

# Threshold Guidance for the Regulation for the Mandatory Reporting of Greenhouse Gas Emissions

California Air Resources Board (CARB)

## Evaluation of GHG Reporting Thresholds

The tables below provide assistance to stakeholders who may be newly subject to the MRR. Table 1 shows the emission factors, as provided by the United States Environmental Protection Agency, for various fuel types. Table 2 uses the emission factors provided in Table 1 to calculate the approximate amount of each fuel type is needed to reach a 10,000 metric ton of carbon dioxide equivalent (MTCO<sub>2e</sub>) threshold or 25,000 MTCO<sub>2e</sub> threshold. Please note that use of information in Table 2 alone is not sufficient enough to demonstrate that a facility has no reporting obligation. Please refer to section 95101(b) of the MRR for complete information, available at: <https://ww2.arb.ca.gov/mrr-regulation>. Also, please note the tables do not include emissions from methane or nitrous oxide, process emissions, fugitive emissions, and other potentially reportable emissions.

**Table 1. Fuel Emission Factors\***

Fuel type	Default high heat value	Default CO <sub>2</sub> Emission Factor
<b>Coal and coke</b>		
	mmBtu/short ton	kg CO <sub>2</sub> /mmBtu
Anthracite	25.09	103.54
Bituminous	24.93	93.4
Subbituminous	17.25	97.02
Lignite	14.21	96.36
Coke	24.8	102.04
Mixed (Commercial sector)	21.39	95.26
Mixed (Industrial coking)	26.28	93.65
Mixed (Industrial sector)	22.35	93.91
Mixed (Electric Power sector)	19.73	94.38
<b>Natural gas</b>		
	mmBtu/scf	kg CO <sub>2</sub> /mmBtu
(Weighted U.S. Average)	0.001028	53.02
<b>Petroleum products</b>		
	mmBtu/gallon	kg CO <sub>2</sub> /mmBtu
Distillate Fuel Oil No. 1	0.139	73.25
Distillate Fuel Oil No. 2	0.138	73.96
Distillate Fuel Oil No. 4	0.146	75.04
Residual Fuel Oil No. 5	0.14	72.93
Residual Fuel Oil No. 6	0.15	75.1
Used Oil	0.135	74
Kerosene	0.135	75.2
Liquefied petroleum gases (LPG)	0.092	62.98
Propane	0.091	61.46
Propylene	0.091	65.95
Ethane	0.069	62.64
Ethanol	0.084	68.44
Ethylene	0.1	67.43
Isobutane	0.097	64.91
Isobutylene	0.103	67.74
Butane	0.101	65.15
Butylene	0.103	67.73
Naphtha (<401 deg F)	0.125	68.02
Natural Gasoline	0.11	66.83
Other Oil (>401 deg F)	0.139	76.22
Pentanes Plus	0.11	70.02
Petrochemical Feedstocks	0.129	70.97
Petroleum Coke	0.143	102.41
Special Naphtha	0.125	72.34

**Table 2. Approximate Applicability Thresholds for MRR\*\***

Approximate Fuel Combustion to Produce CO <sub>2</sub> Emissions Shown (MT, metric tons)	
10,000 MT	25,000 MT
<b>short ton</b>	
3,849	9,623
4,295	10,737
5,975	14,938
7,303	18,258
3,952	9,879
4,908	12,269
4,063	10,158
4,764	11,911
5,370	13,426
<b>scf</b>	
<b>183,470,888</b>	<b>458,677,219</b>
<b>gallon</b>	
982,149	2,455,374
979,770	2,449,424
912,755	2,281,888
979,413	2,448,532
887,705	2,219,263
1,001,001	2,502,503
985,028	2,462,569
1,725,876	4,314,689
1,787,994	4,469,985
1,666,264	4,165,660
2,313,658	5,784,145
1,739,445	4,348,613
1,483,019	3,707,549
1,588,242	3,970,605
1,433,236	3,583,089
1,519,722	3,799,305
1,433,447	3,583,618
1,176,125	2,940,312
1,360,304	3,400,759
943,879	2,359,697
1,298,330	3,245,826
1,092,284	2,730,709
682,844	1,707,110
1,105,889	2,764,722

