



DOE Clean Air Working Group: U.S. EPA Greenhouse Gas Reporting Rule (40 CFR 98) Overview

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Reporting Category I – Large Emitters



Table A-3: Any of the following that emit GHGs:

- Electricity Generation (Subject to 40 CFR, Part 75)
- Adipic, Nitric, or Phosphoric Acid Production
- Aluminum, Cement, HCFC-22, Petrochemical, Silicon Carbide, Soda Ash, or Titanium Dioxide Production
- Ammonia and Lime Manufacturing
- Petroleum Refineries
- Processes Destroying >2.14 MT HFC-23 per year and not co-located with an HCFC-22 Production Facility
- Municipal Solid Waste Landfill $\geq 25,000$ MT CO₂e/year
- *Manure Management Systems $\geq 25,000$ MT CO₂e/year*
- *Congress prohibited EPA from implementing this part*
- *Underground Coal Mines (2011)*

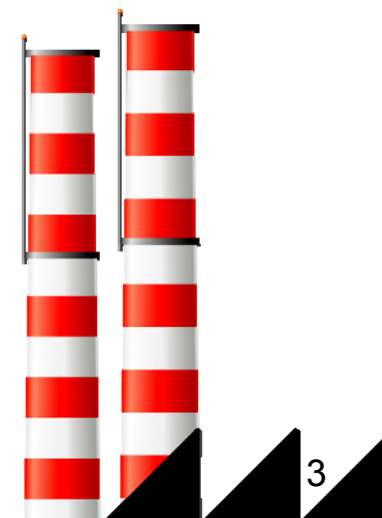


Reporting Category II – Medium Emitters



Table A-4: Facilities emitting $\geq 25,000$ MT CO₂e/year combined from all of the following operations:

- Stationary Fuel Combustion
- Miscellaneous Use of Carbonates
- Ferroalloy, Glass, or Hydrogen Production
- Iron and Steel Production
- Lead or Zinc Production
- Pulp and Paper Manufacturing
- *Magnesium production (2011)*
- *Industrial wastewater treatment (2011)*
- *Industrial waste landfills (2011)*





Reporting Category III – Fuel Combustion



Facilities emitting $\geq 25,000$ MT CO₂e/year from all stationary fuel combustion sources and the aggregate maximum rated heat input capacity of all of the stationary combustion units at the facility is 30 million British thermal units per hour (MMBTU/hour) or greater.

