

Mandatory Greenhouse Gases Reporting Rule

Training



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www.epa.gov/climatechange/emissions/training.html

Agenda



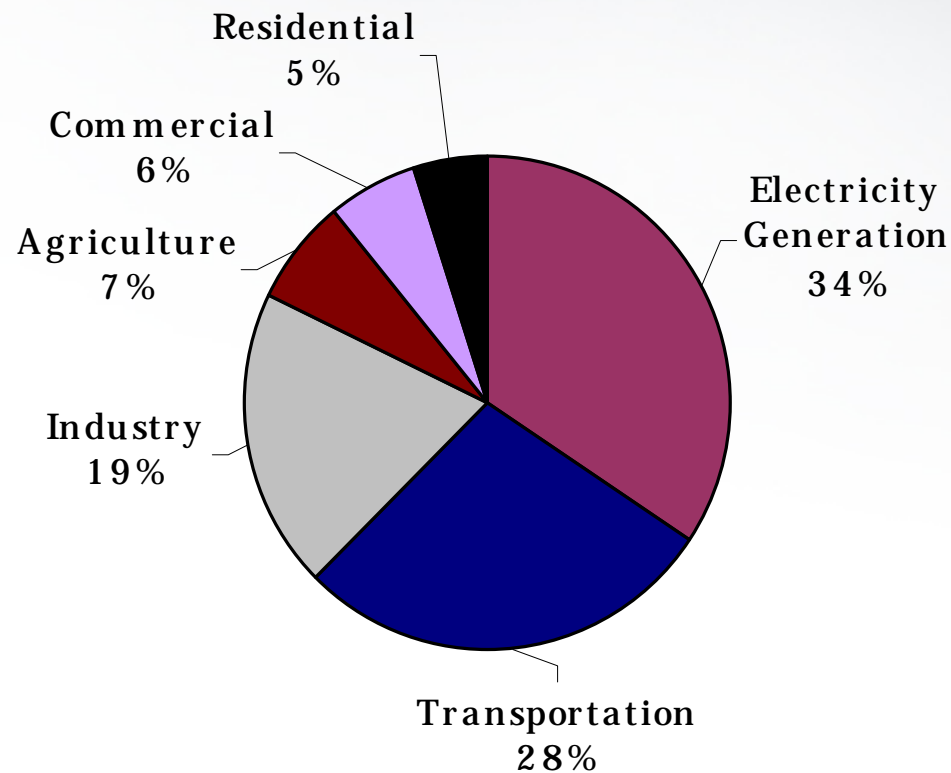
- **Presentation**
 - Background
 - Applicability
 - Reporting, monitoring, and recordkeeping requirements
 - Major changes from proposed rule
 - Subpart C, Stationary Fuel Combustion Sources
 - For more information
- **Q&A**

Purpose of the Rule



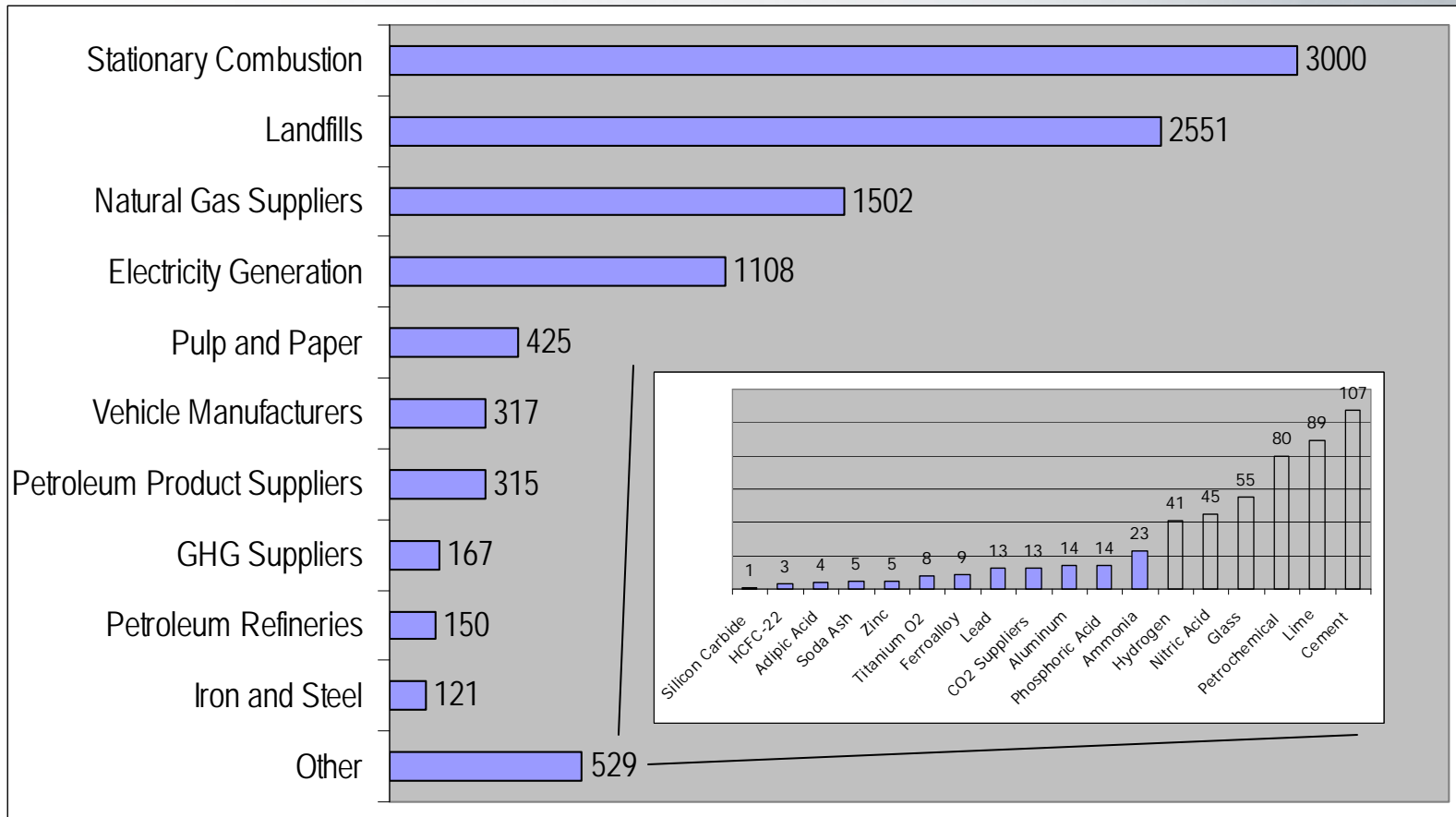
- Provide accurate and timely data to inform future climate change policies and programs
 - Better understand relative emissions of specific industries, and of individual facilities within those industries
 - Better understand factors that influence GHG emission rates and actions facilities could take to reduce emissions
- Does not require control of GHG

