



EPA GHG Mandatory Reporting

Compliance Planning for the Rule



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16th IPEC

EPA GHG MRR Subparts for REFINERIES

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- Final GHG Mandatory Reporting Rule (MRR)
 - Fed Register Oct 30, 2009 (Pre-published Sept 22)
 - A – General Provisions
 - C – Stationary Fuel Combustion
 - Y – Petroleum refineries
 - MM – Suppliers of Petroleum Products

- Can Ignore wastewater and landfills
- R&D activities excluded from reporting
- “Transmix-only” facilities are not refineries



Subpart A Overview

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- QA/QC requirements (GHG Monitoring Plan)
- Accuracy requirements for flow measurement
- Reporting requirements
 - Monitoring Plan in place by April 1, 2010
 - March 31, 2011, reports due!
 - Electronic submission format to be specified by EPA during 2010
 - Report all measured inputs used in the emissions calculations
 - e.g., fuel use, carbon content, heating value
 - and all certification tests and major quality assurance tests for units using CEMs

Subpart A vs. Proposed Rule

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□ GOOD NEWS

- Allowed more aggregate reporting of emissions
- “Once-in, always-in” has been removed (probably not a benefit unless you mothball your refinery)
- Best Available Data allowed for 1Q 2010
 - (particularly for Tier 4 CEMS installations or upgrades)
 - (in limited cases, extension possible through 4Q2010, submit request early)
- Changed the general records retention period from 5 years to 3 years

□ BAD NEWS

- No diminimis
- Extraneous, non-emission information still required

Reporting Requirements

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- Year “2010 only” Exclusions
 - Simplified facility reporting for “Subpart C – only” facilities (year 2010 only). - Will not apply to refineries
 - Best available data Q1 2010 (extensions possible). This affects Tier 3 and 4 only - Will apply to refineries
 - Tier 2/3 for Tier 4 for 2010 only - Will apply to refineries
- Year 2010+
 - Aggregated reporting allowed for:
 - Groups of units, if each unit has a maximum rated heat input capacity of 250 MMBtu/hr or less - Will apply to refineries
 - Units that share a common stack and use CEMS
 - Oil-fired or gas-fired units that combust the same fuel, if the fuel is fed through a metered common pipe - Will apply to refineries

What is Included in Annual Report?

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- Facility Name, address
- Year and months covered, date of report submittal
- Annual facility emissions (ex biogenic CO₂)
- Annual emissions biogenic
- Annual GHG emissions for each source category, by gas (CO₂ ex bio, CH₄, N₂O, each fluorinated GHG)
- Within source category, emissions broken out as req'd in subpart (some require reporting by each unit or process line)
- Additional data specified
 - ▣ activity data, feedstock inputs, etc
 - ▣ Data to support QA/QC and emissions verification

What is Included in Annual Report? (Cont'd)

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- Written explanation IF the reporter changes GHG calc methodologies during the reporting period
- IF best available monitoring methods were used in 2010, a brief description of methods used
- Missing Data: each data element, total number of hours in the year that the missing data procedure was used
- Signed and dated certification provided by Designated Representative

GHG Monitoring Plan (GMP)

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- Written plan that EPA can review in an audit
- ID persons responsible for collecting data
- Explanation of the processes and methods used to collect data
- Description of procedures for QA, maintenance and repair of all CEMS, flow meters, other instrumentation used to provide data for GHG emissions
- Updates to plan required if changes to process, instrumentation, QA procedures, or maintenance and repair procedures are made. (implies MOC procedures)

Subpart Y

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- Stationary combustion units and each flare (CO₂, CH₄, and N₂O)
- Unit Specific Calculations
 - Coke burn-off emissions from each cat cracker, fluid coker, and cat reformer (CO₂, CH₄, and N₂O)
 - Sour gas sent off site for sulfur recovery operations (CO₂)
 - On-site sulfur recovery plant (CO₂)
 - Coke Calcining (CO₂, CH₄, and N₂O)
 - Asphalt Blowing (CO₂, CH₄)
- Equipment leaks, storage tanks, loading operations, delayed coking units, and uncontrolled blowdown systems (CH₄)
- Misc process vents (CO₂, CH₄, and N₂O)
- Non-merchant H₂ production (CO₂ CH₄)

Example for Refinery Flares

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- Flow measurement
 - ▣ Have any? Must use when in range and operational.
 - ▣ None or down or out of range? Use engineering calculations, company records, or similar estimates
- HHV or CC measurement
 - ▣ Measure at least weekly? Must use. (most frequent recording requirement is daily)
 - ▣ If not, engineering calculations and process knowledge to estimate the CC for each start-up, shutdown, or malfunction event exceeding 500,000 scf/day AND For periods of normal operation, use the average heating value measured (or estimated) for fuel gas