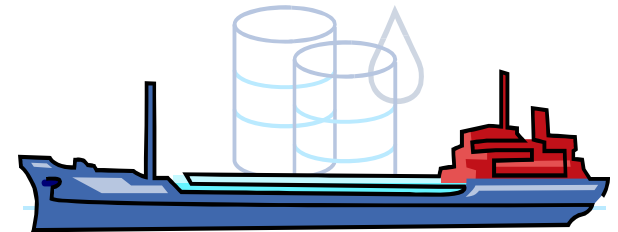




Reporting Category IV – Suppliers

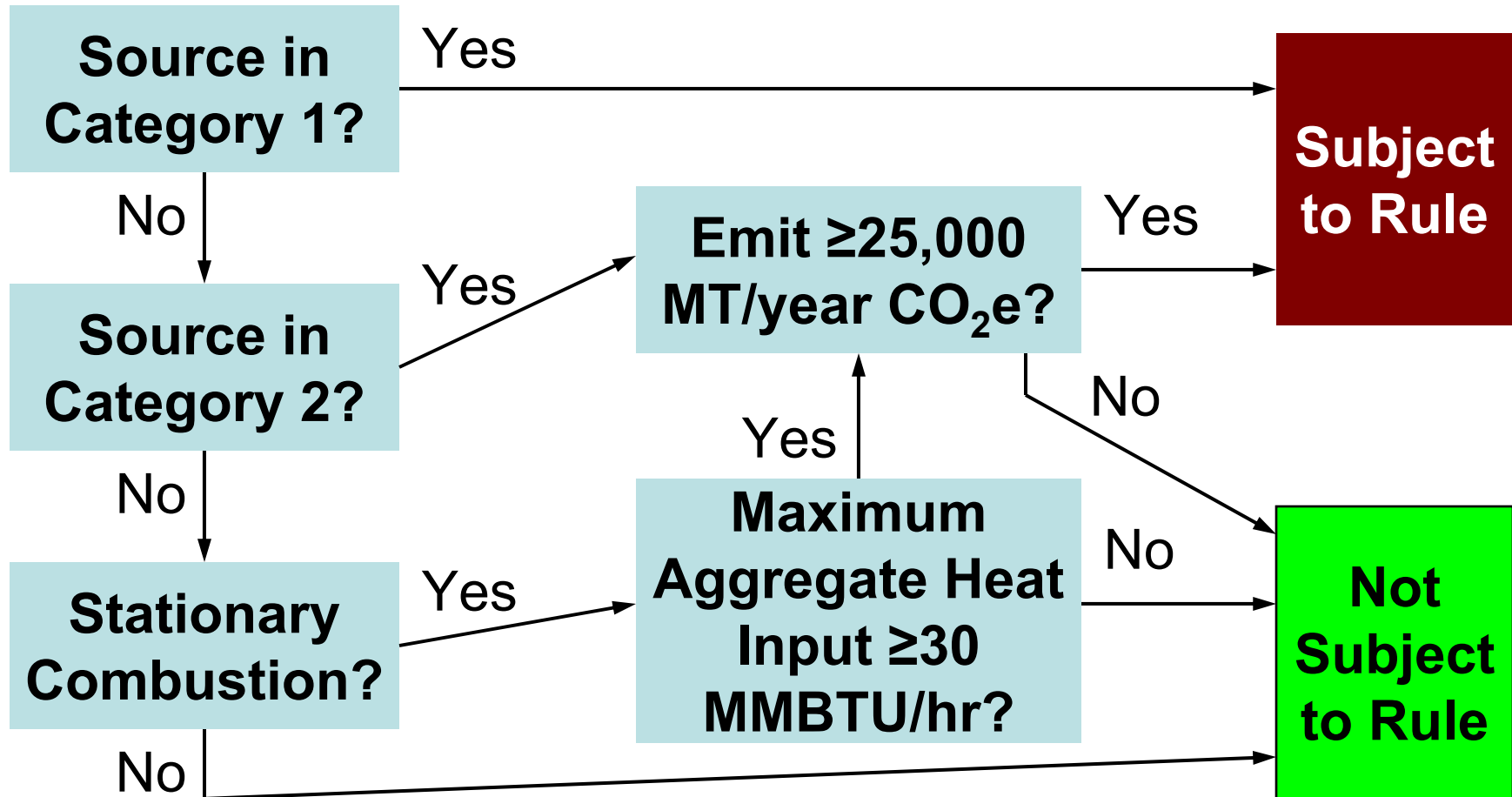


- Suppliers, importers, and exporters of any of the following products:
 - Coal-to-liquid products
 - Petroleum products
 - Natural gas and natural gas liquids
 - Industrial greenhouse gas, including carbon dioxide
Importer/Exporter subject only if $\geq 25,000$ MT CO₂e
- The following production and supply operations:
 - Petroleum refineries distilling crude oil
 - Natural gas fractionators
 - Local natural gas distribution companies
 - Industrial greenhouse gas producers





GHG Reporting Applicability Category

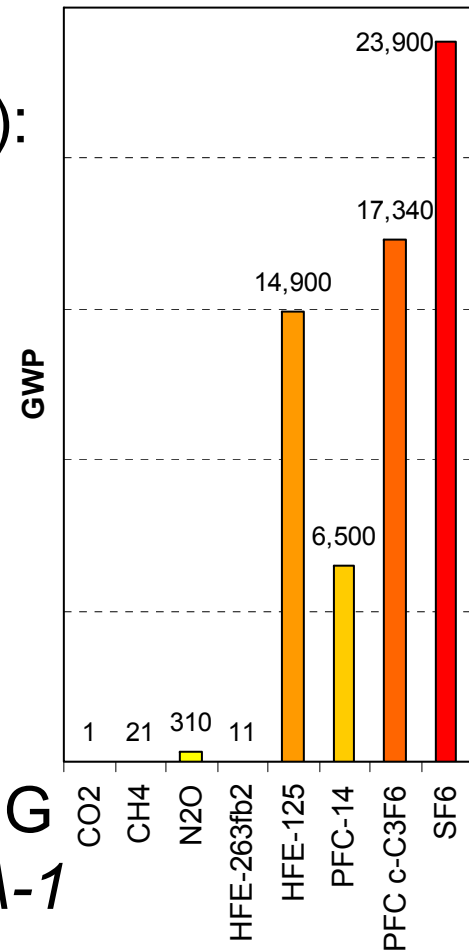




Not All Greenhouse Gases Are Equal



- Each GHG has a capacity to absorb heat, known as global warming potential (GWP):
 - Carbon Dioxide (CO₂): 1
 - Methane (CH₄): 21
 - Nitrous Oxide (N₂O): 310
 - Hydrofluorocarbons (HFC): 11–14,900
 - Perfluorocarbon (PFC): 6,500–17,340
 - Sulfur Hexafluoride (SF₆): 23,900
- Total GHG emissions are listed in carbon dioxide equivalent (CO₂e) emissions - GHG multiplied by its GWP; *40 CFR 98 Table A-1*