U.S. GHG Emissions (CO₂e) Allocated to Economic Sectors (2007)



Source: *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2007* (April 2009)

About 10,000 U.S. Facilities Covered



Key Elements of the Rule



- Annual reporting of GHG by:
 - 25 source categories
 - 5 types of suppliers of fuel and industrial GHG
 - Motor vehicle and engine suppliers (except light duty sector)
- 25,000 metric tons CO₂e per year reporting threshold for most sources; capacity-based thresholds where feasible
- Direct reporting to EPA electronically
- EPA verification of emissions data

What GHGs are Reported?



- CO₂
- CH₄ (methane)
- N₂O (nitrous oxide)
- Fluorinated GHGs
 - HFCs (hydrofluorocarbons)
 - PFCs (perfluorocarbons)
 - SF₆ (sulfur hexafluoride)
 - Other fluorinated gases (except CFC and HCFC and gases <1 mm Hg @25° C)

What is CO₂e?



- GHGs have varying heat-trapping ability and atmospheric lifetimes.
- Global warming potential (GWP) is a metric used to compare emissions among GHGs.
- The GWP of CO₂ is 1.0, and the GWP of other GHGs are expressed relative to CO₂
 - For example, CH₄ has a GWP of 21. Each metric ton of CH₄ emissions would have 21 times as much impact on global warming (over a 100-year time horizon) as a metric ton of CO₂ emissions.
- Mass emissions x GWP = CO₂e (metric tons)

Table A-1 of Subpart A lists GWPs



Applicability

Applicability for Direct Emitters is Facility-based



A facility is defined as...

- Physical property, plant, building, structure, source, or stationary equipment;
- on contiguous or adjacent properties;
- in actual physical contact or separated solely by public roadway or other public right of way; and
- under common ownership or common control

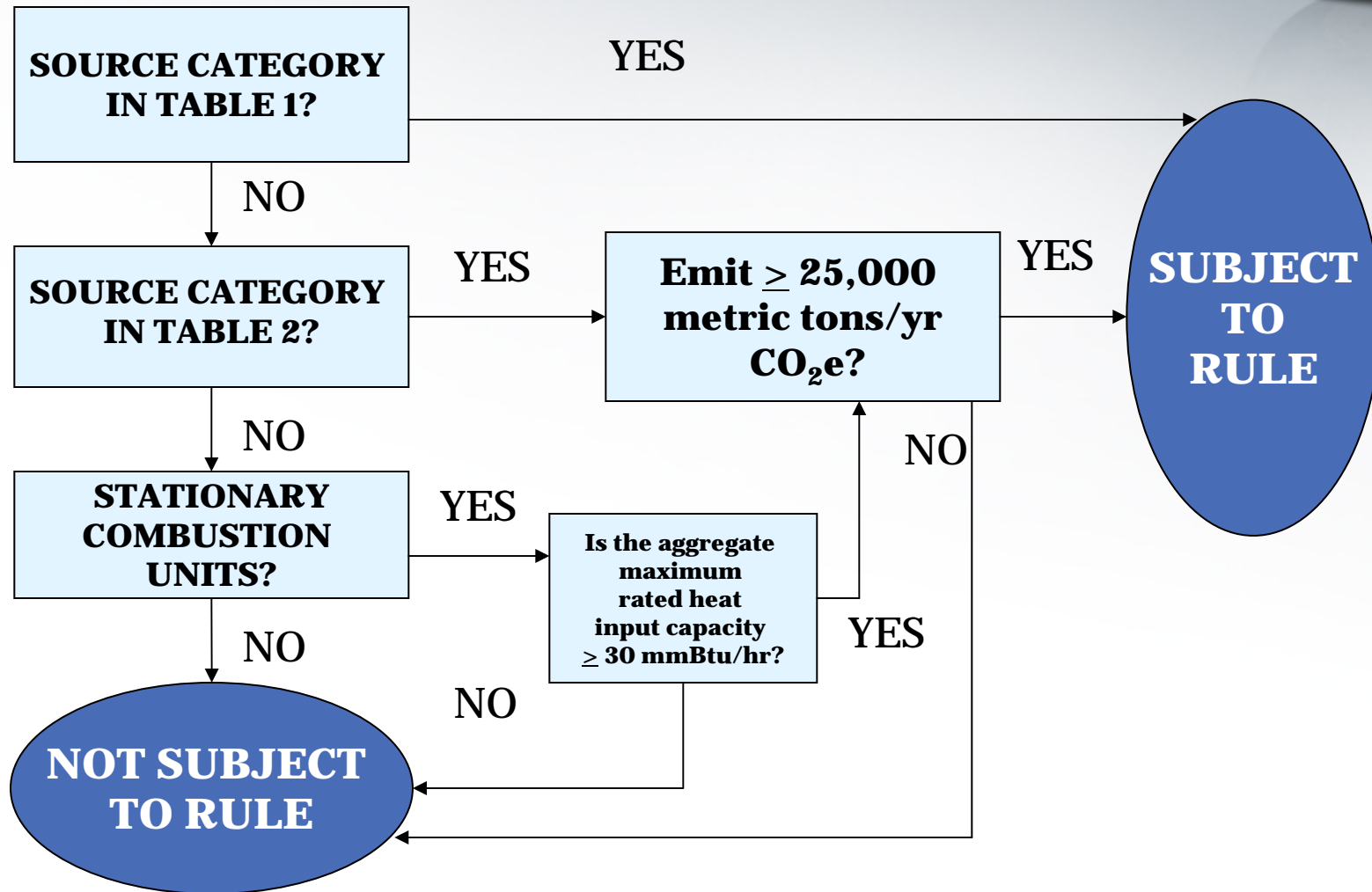
Military installations may be classified as more than one facility.