Subpart C Summary

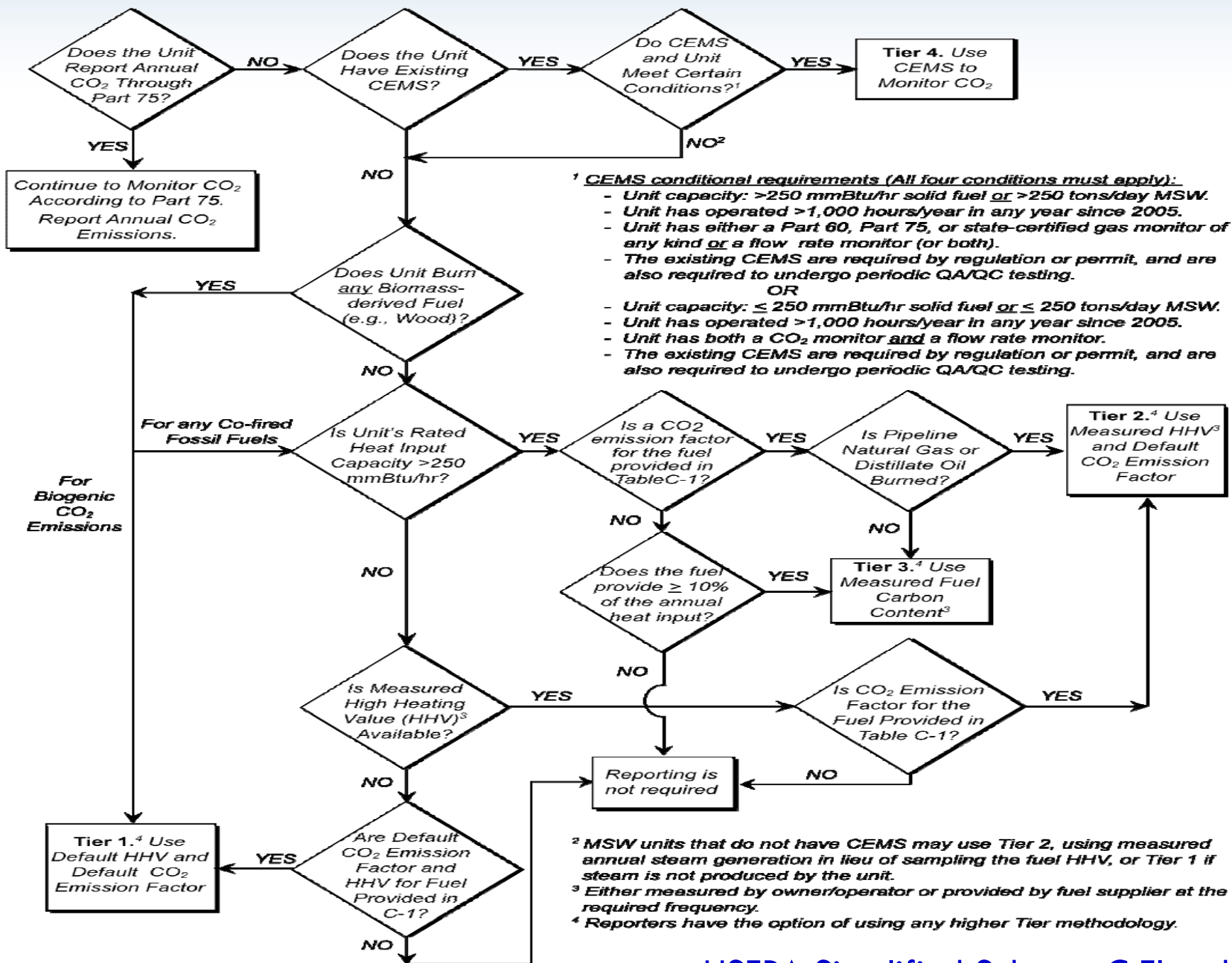
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- Applies to boilers, combustion turbines, engines, incinerators, process heaters (Stationary Combustion Sources)
- CO₂, CH₄, N₂O
- Exclusions:
 - Sources excluded: Flares (though covered in Subpart Y)
 - Sources excluded: Portable equipment, emergency generators, and emergency equipment
 - Combustion of hazardous waste: only reports co-firing of fuels.
 - Exclude units excluded burning unconventional types of fuel (not listed in table C-1, Subpart C), so long as they are under 250 mmBtu/hr. Over 250, they must report only co-fired fuels IF they comprise >10% of the annual heat input

Subpart C Overview (Cont'd)

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- Must report refinery fuel gas sources using Tier 3
 - Conflict with preamble, Subpart C, and Webinars, technically preempted by intro sentences in Subpart Y and by Info Sheet
- Calculation methodology changes depending on source size, available instrumentation, type of fuel
 - 4 Tiers
 - 4: Stack CEMS
 - 3: Fuel flow measurement and CC direct measurement
 - 2: Company records fuel, measured HHV, default CO2 EF
 - 1: Company records fuel, default HHV, default CO2 EF