EPA GHG Applicability Tool



www.epa.gov/climatechange/emissions/GHG-calculator

Select source categories from the list, calculate annual CO₂e emissions, and the results will detail rule applicability and appropriate subparts. EPA GHG hotline: 877-GHG-1188

Source Category Selection List (Select all that apply)

<input type="checkbox"/> Stationary Fuel Combustion Sources	<input type="checkbox"/> Lime Manufacturing
<input type="checkbox"/> Adipic Acid Production	<input type="checkbox"/> Manure Management System
<input type="checkbox"/> Aluminum Production	<input type="checkbox"/> Miscellaneous Uses of Carbonate
<input type="checkbox"/> Ammonia Manufacturing	<input type="checkbox"/> Municipal Solid Waste Landfills
<input type="checkbox"/> Cement Production	<input type="checkbox"/> Nitric Acid Production
<input type="checkbox"/> Electricity Generation	<input type="checkbox"/> Petrochemical Production
<input type="checkbox"/> Ferroalloy Production	<input type="checkbox"/> Petroleum Refineries
<input type="checkbox"/> Glass Production	<input type="checkbox"/> Phosphoric Acid Production
<input type="checkbox"/> HFC-22 Production	<input type="checkbox"/> Pulp and Paper Manufacturing
<input type="checkbox"/> HFC-23 Destruction	<input type="checkbox"/> Silicon Carbide Production
<input type="checkbox"/> Hydrogen Production	<input type="checkbox"/> Soda Ash Manufacturing
<input type="checkbox"/> Iron and Steel Production	<input type="checkbox"/> Titanium Dioxide Production
<input type="checkbox"/> Lead Production	<input type="checkbox"/> Zinc Production
<input type="checkbox"/> None of the Above	

Calculation Worksheet for Stationary Fuel Combustion Sources

Instructions: The fuel-feed types you selected for the facility are presented below. Input the annual amounts combusted for each type.

Selected Stationary Source Combustion Fuels for Facility*	Annual Amount Combusted	Unit of Measure	CO ₂ ** (metric tons/yr)	CH ₄ (metric tons/yr)	N ₂ O (metric tons/yr)
Natural gas: Pipeline (weighted U.S. average)	<input type="text"/>	Standard cubic feet			
Emissions					
Global Warming Potential (GWP)			1	21	310
CO ₂ e Emissions					
Annual CO ₂ e Emissions for Selected Fuels (metric tons/year)					

* Emissions from fuels combusted in emergency generators and portable equipment should not be counted toward the Applicability.

** CO₂ emissions from biomass-derived fuels are not counted toward the Applicability.



Reporting Exemptions



Research & development activities:
Activities conducted in process units or at laboratory bench-scale settings whose purpose is to conduct research and development for new processes, technologies, or products and whose purpose is not for the manufacture of products for commercial sale.



Discontinuing Reporting



Emissions must be reported each year, even if emissions are reduced below 25,000 MT CO₂e; however, there are three possible methods whereby a facility can reduce emissions and cease reporting:

1. Emissions are less than 25,000 MT CO₂e for five consecutive years;
2. Emissions are less than 15,000 MT CO₂e for three consecutive years; or
3. **ALL** applicable GHG-emitting processes cease to operate; not applicable to municipal solid waste landfills.



Instead of a final report, a cessation notification is submitted.



Signing the Report - I



Designated Representative (DR): an individual having responsibility for the overall operation of the facility

- Plant manager;
- Superintendent;
- Operator of a well or a well field;
- Position of equivalent responsibility; or
- Position having overall responsibility for environmental matters for the company. *If subject to 40 CFR 75, must be same individual.*
- Can delegate alternate designated representative (ADR)
- Can be the same as the “responsible official” for Title V





Signing the Report - II



Certificate of Representation:

- Submitted by the DR and ADR to EPA at least 60 days prior to a GHG due date (January 28, 2011);
- Separate from the GHG Report;
- Lists the owners or operators for the facility;
- EPA will be developing a form;
- Certifies that the DR and ADR have a written “document of agreement” with the owners or operators of the facility;
- DR and ADR actions are binding upon the facility owners and operators.