Assessing Applicability to the Rule



- A facility can have multiple source categories.
- You must evaluate each source category separately to assess applicability to the rule.
 - “All-in” source categories
 - Threshold categories
 - Stationary fuel combustion
- If rule applies, report emissions for all source categories for which methods are provided in the rule.

Does the Rule Apply to My Facility?



Does the Rule Apply to My Facility?

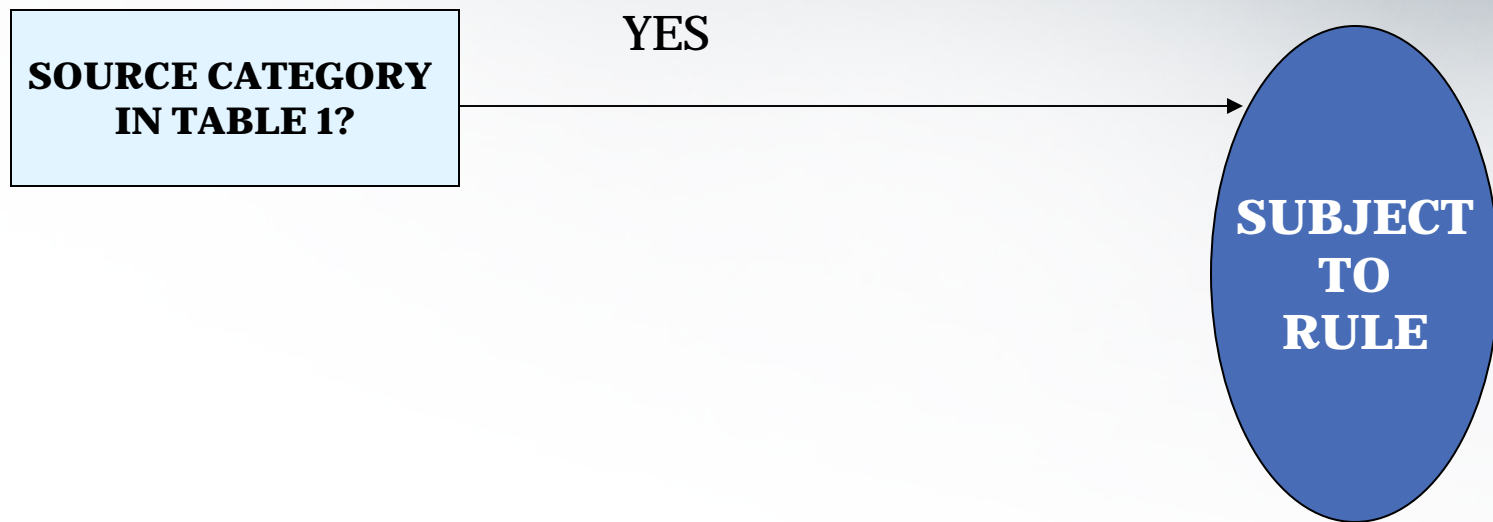




Table 1: All-in Source Categories*

Electricity Generation if report CO₂
year-round through Part 75

Adipic Acid Production

Aluminum Production

Ammonia Manufacturing

Cement Production

HCFC-22 Production

HFC-23 Destruction Processes that
are not collocated with a HCFC-22 production
facility and that destroy more than 2.14
metric tons of HFC-23 per year

Lime Manufacturing

Nitric Acid Production

Petrochemical Production

Petroleum Refineries

Phosphoric Acid Production

Silicon Carbide Production

Soda Ash Production

Titanium Dioxide Production

Municipal Solid Waste Landfills
that generate CH₄ equivalent to 25,000
metric tons CO₂e or more per year

Manure Management Systems
that emit 25,000 metric tons CO₂e or more
per year

[EPA will not be implementing the manure
management rule due to a Congressional
restriction prohibiting expenditure of
funds for this purpose]

*Source categories are defined in each subpart.

Does the Rule Apply to My Facility?