USEPA Simplified Subpart C Flowchart

Tier Qualification

| | | |
|---|---|---|
| 4 | Stack CEMS | <ul style="list-style-type: none"> <input type="checkbox"/> Over 250 MMBtu/hr rating <input type="checkbox"/> Solid fuel <input type="checkbox"/> Operated >1,000 hr/yr in any yr since 2005 <input type="checkbox"/> CEMS of any kind exists already (and required by reg or permit AND required QA/QC) <p style="color: red; margin: 5px 0;">OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> Existing CO2 CEMS required by reg or permit |
| 3 | Fuel flow measurement and Carbon Content (CC) Measurement | <ul style="list-style-type: none"> <input type="checkbox"/> Over 250 MMBtu/hr rating <input type="checkbox"/> Fuel has CO2 EF in Table C-1 (but is not NG or distillate oil) <p style="color: red; margin: 5px 0;">OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> Fuel does not have CO₂ EF in Table C-1, and fuel is >10% of annual heat input <p style="color: red; margin: 5px 0;">OR</p> <ul style="list-style-type: none"> <input type="checkbox"/> Anything burning refinery fuel gas |

Tier Qualification

| | | |
|----------|---|---|
| 2 | Company records fuel, measured HHV, default CO ₂ EF | <ul style="list-style-type: none"> <input type="checkbox"/> Over 250 MMBtu/hr AND burning NG or distillate oil <input type="checkbox"/> OR <input type="checkbox"/> Under 250 MMBtu/hr rating AND existing measured HHV |
| 1 | Company records fuel, and default HHV, default CO ₂ EF | <ul style="list-style-type: none"> <input type="checkbox"/> Under 250 MMBtu/hr rating <input type="checkbox"/> Default HHV in Subpart C <input type="checkbox"/> Default CO₂ EF in Subpart C |
| “Tier 0” | No Reporting | <p><250 MMBtu/hr AND no default CO₂ EF i.e. “mystery gas”</p> <p>>250 MMBtu/hr AND no default CO₂ EF AND fuel is <10% of annual heat input</p> <p>Flares, R&D, emergency equipment</p> |

Changes vs. Proposed Rule

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- Refinery FG sources are Tier 3
 - ▣ Fewer other sources fall into Tier 3 and 4
- Reduction in frequency of Tier 3 sampling
- Exclusions: Flares, emergency equipment
- Limited inclusion for: incinerators, thermal oxidizers (“mystery” Gas does not report <250 MMBtu/hr)
- QA/QC and Monitoring Plan applies to flow measurement (only used in Tier 3 or 4), QA/QC for Tier 2 only applies to the measured HHV
- “Company records” definition added for Tier 1 and 2

Bad News vs. Proposed Rule

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- Added calibration requirements for flow meters and other monitoring devices including a 5% accuracy specification

- Some discrepancies remain
 - ▣ Pilot gas handling?
 - ▣ Co-fired units: do they have multiple tiers for one source?

Subpart MM

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- Supplier of Petroleum Products
 - ▣ Refineries, Importers/Exporters
- Suppliers of petroleum products must report annually:
 - ▣ CO₂ emissions that would result from the complete combustion of each petroleum product and NGL produced, used as feedstock, imported, or exported during the calendar year.
 - ▣ CO₂ emissions that would result from the complete combustion of any biomass coprocessed with petroleum feedstock (required only for refiners).

Subpart MM Calculation Techniques

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- Method 1: Use CO₂ emission factor (metric tons CO₂ emitted per barrel) provided in the MRR for each product
- Method 2: Develop an emission factor using direct measurement of density and carbon share (i.e., percent carbon by mass).

Overview of MRR Compliance Steps

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- Applicability Analysis
- Gap Assessment
 - List of needed projects
 - New flowmeters, CEMS upgrades, HHV analyzers, CC analyzers
 - List of needed new processes
 - Sampling, Calibrations, Calculations
- Training/Education
- Compliance Planning/Implementation
- Inventory Production
 - Data Management Options
 - Spreadsheet calculations, Database , OPS/EMIS type solutions
- Verification Support

MRR is Still Changing

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- Selected Subparts will get added in 2010
- Some other elements may get added later (perhaps indirect electricity use)
- Likely to change again when a Cap&Tax Law is added
- Resolving Discrepancies?
 - Website, summary sheets
 - Web meetings, Q&A
 - Face-to-face meetings
 - Hotline: ghgmrr@epa.gov

The FUTURE: US Federal Regulatory Compliance

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- Mandatory Reporting Rule for GHG (now)
- Mandatory Reporting Rule Additions (2010)
- Future Cap & Trade / Tax & Cap (Waxman Markey/HR2454 & Boxer/Kerry)
- PSD Title V Tailoring Proposed Rule (Oct 27, 2009)
 - BACT/Permitting

Thank you!

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