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Greenhouse Gas Emissions Reporting Rule

Presented to CIBO

E/E Committee

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A Few Definitions…

- **GWP** = global warming potential…or how much more intense the greenhouse effect is for each tonne of GHG when related to CO_2

- **Greenhouse gases (GHGs) and their GWP**
  - Carbon Dioxide (CO_2) = 1
  - Methane (CH_4) = 21x
  - Nitrous Oxide (N_2O) = 310x
  - Sulfur hexafluoride (SF_6) = 22,800x
  - Hydroflurocarbons (HFCs) = 140x – 11,700x
  - Chlorofluorocarbons (CFCs) = 4,000x – 9,300x
  - Perfluorocarbons (PFCs) = 6,500x – 9,200x
  - "Other" fluorinated GHGs as defined (will vary)

- **CO_2e** = Carbon dioxide equivalents…the result of the math from taking emissions of GHG and factoring in the GWP in order to have all on the same basis

- **Metric tonne/ton (MT)** = 2,200 pounds

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EPA's GHG Reporting Rule

- Required by Congress via FY2008 Consolidated Appropriations Act
- Proposed rule released in March 2009 (missing deadlines set by Congress…)
- Economy-wide applicability
  - Energy sector (electric, thermal, natural gas distribution)
  - Support sector (mining, oil & gas production, wastewater treatment)
  - Manufacturing sector (cement, pulp and paper, food processing, glass, electronics)

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Subpart C: Fuel Combustion Category Definition (§98.30)

- Devices that combust solid, liquid, or gaseous fuel…
- …For purposes of producing electricity, *generating steam*, or *providing useful heat or energy* for industrial, commercial, or institutional (ICI) use or reducing the volume of waste by removing combustible matter
- Portable equipment and units designated by air permit as emergency generators are excluded from this category

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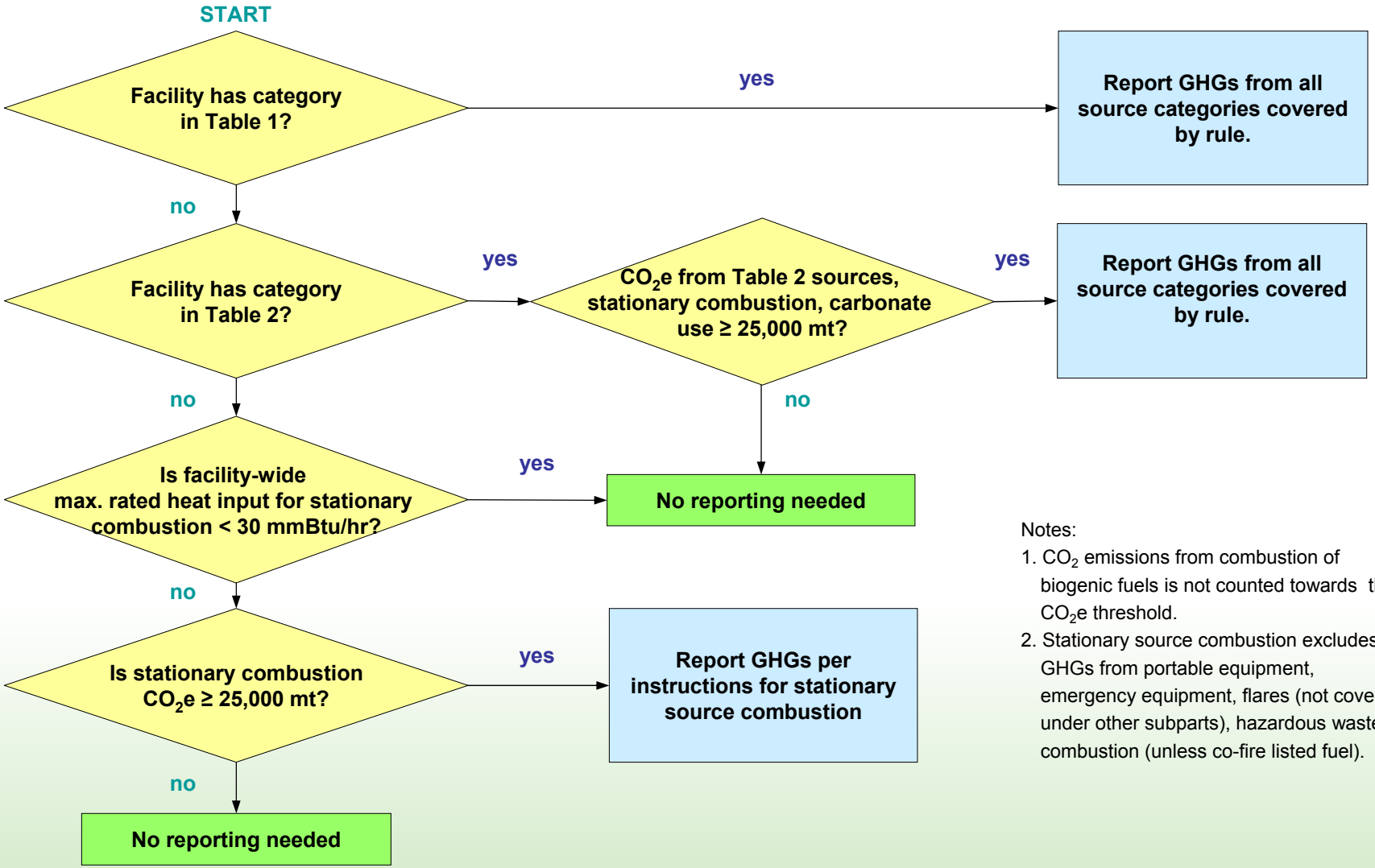
Subpart C: Fuel Combustion Applicability Threshold (§98.31)