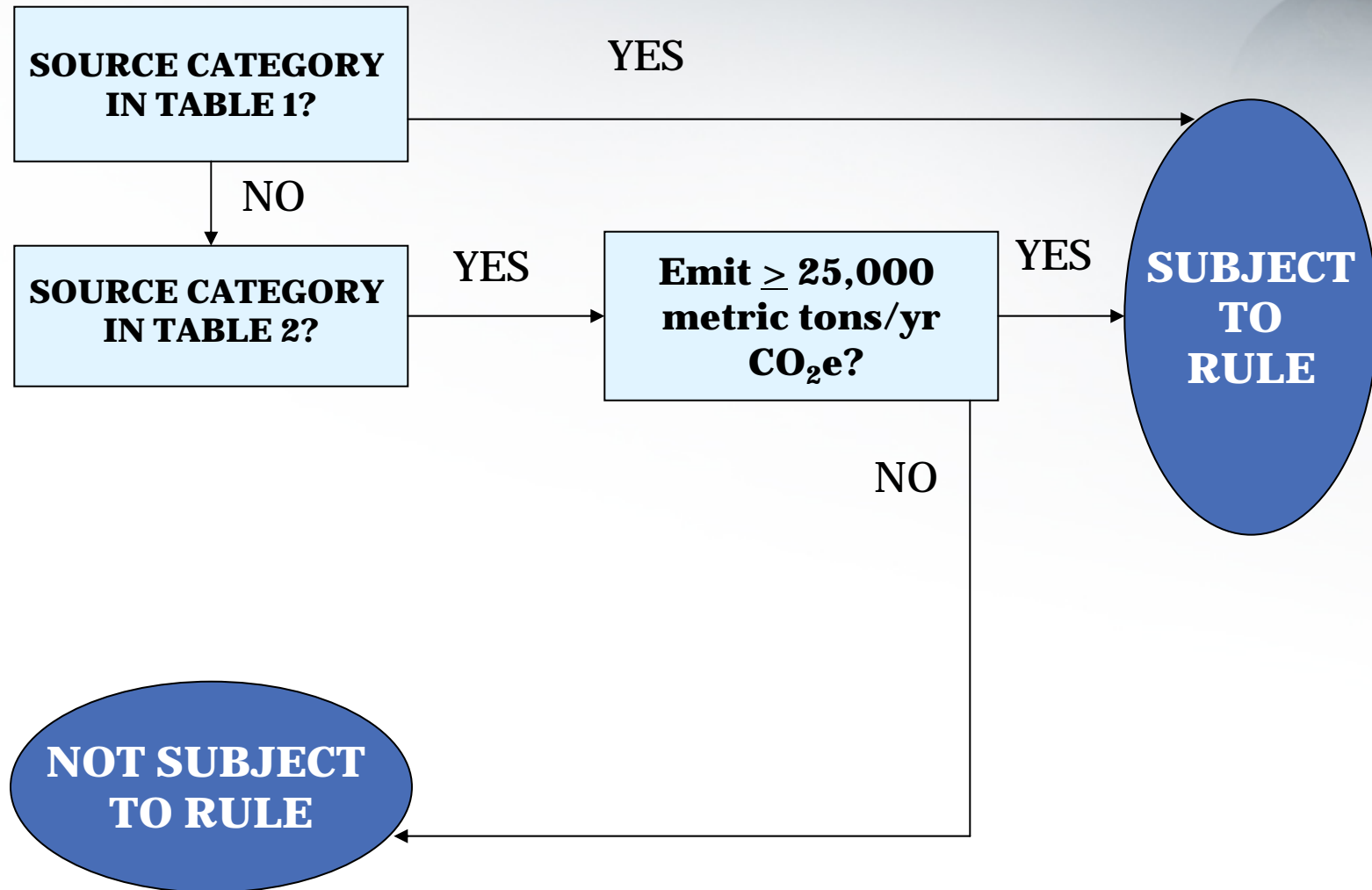




Table 2: Threshold Source Categories*

Ferroalloy Production

Glass Production

Hydrogen Production

Iron and Steel
Production

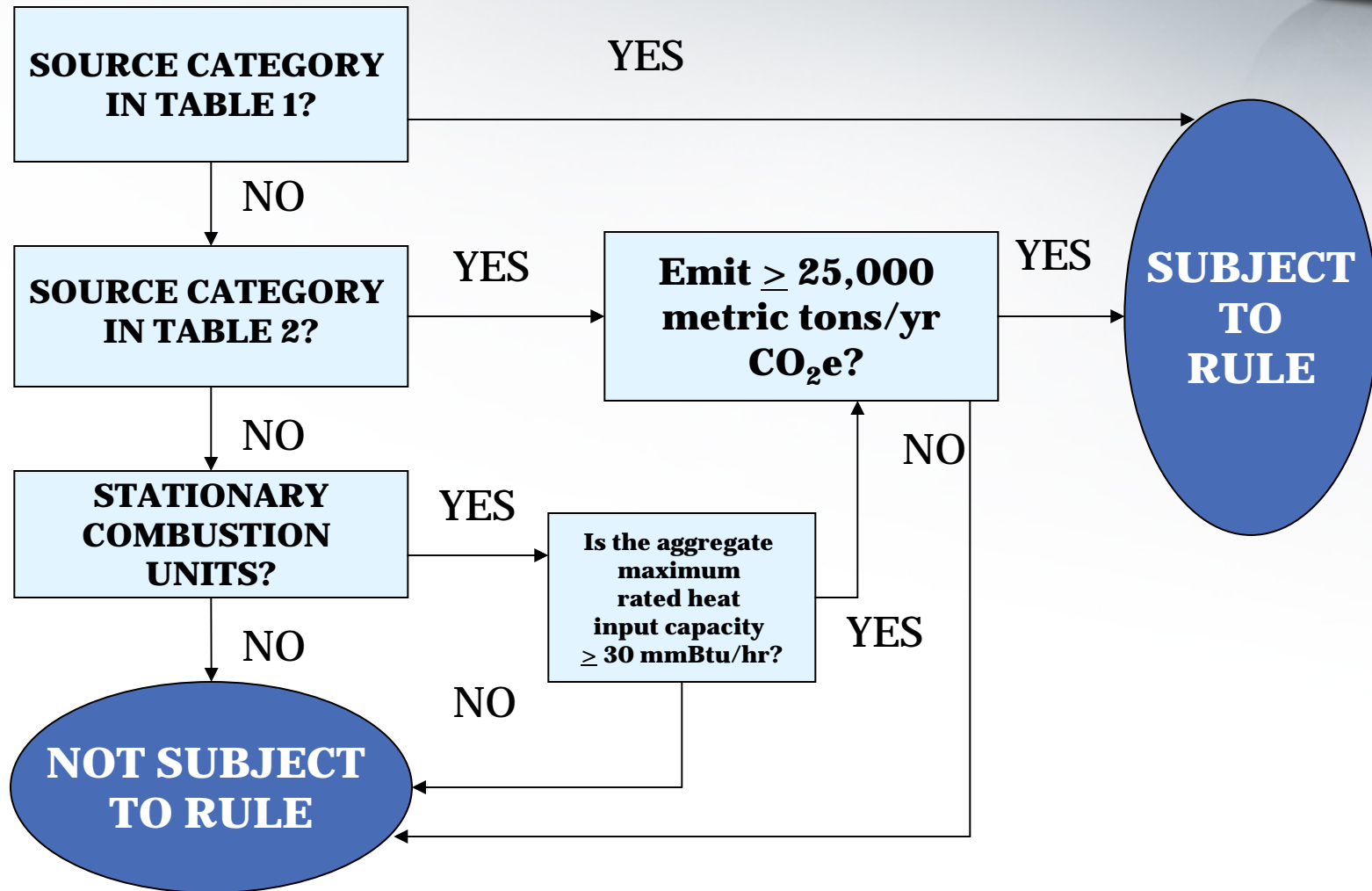
Lead Production

Pulp and Paper
Manufacturing

Zinc Production

* $\geq 25,000$ metric tons CO₂e per year from all source categories, combustion units, and miscellaneous use of carbonates.

