

Fact Sheet

Proposed Bay Area Air Quality Management District Greenhouse Gas Fee Schedule February 5, 2008

Background

Under State law, the Bay Area Air Quality Management District (Air District) has the authority to assess fees to fully recover the direct and indirect costs associated with implementing and enforcing programs related to stationary sources of air pollution. The Air District is proposing to adopt a greenhouse gas (GHG) fee schedule to recover the costs associated with its Climate Protection Program activities related to stationary sources. The GHG fee schedule would apply to all Air District-permitted facilities with greenhouse gas emissions.

Questions and Answers

What are GHGs?

GHGs, also known as global warming gases, include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons, perfluorinated compounds, fluorinated ethers, perfluoropolyethers, and a number of other chemical compounds. The specific GHGs that are included in the proposed Air District fee schedule are listed in Table 1, below.

The GHGs that are generally considered to have the most significant impact on global warming are CO₂, because of the vast quantity emitted by human activities, its ability to absorb many infrared wavelengths of sunlight and because of the amount of time this compound stays in the atmosphere; and CH₄, which has a higher warming effect per molecule, but much less presence in the Earth's atmosphere, than CO₂.

What is the jurisdiction of the Air District?

The Air District's jurisdiction includes all of Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa counties, and portions of two other counties – southwestern Solano and southern Sonoma.

What is the Air District's Climate Protection Program?

In 2005, the Air District Board of Directors adopted a resolution that established a Climate Protection Program, acknowledging the link between climate protection and the efforts to reduce air pollution in the Bay Area. A central element of this program is the integration of climate protection activities into existing Air District programs. In addition, the Air District's Climate Protection Program emphasizes collaboration with

ongoing climate protection efforts at the local and state level, public education and outreach, and technical assistance to cities and counties.

What types of facilities are potentially subject to the GHG Fee Schedule?

All facilities with stationary sources of GHG emissions that are subject to an Air District permit requirement would be subject to the GHG fee schedule.

Are there any exceptions or thresholds that apply to the GHG Fee Schedule?

The proposed GHG fee schedule would apply to all permitted facilities with GHG emissions, without any exception or threshold for lesser amounts of GHG emissions.

What Air District costs are included in the GHG Fee Schedule?

The following activities related to GHG emissions from stationary sources are included in the costs that the Air District proposes to recover through the proposed GHG fee schedule:

- Development and maintenance of a regional inventory of GHG emissions.
- Completion of region-wide studies to identify and evaluate potential greenhouse gas emission control options for application at stationary sources in the Bay Area.
- Development of regulatory measures for GHGs at stationary sources.
- Review of GHG-related documents.
- Coordination with the California Air Resources Board for activities associated with the implementation of the California Global Warming Solutions Act of 2006 (Assembly Bill 32).
- Other miscellaneous activities, such as database system update and invoicing.

How would the GHG fees be calculated?

To calculate the GHG fee applicable to each permitted facility, GHG emissions would be based on the data reported to the Air District for the most recent 12-month period prior to billing for permit renewals. The annual emissions of each GHG listed in Table 1 would be determined for each permitted facility. For each emitted GHG, the carbon dioxide equivalent (CDE) emissions would be determined by multiplying the annual GHG emissions by the applicable Global Warming Potential (GWP) value. The fee for each facility would be determined by multiplying the total CDE emissions from the permitted facility by the unit fee of **\$0.042 per metric ton of CDE** (see equation below). The corresponding GHG fee would be included in the annual permit renewal fee for all Air District-permitted facilities.

[Grams CDE per year / 1,000,000 grams per metric ton] x \$0.042 per metric ton

How can GHG emissions be estimated?

Emission factors can be used to estimate the amount of GHGs emitted by a facility. Examples of some typical emission factors for fuel combustion sources of GHGs are presented in Table 2 below. Once the emissions of any GHG are estimated, the emission values can be converted to CDE using the data presented in Table 1.

Table 1 - Direct Global Warming Potential Relative to Carbon Dioxide*

GHG	GWP	GHG	GWP
Carbon Dioxide	1	HFC-43-1-mee	1,640
Methane	25	Sulphur Hexafluoride	22,800
Nitrous Oxide	298	Nitrogen Trifluoride	17,200
CFC-11	4,750	PFC-14	7,390
CFC-12	10,900	PFC-116	12,200
CFC-13	14,400	PFC-218	8,830
CFC-113	6,130	PFC-318	10,300
CFC-114	10,000	PFC-3-1-10	8,860
CFC-115	7,370	PFC-4-1-12	9,160
Halon-1301	7,140	PFC-5-1-14	9,300
Halon-1211	1,890	PFC-9-1-18	7,500
Halon-2402	1,640	Trifluoromethyl Sulphur Pentafluoride	17,700
Carbon Tetrachloride	1,400	HFE-125	14,900
Methyl Bromide	5	HFE-134	6,320
Methyl Chloroform	146	HFE143-a	756
HCFC-22	1,810	HCFE-235da2	350
HCFC-123	77	HFE-245cb2	708
HCFC-124	609	HFE-245fa2	659
HCFC-141b	725	HFE-254cb2	359
HCFC-142b	2,310	HFE-347mcc3	575
HCFC-225ca	122	HFE-347pcf2	580
HCFC-225cb	595	HFE-356pcc3	110
HFC-23	14,800	HFE-449si (HFE-7100)	297
HFC-32	675	HFE-569sf2 (HFE- 7200)	59
HFC-125	3,500	HFE-43-10pccc124 (H- Galden 1040x)	1,870
HFC-134a	1,430	HFE-236ca12 (HG-10)	2,800
HFC-143a	4,470	HFE-338pcc13 (HG-01)	1,500
HFC-152a	124	PFPME	10,300
HFC-227ea	3,220	Dimethylether	1
HFC-236fa	9,810	Methylene Chloride	8.7
HFC-245fa	1,030	Methyl Chloride	13
HFC-365mfc	794		

* Source: Intergovernmental Panel on Climate Change (Fourth Assessment Report: Climate Change 2007).

**Table 2 - Typical Greenhouse Gas Emission Factors for Fuel Combustion
(Grams/Usage Unit)**

Description	CO₂	CH₄	N₂O	Usage Unit
Liquid Fuels				
Distillate Fuel (Fuel Oil, Diesel)	10,153	0.24	0.09	Gallon
Jet Fuel	9,569	0.24	0.09	Gallon
Kerosene/Naphtha	9,769	0.23	0.08	Gallon
Liquefied Petroleum Gases (LPG)	5,808	0.12	0.01	Gallon
Motor Gasoline	8,874	0.00	0.00	Gallon
Residual Fuel (Bunker C Fuel Oil)	11,808	0.10	0.09	Gallon
Aviation Gasoline	8,326	0.24	0.09	Gallon
Bio-diesel	9,408	0.22	0.08	Gallon
Propane	5,747	0.00	0.00	Gallon
Butane	6,647	0.00	0.00	Gallon
Gaseous Fuels				
Natural Gas	54,700	0.09	0.09	1,000 ft ³
Landfill Gas	50,097	95.48	0.11	1,000 ft ³
Digester Gas	47,470	13.59	0.14	1,000 ft ³
Carbon Monoxide	52,660	1.22	0.09	1,000 ft ³
Refinery Make Gases	63,049	1.45	0.10	1,000 ft ³
Solid Fuels				
Refuse/Waste	907,185	135.13	40.73	Ton
Wood and Other	1,728,187	135.13	40.73	Ton
Agricultural Waste Burning	78,834	63.50	158.76	Ton
Petroleum Coke	3,070,820	203.75	48.22	Ton