- (a)(1): Any electric generating facility that emits ≥ 25,000 metric tons (MT) CO_2e
- (a)(2): Any facility that emits ≥ 25,000 MT CO_2e in combined emissions from fuel combustion, miscellaneous use of carbonate, and all listed source categories
- (a)(3): Any facility that meets three conditions:
  - Does not contain a previously listed source category
  - Aggregate maximum rated heat input capacity of stationary fuel combustion units ≥ 30 MMBtu/hr
  - Facility emits ≥ 25,000 MT CO_2e from all stationary fuel combustion sources

Applicability for Direct Emitters Only



Notes:

1. CO_2 emissions from combustion of biogenic fuels is not counted towards the CO_2e threshold.
2. Stationary source combustion excludes GHGs from portable equipment, emergency equipment, flares (not covered under other subparts), hazardous waste combustion (unless co-fire listed fuel).

Source: ERM

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Combustion Emission Factors

Fossil Fuel	Pounds CO_2 per Unit	Unit	Pounds CO2 per MMBtu
Bituminous Coal	4931.3	Short ton	205.3
#2 Fuel Oil	22.384	Gallon	161.386
Natural Gas	120.593	1,000 ft^3	117.08
Motor Gasoline	19.564	Gallon	156.425

Source: http://www.eia.doe.gov/oiaf/1605/coefficients.html

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What is 25,000 MT CO_2e?

- ~456,000 DTH natural gas
- ~11,000 tons of bituminous coal
- ~58,000 barrels of oil

…and just for the fun of it…

- Energy use of 2,200 homes

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What must be reported? (§98.32)

- Mass emissions of CO_2, CH_4, and N_2O from each stationary fuel combustion unit or aggregated units

Subpart C: How are Emissions Calculated? (§98.33)

- Establishes four tiers (Tier I, Tier II, Tier III, Tier IV) – use of each tier depends on described factors
  - Tier I: Unit <250 MMBtu/hr *and* the owner does not perform or receive measurements that include HHV
  - Tier II: Unit <250 MMBtu/hr with monthly HHV and a default CO2 value from EPA's table
  - Tier III: Any unit, any size, except when Tier IV mandated

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Subpart C: How are Emissions Calculated? (§98.33)

- Tier IV: Any unit, any size
- Tier IV **must** be used for:
  - Rated heat input capacity ≥ 250 MMBtu/hr
  - Unit combusts solid fossil fuel or MSW
  - Unit has operated for more than 1,000 hours in any calendar year since 2005
  - Unit has installed CEMs required by a regulation or permit
  - CEMs include gas monitor of any kind, flow monitor, or both
  - Conditions for unit ≤ 250 MMBtu/hr also exist…

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Data Used by Each Tier

- Tier I: Fuel consumption with default HHV and CO_2,CH_4, and N_2O emissions factors

- Tier II: Fuel consumption with monthly HHV of fuel and default CO_2, CH_4, and N_2O emissions factors

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Data Used by Each Tier

- Tier III: Fuel consumption with monthly HHV of fuel, fuel carbon content for CO_2, emissions factors for CH_4, and N_2O, and molecular weight of gaseous fuels

- Tier IV: CEMs (gas analyzer and flow) with emissions factors for CH_4, and N_2O

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Stationary combustion calculation methods