Does the Rule Apply to My Facility?



What Combustion Units Will Emit 25,000 MT CO₂e per year?



Fuel	Design Capacity ¹ (mmBtu/hr)	Annual fuel Use
Coal	30	10,800 tons
Fuel Oil	35	2.3 million gallons
Natural Gas	50	460 million ft ³

¹Assuming full utilization and 8,760 hours/yr.



Applicability Tool

To help determine if facilities must report...

- Check-off list of source categories
- Combustion calculator
- Municipal landfill calculator

<http://www.epa.gov/climatechange/emissions/GHG-calculator/index.html>

Source Categories Not Included in Final Rule



EPA plans to further review public comments and other information before deciding on these subparts:

- Electronics manufacturing
- Ethanol production
- Fluorinated GHG production
- Food processing
- Magnesium production
- Oil and natural gas systems
- Sulfur hexafluoride (SF₆) from electrical equipment
- Underground coal mines
- Industrial landfills
- Wastewater treatment
- Suppliers of coal

Facilities with these source categories could be covered by the rule based on GHG emissions from stationary fuel combustion sources.

How Do I Estimate Emissions for Applicability Purposes?



- Estimate actual emissions
- Use applicable equations in the rule
- Monitoring data not required—use available company records
- Simplified methods allowed for combustion sources
- Include CO₂ transferred off-site
- Exclude CO₂ emissions from biomass combustion
- Include an F-GHG only if listed in Table A-1 of rule

If you are close to 25,000 MT CO₂e/yr based on available records, it may be prudent to monitor.

What Suppliers Are Covered?



- All producers of:
 - Petroleum products
 - Coal-based liquids
 - Industrial GHGs (F-GHG and N₂O)
 - CO₂
- Exporters of 25,000 metric tons CO₂e per year or more
- Importers of 25,000 metric tons CO₂e per year or more
- Natural gas and natural gas liquids
 - All fractionators
 - All local gas distribution companies

Applicability Example #1



Facility Description	Required to Report?	Explanation
A lime manufacturing plant emits 22,000 metric tons/yr CO ₂ e from lime kilns.	Yes	Because lime manufacturing is a source category that is listed in Table 1, the facility must submit a report regardless of the amount of GHGs emitted.

Applicability Example #2



Facility Description	Required to Report?	Explanation
<p>An automobile assembly plant emits 30,000 metric tons/yr CO₂e from a coal-fired boiler.</p>	<p>Yes</p>	<p>Automobile assembly plants are not a listed source category in Tables 1 or 2, but the facility nevertheless must submit a report because emissions from stationary fuel combustion are 25,000 metric tons/yr CO₂e or more.</p>

Applicability Example #3



Facility Description	Required to Report?	Explanation
A university emits 24,000 metric tons/yr CO ₂ e from a cogeneration unit and 2,000 metric tons/yr CO ₂ e from coal storage.	No	Because the rule does not prescribe a method for calculating GHG emissions from coal storage, coal storage emissions are not counted in determining applicability.

Applicability Example #4



Facility Description	Required to Report?	Explanation
<p>A cheese manufacturing plant contains:</p> <ul style="list-style-type: none">• A gas-fired boiler that emits 15,000 metric tons/yr CO₂e,• A biomass-fired boiler that emits 10,000 metric tons/yr CO₂, and• A wastewater treatment operation that emits 10,000 metric tons/yr CO₂e.	No	Because food processing and wastewater treatment are not source categories listed in Tables 1 or 2, the facility must report only if emissions from stationary fuel combustion are 25,000 metric tons/yr CO ₂ e or more. Because combustion of biogenic CO ₂ is excluded from the applicability computation, nonbiogenic GHG emissions for the facility are 15,000 metric tons/yr CO ₂ e; and the facility is not required to report.

For more examples:

<http://www.epa.gov/climatechange/emissions/downloads09/generalprovisions.pdf>



Reporting, Monitoring, and Recordkeeping Requirements

What are the Reporting Requirements?



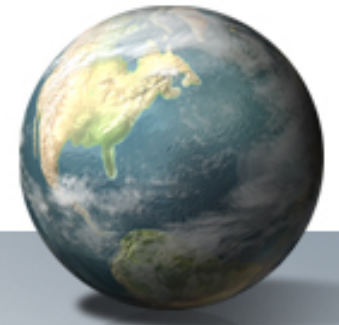
- **Subpart A: General Provisions**
 - Applicability provisions
 - Schedule
 - Reporting and recordkeeping requirements common to all reporters
 - Definitions
 - Report submission procedures
 - Other (e.g., calibration procedures, monitoring plan)
- **Subparts C-PP: Source-Specific Requirements**
 - Definition of source category
 - GHG to report
 - Calculation methods
 - Monitoring and QA/QC
 - Missing data procedures
 - Reporting and recordkeeping elements unique to each subpart

General Monitoring Approaches



- **Continuous emission monitoring systems (CEMS)**
 - Required if already used (e.g., NSPS, Acid Rain Program) and meet specified criteria
 - Optional for other sources
- **Source category-specific GHG calculation methods**
 - Monitor process parameters, fuel use
 - Calculate GHG using equations in applicable subparts
 - Example approaches (varies by source category)
 - Mass balance calculation
 - Site-specific emission factors
 - Default emission factors

Special Provisions for 2010: Best Available Monitoring Methods



- Best available monitoring methods may be used during January 1, 2010 through March 31, 2010
 - Use emission estimation equations provided in the rule
 - Obtain equation inputs using best available monitoring method (e.g., current monitoring methods, engineering calculations, company data)
- Must begin following all applicable monitoring and QA/QC requirements on April 1, 2010 unless an extension is approved by EPA
- If an extension is needed (equipment purchase, process unit shutdown etc.), facility may request an extension.
 - Extension request must be submitted to EPA no later than January 28, 2010.
 - No extension beyond December 31, 2010

Special Provisions for 2010: Abbreviated Emissions Report



- Available to facilities with only stationary combustion sources, and no other listed source categories
- Can report total facility emissions only (not unit level)
- Can use any calculation methodology in Subpart C

Schedule for Monitoring and Reporting



1/1/10	Start collecting data using required methods in each subpart or best available monitoring methods
1/28/10 (30 days after rule effective date)	Deadline for submitting application to extend use of best available monitoring methods
3/31/10	Monitors installed and calibrated Begin using required monitoring methods (if extension for best available methods not obtained)
12/31/10	Complete 2010 data collection
1/30/11	Submit certificate of representation
3/31/11	Submit GHG report for 2010
Ongoing	Submit corrected report 45 days after each discovery
Ongoing	Submit annual reports on 3/31 each year

What Do Facilities Report?