Signing the Report - III



Agent:

- The DR or ADR can further delegate to an agent;
- An agent submits the report on behalf of the DR or ADR;
- Agent can be anyone within or outside the organization;
- Agent is given authorization to EPA by DR or ADR;
- EPA will develop a form authorizing agent to submit data to EPA.





Recordkeeping Requirements



- The following records are required:
 - Every unit for which GHG emissions were calculated
 - Data used in GHG calculations, required in a Subpart
 - Copies of the annual GHG reports submitted
 - Any missing data computations
 - Written GHG monitoring plan
 - Certification results and maintenance records for instruments required in a Subpart
 - Any additional records required in a Subpart
- All records must be maintained onsite and readily accessible for three years
- Each Subpart has additional requirements





GHG Monitoring Plan



Each facility must develop a written GHG Monitoring Plan (GHGMP) that details the following procedures:

1. Positions responsible for collecting GHG data
 2. Processes / methods for collecting GHG data
 3. Procedures used for quality assurance, maintenance, and repair of monitoring systems and equipment
 4. Delegation Agreement and Certificate of Representation
- The GHGMP can reference existing documents, provided that the requirements are easily identified.
 - EPA can request a copy of the GHGMP or review the GHGMP during an audit.





Enforcement



U.S. EPA is the sole enforcer of these regulations; the state or local air agencies have not been given the power to enforce this rule, at this time.

EPA will conduct reviews and audits of the GHG emissions reports and applicable facilities and ensures that data submitted as part of the GHG report matches emissions reports.





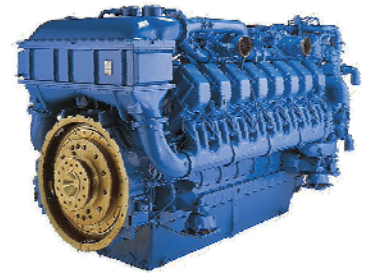
Subpart C: Stationary Fuel Combustion - I



Applicability:

All stationary units that combust fuels (e.g. boilers, engines, process heaters, incinerators)

- Does not include:
 - Portable sources
 - Emergency generators (emergency use only; no load reduction)
 - Flares, unless specified in another Subpart (e.g. Petroleum Refinery)
 - Hazardous waste combustion (unless another fuel is used)



EPA website has an emissions calculator for Subpart C



Subpart C: Stationary Fuel Combustion - II



Calculation Method Tier 1

- Unit Maximum Rated Heat Capacity ≤ 250 MMBTU/hr
- Fuel listed in Table C-1
- *Cannot use if fuel heating value is analyzed! (check air permit)*

Calculation Method Tier 2

- Unit Maximum Rated Heat Capacity ≤ 250 MMBTU/hr or > 250 MMBTU/hr, if firing natural gas or distillate fuel oil
- Fuel used is listed in Table C-1

Calculation Method Tier 3

- Cannot use Method 1 or 2 and without a CO₂ CEMS

Calculation Method Tier 4

- Units equipped with a CO₂ CEMS must use Tier 4





Subpart C: Stationary Fuel Combustion - III



GHG to report: CO₂, CH₄, and N₂O

Calculation Methods (Tiers):

1. Fuel Usage × Default Heat Factor × GHG Factor
Default heat factor – average heating value per amount of fuel, (e.g. MMBTU/CF); Table C-1
2. Fuel Usage × Measured Heat Factor × GHG Factor
Measured heat factor - heating value per amount of fuel
3. Fuel Usage × Fuel Carbon Content × 44 (CO₂)/12 (C)
Measured carbon content - percent of carbon in fuel
4. Continuous Emissions Monitoring System (CEMS)
Measured carbon emissions rate exiting stack





Subpart C: Stationary Fuel Combustion - VII



Miscellaneous Requirements:

- Fuel sampling is only required if the unit operates within the time period for fuel analysis (e.g. calendar quarter)
- Oil or gas flow meters (Tier 3) must be calibrated
- If two or more fuels are fired in the same unit, different Tiers can be used for each fuel
- If Tier 4 is used, no other Tier may be used
- To calculate CH₄ and N₂O emissions, use the appropriate GHG emissions factor. Tiers 1 & 3 use Tier 1 Calculation. Tiers 2 & 4 use Tier 2 Calculation
- For missing analysis data, use the average of the before and after values.





Subpart II: Industrial Wastewater Treatment



This subpart applies to anaerobic processes used to treat industrial wastewater and industrial wastewater treatment sludge at the following:

- Pulp and paper manufacturing
- Food processing
- Ethanol production
- Petroleum refining



Anaerobic process: organic matter in wastewater, wastewater treatment sludge, or other material is degraded by micro-organisms in the absence of oxygen, generating of CO_2 and CH_4 .



