

EPA's Greenhouse Gas Inventory Rule

Agenda

▶ Presentation

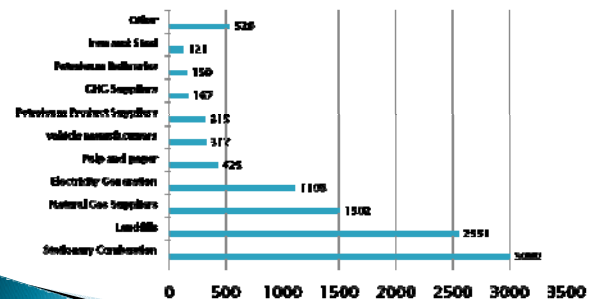
- Background/Purpose
- Applicability
- Reporting, monitoring, and recordkeeping requirements
- Subpart PP, Suppliers of Carbon Dioxide
- Challengers
- Impacts
- Next Steps

▶ Q&A

Overall 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
- ▶ Does not require control of GHG

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)

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.

Table 1: All-in Source Categories

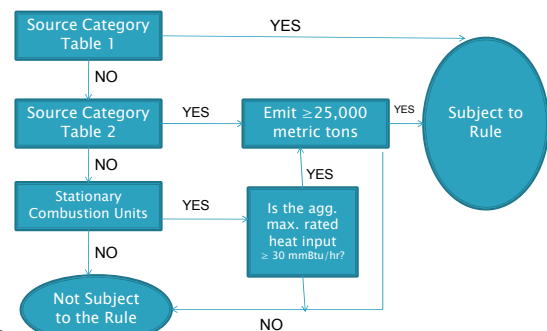
Electricity Generation	Petrochemical Production
Adipic Acid Production	Petroleum Refineries
Aluminum Production	Phosphoric Acid Production
Ammonia Manufacturing	Silicon Carbide Production
Cement Production	Soda Ash Production
HCFC 22 Production	Titanium Dioxide production
HFC - 23 Destruction processes	Municipal Solid Waste Landfills
Lime Manufacturing	Manure Management Systems
Nitric Acid Production	

Table 2: Threshold Source Categories*

Ferroalloy Production	Lead Production
Glass Production	Pulp and Paper Manufacturing
Hydrogen Production	Zinc Production
Iron and Steel Production	

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

Does the Rule Apply to My Facility?



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.

EPA GHG Rule Determination

- ▶ <http://www.epa.gov/RDEE/energy-resources/calculator.html>

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

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

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 (BAMM)
1/28/10 (30 days after rule effective date)	Deadline for Submitting application to extend use of BAMM
3/31/10	Monitors installed and calibrated Begin using required monitoring methods (if BAMM extensions 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

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

Subpart PP- CO₂
Suppliers



Subpart PP: Who Must Report

- ▶ Capture Facilities – i.e. facilities that capture for commercial use or sequestration
- ▶ CO₂ production wells
- ▶ Importers of CO₂ ≥ 25,000 metric tons
- ▶ Exporter of CO₂ ≥ 25,000 metric tons

Subpart PP: Who Must Report?

- ▶ However the following sources are excluded:
 - Storage of CO₂ above ground or in geologic formations
 - Use of CO₂ for EOR
 - Transport or distribution of CO₂
 - Purification, compression, etc.
 - On-site use or storage
 - Oil & gas surface facilities

Subpart PP – What must be reported?

- ▶ Production quantities captured from:
 - Production process units – equipment to process raw materials and to manufacture a final product or an intermediate used in the production of other products
 - CO₂ production wells
- ▶ Allows for aggregate reporting of multiple flow meters at a given location – “dome” reporting

Subpart PP – What must be reported?

- ▶ End use information “if known” (§ 98.426(f))

Food & Beverage	Fire fighting
Industrial & municipal water/wastewater treatment	Transportation and storage of explosives
Metal fabrication	Enhanced oil and gas recovery
Greenhouse uses for plant growth	Long-term storage (sequestration)
Fumigants and herbicides	Research and Development
Pulp and paper	Other
Cleaning and Solvent use	

Subpart PP – What must be reported?