- Identifying information
- Annual GHG emissions excluding biomass CO₂, metric tons CO₂e
- Annual CO₂ emissions from biomass combustion, metric tons
- Annual emissions of each GHG for each source category, metric tons each gas
- Other emissions data required by an applicable subpart (e.g., by unit or process line)
- Verification data required by each subpart (e.g., data used to calculate emissions)
- Description of best available methods used
- Data elements for which a missing data procedure was used
- Certification by the “designated representative”

What Do Suppliers Report?



- Identifying information
- Annual quantity from all supply categories, metric tons CO₂e
- Annual quantity from each supply category, metric tons of each gas
- Other data required by an applicable subpart
- Verification data required by each subpart
- Description of best available methods used
- Data elements for which a missing data procedure was used
- Certification by the “designated representative”

What Is Not Reported?



- Indirect emissions (e.g., electricity use)
- Mobile source emissions (e.g., fleet emissions, off-road equipment)
- Emission offsets
- Carbon sequestration

Retain These Records for 3 Years:



- List of all units, operations, processes, and activities for which GHG emission were calculated
- All data used to calculate the GHG emissions for each unit, operation, process, and activity, categorized by fuel or material type
- The annual GHG reports
- Missing data computations
- Written GHG Monitoring Plan
- Certification and QA tests
- Maintenance records for measurement equipment
- Other data required by applicable subparts

Monitoring Plan



- Identifies responsibilities (i.e., job titles) for data collection
- Explains processes and methods used for data collection
- Describes QA/QC procedures for monitors
- May rely on references to existing corporate documents (e.g., existing QA plans, standard operating procedures)

When Can I Stop Annual Reporting?



- If annual reports demonstrate CO₂e <25,000 metric tons/yr for 5 consecutive years.
- If annual reports demonstrate CO₂e <15,000 metric tons/yr for 3 consecutive years.
- If you shut down all processes/units/supply operations covered by the rule.

How Will Emissions Be Verified?



- **Self certification**
 - Designated representative certifies and submits report
 - Rule allows one designated representative for each facility and supplier
- **EPA verification**
 - Reports submitted through an electronic system
 - Built-in calculation and completeness checks for reporters
 - Electronic QA and consistency checks
 - On-site audits

Electronic Data Reporting System



- Electronic format and system under development
- Web-based system
 - Will guide reporters through data entry and submission
 - Built-in emissions calculations
- Mechanism to submit file directly using standard format (e.g., XML)
- Continued stakeholder input during system development
- Outreach, training, and hotline to assist reporters using the system

Confidential Business Information (CBI)



- EPA will protect any information claimed as CBI in accordance with regulations in 40 CFR Part 2, subpart B
- In general, emissions data collected under CAA sections 114 and 208 cannot be considered CBI
- EPA will undertake a separate notice and comment process next year on CBI status of data collected.

Relationship to State and Regional Programs



- Rule does not preempt states from regulating or requiring reporting of GHGs.
 - EPA rule is a limited action developed in response to a specific request from Congress and is narrower in focus than many existing State programs that are coupled with reduction programs
- No state delegation
- Reporting entities will report directly to EPA
 - To reduce reporting burden, EPA staff is working with the Climate Registry and the Exchange Network on a data exchange standard
 - EPA is committed to working with state and regional programs to provide timely access to verified emissions data, establish mechanisms to share data efficiently, and harmonize data systems to the extent possible

Mobile Source Requirements



- Emissions from mobile sources will be captured by reports from fuel suppliers and manufacturers of vehicles and engines (outside of the light-duty sector).
- No requirements for fleet operators or state and local governments.
- Manufacturers of vehicles and engines—including heavy-duty trucks, motorcycles, and nonroad engines—will report CO₂ starting with model year 2011 and other GHGs in subsequent model years.

Mobile Source Requirements (continued)



- Rule amends existing mobile source regulations to integrate GHG reporting into long-standing criteria emissions testing and certification programs.
 - Emissions reported as a rate (e.g. grams per unit of work) using existing test procedures in most cases.
 - Manufacturers report by model year at time of current annual certification.
 - Small manufacturers are generally exempt from new reporting requirements.
 - Requirements for new testing of CH₄ and N₂O may be waived if manufacturers provide appropriate, alternative data.



Major Changes from Proposed Rule

Major Changes from Proposal



- **Applicability.** Reduced the number of source and supply categories that facilities and suppliers must report under this final rule.
- **Exiting the Program.** Added a mechanism for facilities and suppliers to cease annual reporting by reducing their GHG emissions.
- **Measuring Devices.** Added a provision to allow use of best available monitoring methods in lieu of the required monitoring methods for January - March 2010. Facilities can request a date extension beyond March 2010, but EPA will not approve any requests for an extension beyond 2010.
- **Monitoring Equipment.** Added monitoring options, changed monitoring locations, or allowed engineering calculations to reduce the need for installing new monitors.
- **Sampling Frequency.** Reduced the required frequency for sampling and analysis.
- **Exemption.** Excluded R&D activities from reporting.

Major Changes from Proposal (continued)



- **Quality Assurance.** Added calibration requirements for flow meters and other monitoring devices including a five percent accuracy specification.
- **Report Revision.** Added provision to require submittal of revised annual GHG reports if needed to correct errors.
- **Records Retention.** Changed the general records retention period from 5 years to 3 years.
- **Verification.** In several subparts, required more data to be reported rather than kept as records to allow EPA to verify reported emissions.
- **Combustion Sources.** Added exemptions for unconventional fuels, flares, hazardous wastes, and emergency equipment. Reduced the need for mass flow monitors for some units or fuels. Allowed more facilities to aggregate reporting of emissions from smaller units rather than report emissions for each individual unit.