Subpart TT: Industrial Waste Landfills - I



This subpart applies to industrial landfills that accepted waste on or after January 1, 1980, with a total landfill capacity of 300,000 metric tons or greater. The following landfills are exempted:

- RCRA Subtitle C hazardous waste
- TSCA hazardous waste
 - Non-hazardous industrial solid waste (40 CFR 257.2)
 - Commercial solid wastes
 - Conditionally exempt small quantity generator wastes
- Dedicated construction & demolition (C&D)
- Received inert waste materials





Subpart TT: Industrial Waste Landfills - II



List of inert waste materials:

- Coal combustion residue (e.g. fly ash)
- Cement and/or cement kiln dust
- Rocks and/or soil (i.e. excavation and/or construction)
- Glass, clay, gypsum, pottery cull, bricks, or mortar
- Non-chemically bound sand (e.g. green foundry sand)
- Furnace slag
- Refractory material (e.g. alumina, silicon, fire clay, brick)
- Plastics
- Other waste material with a volatile solids concentration of 0.5 weight percent (on a dry basis) or less
- American Public Health Association Standard Method 2540G used for volatile solid content



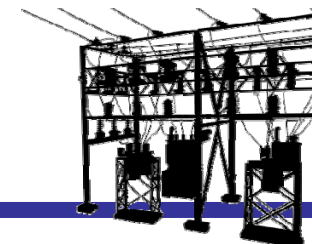
Subpart DD: Use of Electric Transmission and Distribution Equipment - I



Applicability:

Electrical equipment part of an “electric power system,” with total SF₆/PFC nameplate capacity >17,820 lbs., linked through electric power transmission or distribution lines and operated as an integrated unit.

Electrical power system is defined by the DOE Energy Information Administration (EIA) and power administrations are specifically addressed. EPA is considering additional clarification as a transmission and/or distribution entity in which the equipment is used to transmit and distribute electricity from an electric generator to the electrical load of a customer.

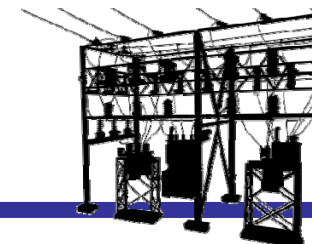




Subpart DD: Use of Electric Transmission and Distribution Equipment - II



- Power Administrations = Yes
 - Engage in transmission and distribution of electricity
 - Specifically identified in EIA
- Laboratories = No
 - Large user of electricity, not an entity that transmits or distributes electricity
 - A site with on-site generation and no off-site distribution is not subject to rule
- DOE HQ will be engaging EPA to ensure clarity in the rule.





Subpart DD: Use of Electric Transmission and Distribution Equipment - III

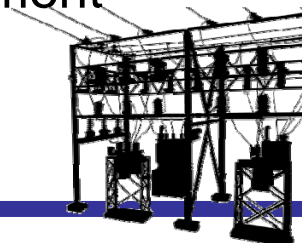


Calculation Methodology :

GHG Emissions = (Decrease in SF₆ Inventory) + (Acquisitions of SF₆) - (Disbursements of SF₆) - (Net Increase in Total Nameplate Capacity of Equipment Operated)

Where:

- Decrease in SF₆ Inventory = (SF₆ stored in containers only on 1/1) - (SF₆ stored in containers, not equipment, on 12/31);
- Acquisitions of SF₆ = (SF₆ purchased, including inside equipment) + (SF₆ returned to site after off-site recycling).
- Disbursements of SF₆ = (SF₆ sold to other entities, including inside equipment) + (SF₆ returned to suppliers) + (SF₆ sent off site for recycling) + (SF₆ sent to destruction facilities).
- Net Increase in Total Nameplate Capacity of Equipment Operated = (New equipment nameplate capacity) - (Retired equipment nameplate capacity)





Subpart DD: Use of Electric Transmission and Distribution Equipment - IV



Reporting:

- Assuming final publication in 2010:
 - Begin data collection January 1, 2011
 - Report 2011 emissions on March 31, 2012
- To be reported:
 - GHG emissions (as calculated on previous slide)
 - Each item used to calculate GHG emissions (inputs to the equation on the previous slide)
 - Transmission miles (length of lines carrying voltages at or above 34.5 kilovolts [kV])

Information Notice

- Draft info notice provided
- Final rule & info notice expected by end 2010