- ▶ Information on Measurement equipment
 - Type of measurement equipment
 - Standard used to calibrate equipment
 - ASTM International
 - American National Standards Institute (ANSI)
 - American Gas Association (AGA)
 - North American Energy Standards Board (NAESB)
 - ASME
 - API
- ▶ Allows use of alternate data when actual data is unavailable

The Challenge

EPA's failure to acknowledge that all or nearly all of the CO₂ injected for enhanced oil or gas recovery remains sequestered

Subpart PP: Challenges

- ▶ Demonstrates a core misunderstanding of the EOR industry
- ▶ Threatens EOR business—as-usual with additional/costly regulation
 - EOR business as usual (BAU) likely to be subject to monitoring, measurement and verification in the future

Subpart PP: Challenges

- ▶ May lead to four (4) additional reporting and regulatory requirements imposed on EOR operators.

1. Proposed Federal Requirements Under the Underground Injection Control (UIC) Program for Carbon Dioxide (CO ₂) Geologic Sequestration (GS) Wells. 40 CFR 146	3. Pending Geologic Sequestration rule under the Clean Air Act (the "Airside" GS Rule)
2. Mandatory Reporting of Greenhouse Gases: Subpart PP – Suppliers of Carbon Dioxide. 40 CFR Parts 86, 87, 89 et al.	4. Mandatory Reporting of Greenhouse Gases: Subpart W – Oil and Natural Gas Systems – requiring reporting of fugitive and vented emissions applicable to surface facilities.

Subpart PP: Impact

- ▶ Requiring CO₂ suppliers (particularly suppliers of natural CO₂) to report and quantify the mass of their produced CO₂ creates a potential carbon liability w/o a recognized offset, if EOR is not recognized as a carbon reduction methodology/protocol
- ▶ Could make CO₂-driven EOR uneconomical
 - Reduction of domestic oil production
 - Greater reliance on foreign (larger carbon footprint) supplies

EPA Regulators Need Industry Input

- ▶ EPA is drafting the "Airside" GS rule now
- ▶ EOR industry experience is crucial
- ▶ EPA faces obstacles in drafting Airside rule, namely lack of data on EOR
- ▶ Evidence of historic storage reliability of EOR (i.e. lack of leakage or migration) would
 - impact EPA's approach; and
 - Promote enhanced public understanding and acceptance

Specific Issues

- ▶ Standard method for quantifying and discussing retention, i.e. focusing on the amount of CO₂ permanently stored
- ▶ Reasonable MMV for EOR
- ▶ Reservoir suitability and integrity requirements
- ▶ Accounting standards, i.e. capacity, facility loss and release accounting

Subpart PP: Next Steps

- ▶ Industry's long experience and track record in EOR is needed to inform EPA's imminent decisions
 - EOR has sequestered CO₂ as part of the injection and flooding process for 30 years, and so provides large and important near-term opportunity for sequestration of anthropogenic CO₂.
 - Long track record of CO₂ injection, for instance at SACROC 1 BCF/day of CO₂ is injected (~20 MT, or equivalent of 4 large power plants!)
 - Oil and water production allows recycling & more efficient use of storage space and plume control through production.
 - Wells allow tracking of CO₂ plumes.
 - Costs offset by oil production.
 - Challenge include addressing old wells and CO₂ recycle and accounting.

Subpart PP: Next Steps

- ▶ Proactive and coordinated data gathering in response to EPA requests
 - (1) "where the end use is geologic sequestration (at EOR or other types of facilities), EPA will need additional information on the amount of CO₂ that is permanently and securely sequestered and on the monitoring and verification methodologies applied" (FR at 56350)
 - (2) "EPA will take action [on active EOR facilities] with the goal that data collection [i.e. *downstream data collection...with respect to EOR systems and CO₂ geologic sequestration*] for these types of facilities can begin as quickly as possible." (FR at 56350)

Subpart PP: Next Steps

- ▶ Who will provide information to the EPA and regulators?
- ▶ How should CO₂ retention be quantified and discussed?
- ▶ What airside MMV requirements reasonably supplement existing for EOR BAU/Class 2 injection wells?
- ▶ What would constitute reasonable, yet effective MMV for EOR GS?

Subpart PP: Next Steps

- ▶ EPA Reporting Rule Contacts
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Questions?

- ▶ Good Source to Regularly Check is the FAQs at the EPA GHG site. Updated with new information, especially on source emissions
- ▶ http://www.epa.gov/climatechange/emissions/ghg_faq.html