Subpart C - Stationary Fuel Combustion Sources

What Units are Covered?



- **Devices that combust solid, liquid, or gaseous fuel for:**
 - producing electricity, generating steam, or providing useful heat or energy for industrial, commercial, or institutional use, or
 - reducing the volume of waste by removing combustible matter
- **Examples:**
 - Boilers
 - Stationary Internal Combustion Engines
 - Process Heaters
 - Combustion Turbines
 - Incinerators
 - Other Stationary Fuel Combustion Equipment (e.g. control devices)
- **Covers any fuel combustion device, unless specifically exempted**

Subpart C does not apply to:



- Portable equipment
- Emergency generators and emergency equipment
- Agricultural irrigation devices
- Flares, unless otherwise required by another subpart
- Electricity Generating Units subject to subpart D
- Hazardous waste combustion (co-fired fossil fuels only)

Applicability



Three ways for subpart C to apply:

- Facility is subject to the rule because another source category
- Facility emits 25,000 metric tons CO₂e/year from all stationary fuel combustion units
- Another subpart refers to subpart C for combustion emissions (e.g., kiln emissions)

What GHGs are Reported?



- **CO₂ from fossil fuel and biomass**
 - Four different methods (Tiers) for calculating CO₂ emissions
 - Different tiers used based on unit size, fuel type, other factors
 - Separately estimate CO₂ from sorbent used for acid gas control (unless CO₂ is measured with CEMS)
- **CH₄ and N₂O**
 - Emission factors

CO2 Emission Calculation Tiers



Tier	For this fuel...	Measure these parameters...	And use a default factor for...
1	55 fuels ¹	Annual fuel use	HHV CO2 emission factor
2	55 fuels ¹	Annual fuel use HHV	CO2 emission factor
	MSW	Steam generation	CO2 emission factor
3	Solid/liquid	Annual fuel use Carbon content	--
	Gas	Annual fuel use Carbon content Molecular weight	--
4	All	CO2	--

¹Any fuel listed in Table C-1 of subpart C, except MSW units that generate steam.

Tier 1 Monitoring – Fuel Use



Use “company records”

- Direct measurements of fuel consumption by gravimetric or volumetric means
- Tank drop measurements
- Engineering calculations (e.g., using generation or unit operating hours)
- Fuel billing records
- Other

Must maintain records of methods used

Tier 2 Monitoring - HHV



- **Fuel use**
 - Company records
- **High heating value of fuel. Minimum sampling frequency:**
 - Natural gas: Semiannual
 - Coal and fuel oil: Each fuel lot (shipment or delivery)
 - Other liquid fuels, fossil fuel-derived gas fuels, and biogas: Quarterly
 - Other solid fuels and MSW: Weekly sample and monthly analysis

Tier 3 Monitoring – Fuel Carbon Content



- Fuel use
 - Solid fuel: Company records
 - Liquid fuel: Flow meter, billing meter, or tank drop measurements
 - Gaseous fuel: Flow meter or billing meter
- Minimum fuel sampling frequency (carbon):
 - Same as for Tier 2, except
 - Other gaseous fuels: Daily (if equipment in place) or weekly

Tier 4 Monitoring (CEMS)



- Use validated hourly concentration data from CEMS and missing data values
- Calculate hourly mass emission rates
- Sum to annual emissions



Use of Tier 1 (measure fuel use only)

Tier 1 may be used in 3 situations:

- Unit ≤ 250 mmBtu/hour and fuel listed in Table C-1 (55 fuels)
- Municipal solid waste (MSW) unit that does not produce steam
- Biomass in unit of any size

Exception: If HHV data are available at the minimum required frequency, Tier 2 must be used.

Use of Tier 2 (measure HHV)



Tier 2 may be used in 3 situations:

- Unit \leq 250 mmBtu/hour and fuel listed in Table C-1 (55 fuels)
- Pipeline natural gas and/or distillate fuel oil in unit of any size
- MSW unit that produces steam

Use of Tier 3 (measure carbon content)



Tier 3 must be used in 2 situations:

- Unit > 250 mmBtu/hour for any fuel listed in Table C-1, except:
 - Pipeline natural gas, distillate fuel oil, and biomass fuels
 - MSW
 - If Tier 4 is required
- Unit > 250 mmBtu/hour and a fuel not listed in Table C-1, only if:
 - The fuel provides 10% or more of annual heat input to the unit, and
 - Tier 4 is not required



Use of Tier 4 (CEMS)

For large units, required if ALL six requirements are met:

1. Unit has CEMS that is required by regulation or permit.
2. Unit >250 mmBtu/hr, or >250 tons per day of MSW.
3. Solid fossil fuel or MSW is primary or secondary fuel.
4. Unit operated $>1,000$ hours in any calendar year since 2005.
5. CEMS has a gas monitor of any kind or a stack gas volumetric flow rate monitor
6. Monitors undergo periodic QA testing under part 75, NSPS, or State program.



Use of Tier 4 (CEMS)