Fuel type	Default high heat value	Default CO <sub>2</sub> Emission Factor
Unfinished Oils	0.139	74.49
Heavy Gas Oils	0.148	74.92
Lubricants	0.144	74.27
Motor Gasoline	0.125	70.22
Aviation Gasoline	0.12	69.25
Kerosene-Type Jet Fuel	0.135	72.22
Asphalt and Road Oil	0.158	75.36
Crude Oil	0.138	74.49
Other fuels-solid	mmBtu/short ton	kg CO <sub>2</sub> /mmBtu
Municipal Solid Waste	9.95 <sup>1</sup>	90.7
Tires	26.87	85.97
Plastics	38	75
Petroleum Coke	30	102.41
Other fuels—gaseous	mmBtu/scf	kg CO <sub>2</sub> /mmBtu
Blast Furnace Gas	0.000092	274.32
Coke Oven Gas	0.000599	46.85
Propane Gas	0.002516	61.46
Fuel Gas <sup>2</sup>	0.001388	59
Biomass fuels—solid	mmBtu/short ton	kg CO <sub>2</sub> /mmBtu
Wood and Wood Residuals	15.38	93.8
Agricultural Byproducts	8.25	118.17
Peat	8	111.84
Solid Byproducts	25.83	105.51
Biomass fuels—gaseous	mmBtu/scf	kg CO <sub>2</sub> /mmBtu
Biogas (Captured methane)	0.000841	52.07
Biomass Fuels—Liquid	mmBtu/gallon	kg CO <sub>2</sub> /mmBtu
Ethanol	0.084	68.44
Biodiesel	0.128	73.84
Biodiesel (100%)	0.128	73.84
Rendered Animal Fat	0.125	71.06
Vegetable Oil	0.12	81.55

\*Source: Table C-1, USEPA Greenhouse Gas Reporting Rule (40 CFR Part 98)

<sup>1</sup>Use of this default HHV is allowed only for: (a) Units that combust MSW, do not generate steam, and are allowed to use Tier 1; (b) units that derive no more than 10 percent of their annual heat input from MSW and/or tires; and (c) small batch incinerators that combust no more than 1,000 tons of MSW per year.

<sup>2</sup>Reporters subject to subpart X of this part that are complying with §98.243(d) or subpart Y of this part may only use the default HHV and the default CO<sub>2</sub> emission factor for fuel gas combustion under the conditions prescribed in §98.243(d)(2)(i) and (d)(2)(ii) and §98.252(a)(1) and (a)(2), respectively. Otherwise, reporters subject to subpart X or subpart Y shall use either Tier 3 (Equation C-5) or Tier 4.

**USEPA rule citation**

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 79153, Dec. 17, 2010]

[http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr98\\_main\\_02.tpl](http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title40/40cfr98_main_02.tpl)

Approximate Fuel Combustion to Produce CO <sub>2</sub> Emissions Shown (MT, metric tons)	
10,000 MT	25,000 MT
965,800	2,414,500
901,863	2,254,657
935,027	2,337,567
1,139,277	2,848,191
1,203,369	3,008,424
1,025,673	2,564,181
839,851	2,099,626
972,799	2,431,997

10,000 MT	25,000 MT
short ton	
11,080	27,699
4,329	10,822
3,509	8,772
3,255	8,137

scf	
396,236,702	990,591,756
356,339,185	890,847,963
64,669,099	161,672,746
122,112,050	305,280,125

short ton	
6,932	17,329
10,257	25,644
11,177	27,942
3,669	9,173

scf	
228,358,103	570,895,257

gallon	
1,739,445	4,348,613
1,058,031	2,645,077
1,058,031	2,645,077
1,125,809	2,814,523
1,021,868	2,554,670

\*\*Approximate values calculated by CARB staff.