	0.79	0.75	0.69	0.65	0.66	0.70
Gasoline	0.31	0.38	0.41	0.41	0.52	0.52	0.57	0.32	0.17	0.17	0.17	0.63	0.55
Other Fuels	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total Emissions</b>	<b>466.32</b>	<b>481.23</b>	<b>480.32</b>	<b>483.05</b>	<b>492.86</b>	<b>485.13</b>	<b>482.52</b>	<b>489.16</b>	<b>487.10</b>	<b>458.44</b>	<b>453.06</b>	<b>450.94</b>	<b>458.68</b>

[1] Includes equipment used in construction, mining, oil drilling, industrial and airport ground operations

[2] Reflects emissions from combustion of natural gas, diesel, and lease fuel plus fugitive emissions

[3] These categories are listed in the Industrial sector of ARB's GHG Emission Inventory sectors

[4] This category is listed in the Electric Power sector of ARB's GHG Emission Inventory sectors