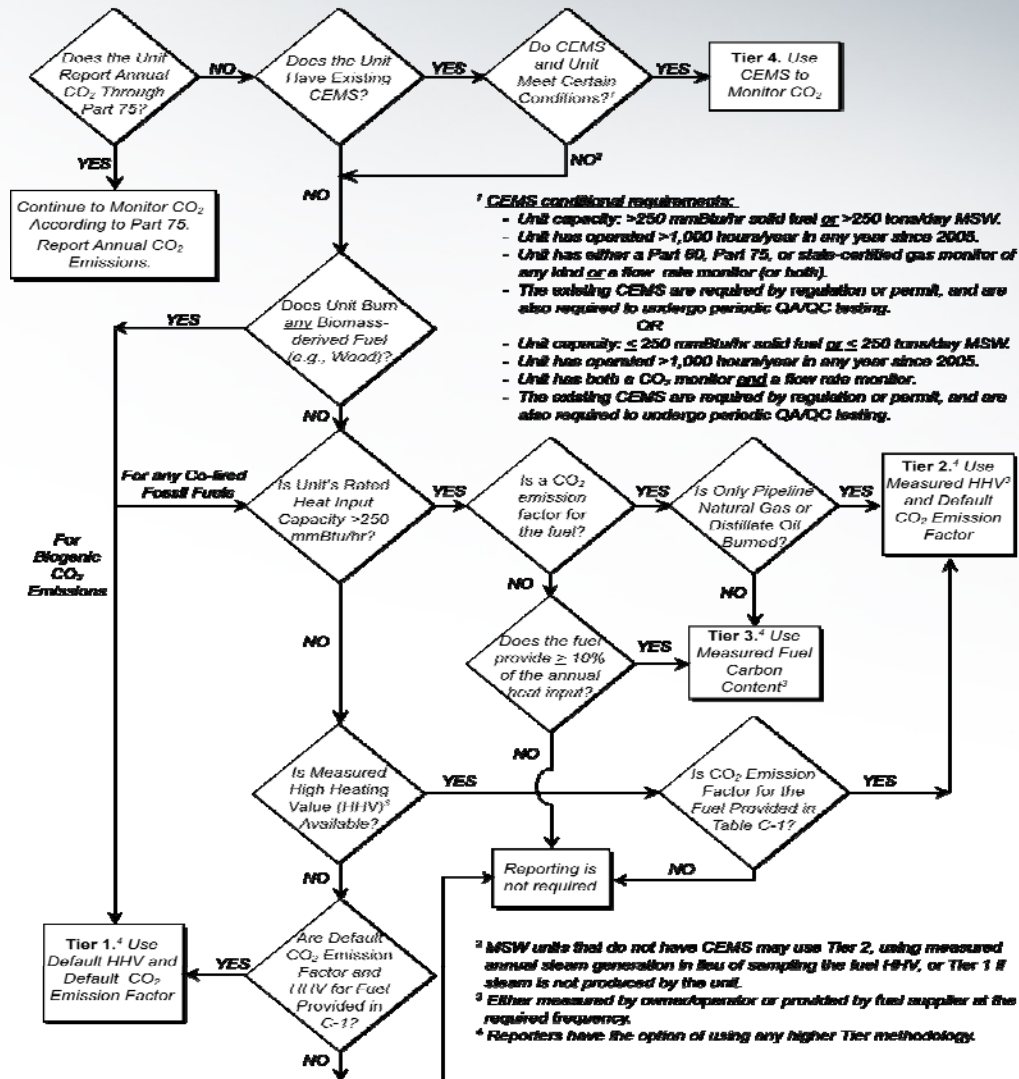
For small units, required if ALL six requirements are met:

1. Unit has CEMS that is required by regulation or permit.
2. Unit ≤ 250 mmBtu/hr, or ≤ 250 tons per day of MSW.
3. Solid fossil fuel or MSW is primary or secondary fuel.
4. Unit operated $>1,000$ hours in any calendar year since 2005.
5. CEMS has a CO₂ monitor and a stack gas volumetric flow rate monitor
6. Monitors undergo periodic QA testing under part 75, NSPS, or State program.



How the Tiers Work...

General Stationary Fuel Combustion Requirements for CO₂ 40 CFR 98 Subpart C



¹ CEMS conditional requirements:

- Unit capacity: >250 mmBtu/hr solid fuel or >250 tons/day MSW.
- Unit has operated >1,000 hours/year in any year since 2005.
- Unit has either a Part 60, Part 75, or state-certified gas monitor of any kind or a flow rate monitor for both.
- The existing CEMS are required by regulation or permit, and are also required to undergo periodic QA/QC testing.

OR

- Unit capacity: ≤ 250 mmBtu/hr solid fuel or ≤ 250 tons/day MSW.
- Unit has operated >1,000 hours/year in any year since 2005.
- Unit has both a CO₂ monitor and a flow rate monitor.
- The existing CEMS are required by regulation or permit, and are also required to undergo periodic QA/QC testing.

² MSW units that do not have CEMS may use Tier 2, using measured annual steam generation in lieu of sampling the fuel HHV, or Tier 1 if steam is not produced by the unit.

³ Either measured by owner/operator or provided by fuel supplier at the required frequency.

⁴ Reporters have the option of using any higher Tier methodology.

August 31, 2008

What Must be Reported?



- CO₂, N₂O, and CH₄ from fossil fuel and biomass
- Reporting is at unit level (each fuel) with some exceptions:
 - Aggregate units ≤ 250 mmBtu/hr
 - Aggregate units served by common pipe
 - Aggregate units sharing common stacks using CEMS
- Verification data specified at § 98.36(e)

Requirements for Biomass



- Biomass CO₂ emissions not considered in applicability, but are reported if subject to rule
- Estimate biogenic CO₂ emissions only for fuels listed in Table C-1, unless CEMS is used:
 - Wood and Wood Residuals
 - Agricultural Byproducts
 - Peat
 - Solid byproducts
 - Biogas
 - Ethanol
 - Biodiesel
 - Rendered Animal Fat
 - Vegetable Oil
- CH₄ and N₂O emissions are considered in applicability and reported

Calculating Biogenic CO₂ from Mixed Biomass and Fossil Fuels



- If no CEMS
 - Tier 1 Calculation Method and company records for amount of biomass combusted
- If use CEMS
 - Equations using F-factors, or
 - ASTM D7459-08 and D6866-06a (quarterly)
- If burning MSW,
 - Tier 1 or 2 (as applicable)
 - ASTM D7459-08 and D6866-06a (quarterly)

Abbreviated Emissions Report in 2010



- Available to facilities with combustion sources
- Can report total facility emissions only (not unit level).
- Can use any calculation methodology in subpart C.

Technical Assistance



- On-line applicability tool: Assists potential reporters in assessing whether they are required to report
- Technical assistance materials (e.g., Information Sheets, Monitoring Checklists)
- Trainings and webinars
- Other materials later
- RSS available to announce new outreach materials

For complete list of materials and training schedule, see:
www.epa.gov/climatechange/emissions/ghgrulemaking.html

Additional Information



- www.epa.gov/climatechange/emissions/ghgrulemaking.html
 - Preamble and rule
 - Technical background documents on source categories
 - Comment response documents
 - Link to rulemaking docket
 - Technical assistance materials
- Email: GHGMRR@epa.gov



Questions?