



GREENHOUSE GAS: AIR POLLUTANT

Air Pollution Control Division

<http://www.cdphe.state.co.us/climate/>



Colorado Department
of Public Health
and Environment

Large emitters of greenhouse gases (GHG) are required by the U.S. Environmental Protection Agency to begin collecting GHG emissions data under a national reporting system, beginning as early as January 1, 2010. The reporting covers approximately 85 percent of the nation's GHG emissions and 10,000 facilities. This rule is called the Mandatory Reporting of Greenhouse Gas Rule, promulgated in October 2009.

Additionally, large stationary sources of GHG are required under the Prevention of Significant Deterioration (PSD) and Title V Operating Permit programs to obtain permits for construction or operation of their facilities effective January 2, 2011. The U.S. Environmental Protection Agency has estimated that this will affect an additional 550 facilities nationwide. This rule is called the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule, promulgated in June 2010.

A short summary of the two GHG regulations which have been promulgated is outlined in the Table 1, below. More information on GHG and the regulatory obligations of sources in Colorado can be found at <http://www.cdphe.state.co.us/climate/>.

Table 1: Federal Greenhouse Gas Rules – Summary

RULE	Mandatory Reporting of Greenhouse Gases Rule (MRR)	Greenhouse Gas (GHG) Tailoring Rule	
Administrator	 U.S. Environmental Protection Agency (USEPA)	 Air Pollution Control Division (APCD), Colorado Department of Public Health and Environment	
Intention of Rule	Reporting of actual GHG emissions <ul style="list-style-type: none"> No control requirements No emissions limitations No applicable requirements No permitting requirements 	Permitting potential to emit of GHG <ul style="list-style-type: none"> Potential for PSD Review / BACT limits Title V Operating Permits required No minor source permitting No minor source reporting 	
Thresholds	25,000 metric tons per year (mtpy) CO ₂ e for certain source categories All-in for others	Title V – major source	100,000 tons per year (tpy) CO ₂ e and 100 tpy GHG
		PSD – subject to regulation	100,000 tpy CO ₂ e and 100/250 tpy GHG
Affected Sources	Sources of GHG http://www.epa.gov/climatechange/emissions/subpart.html	Major Sources and Major Stationary Sources of GHG http://www.cdphe.state.co.us/regulations/airregs/5C_CR1001-5.pdf	

Greenhouse gas as an air pollutant has been defined to encompass six categories of gases that cause or contribute to global warming and climate change. Table 2, below, lists the gases which collectively make up the air pollutant GHG and identifies how to calculate the carbon dioxide equivalent (CO₂e).

Table 2: Greenhouse Gas Terms and Equations

GHG (tpy mass) x GWP = GHG (tpy CO2e)	
Greenhouse Gases (GHG)	CO2 Carbon Dioxide
	CH4 Methane
	N2O Nitrous oxide
	HFCs Hydrofluorocarbons
	PFCs Perfluorocarbons
	SF6 Sulfur hexafluoride
Global Warming Potential (GWP)	40 C.F.R. Part 98, Subpart A, Table A-1: Global Warming Potentials (74 FR 56395-56396) http://www.cdphe.state.co.us/climate/TableA-1.pdf
Carbon Dioxide Equivalent (CO2e)	<i>Carbon dioxide equivalent</i> means a metric used to compare the emissions from various GHG classes based upon their global warming potential (GWP).

Sources Affected

Sources including, but not limited to, large combustion sources, landfills, oil & gas facilities, power plants, ethanol plants, large breweries, refineries, fertilizer manufacturers, and industrial facilities or mining operations utilizing PFCs, HFCs, or SF6 in their processes may be subject to the PSD and Title V permitting programs.

Most stationary sources in Colorado are not anticipated to have the potential to emit greater than 100,000 tpy CO2e. Please note, however, that exemption from EPA’s Mandatory Reporting Rule does not guarantee exemption from the PSD and Title V permitting requirements. For reference in understanding the sources that may be subject to PSD or Title V permitting for GHG, Table 3 below contains general information on CO2e emissions from combustion sources.

Table 3: CO2e Emissions from Combustion Sources

		Unit Size	Approximate Carbon Dioxide Equivalent (tpy CO2e)*
Natural Gas	Turbine	2,000 hp	6,900
		5,000 hp	17,100
	Lean Burn RICE	500 hp	2,100
		2,000 hp	8,400
	Rich Burn RICE	500 hp	1,800
		2,000 hp	7,100
	Boiler	5 MMBtu/hr	2,600
		10 MMBtu/hr	5,200
100 MMBtu/hr		52,000	
500 MMBtu/hr		260,000	
Diesel Fuel / Distillate Oil	RICE	100 hp	550
		500 hp	2,600
		1,000 hp	5,100
		2,000 hp	10,200
	Boiler	5 MMBtu/hr	4,100
		10 MMBtu/hr	8,200
		100 MMBtu/hr	82,000
		500 MMBtu/hr	410,000
Coal	Boiler	5 MMBtu/hr	5,000
		10 MMBtu/hr	10,000
		100 MMBtu/hr	100,000
		500 MMBtu/hr	500,000

*The values in this table do not represent actual or permitted GHG emissions, and should NOT be used in emission calculations. Actual emission calculations will vary dependant on fuel usage, fuel heating value, hours of operation, and equipment specific emission factors. Values in this table are based on maximum capacity, average fuel heating values, and 8,760 hours of operation annually, using emission factors from AP-42, and rounded up for simplicity.