Device Type	Tier 1 Default EF Default HHV	Tier 2 Default EF Measured HHV	Tier 3 Measured fuel composition Measured MW	Tier 4 CEMS
• ≤250MMBtu/hr and EF avail. • No fuel analyses performed • Biogenic fuels	✓	✓	✓	✓
• ≤250MMBtu/hr and EF avail. • Any size NG or distillate oil unit • Have site specific HHV data • RFG (still gas) starts here		✓	✓	✓
• Any fuel, any size unit • ≥250MMBtu/hr, any fuel • RFG or process gas			✓	✓
• Certain solid waste incinerators				✓

Source: ERM

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Data Quality Assurance

- **Owner or operator shall document procedures used to ensure the accuracy of measurement devices**
  - Estimated accuracy shall be recorded
  - Technical basis for estimates shall be provided
- Periodic calibration of fuel flow meters, scales and other measurement devices
- Oil tank drop measurements must be performed in accordance with listed methods
- CEMs must be certified and operated in accordance with Part 75

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Subpart D: Electricity Generation Category Definition (§98.40)

- Facilities with one or more electricity generating units…
- "EGU" means any unit that is subject to the Acid Rain Program and any other EGU requried to monitor and report to EPA emissions of CO_2 on a year-round basis in accordance with 40 CFR 75

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Subpart D: How are Emissions Calculated? (§98.43)

- CEMs for CO_2
- Emissions factors for CH_4 and N_2O

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Schedule (§98.3(b))

- Annual GHG emissions report due no later than March 31 of calendar year for GHG emissions in the previous year
- Final rule requires emissions data collection for calendar year 2010
  - *Post facto* determination of reporting requirement

GHG reporting timeline

Gap Analysis
- *What sources are covered?*
- *Consistency of methods?*
- *Meters / instruments required?*

Adapt Systems
- *Adapt data management and reporting systems*
- *Develop monitoring plan*

Begin Monitoring
- *Start required data collection*
- *Begin recordkeeping*

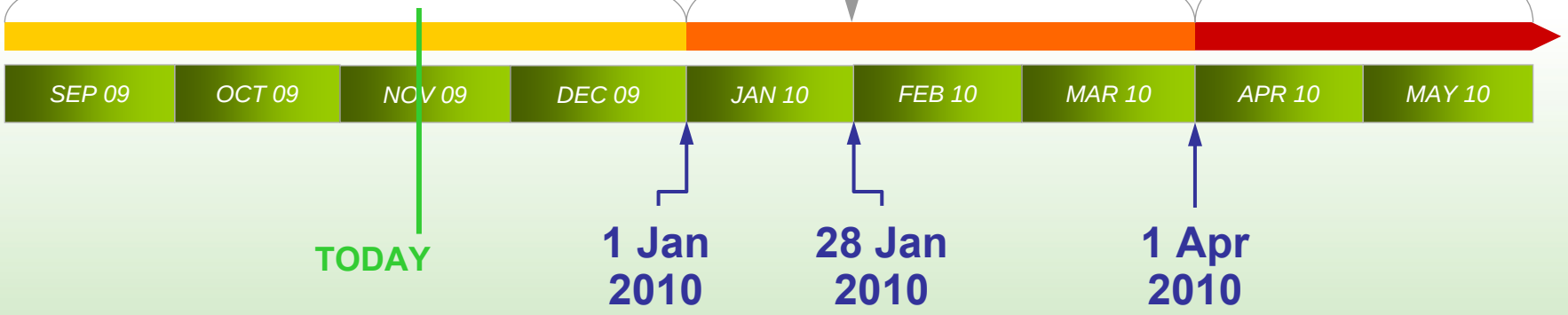
Request Extension
- *Best Available Monitoring*

Prepare for Full Compliance
- *Calibrate meters and instruments*
- *Install necessary equipment*

Must have Final Monitoring Plan

Stop Best Available Monitoring
- *Unless extension granted*

Ongoing Monitoring
- *Upgrade data management systems*
- *Report submittal*
- *Improve efficiency of reporting process*



Source: ERM

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Designated Representative (§98.4)

- Must identify “one and only one” DR
  - Responsible for certifying, signing, and submitting GHG reports
  - If subject to other requirements in Part 75 (Acid Rain Program), must be the same DR
- Binding agreement on all owners and operators

DR Certification Statement

- "I am authorized to make this submission on behalf of the owners and operators of the facility or supplier, as applicable, for which the submission is made. I certify **under penalty of law that I have personally examined, and am familiar with**, the statements and information submitted in this document and all its attachments. Based on my inquiry of those individuals with primary responsibility for obtaining the information, I certify that **the statements and information are to the best of my knowledge and belief true, accurate, and complete**. I am aware that there are significant penalties for submitting false statements and information or omitting required statements and information, including the possibility of fine or imprisonment."

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General Recordkeeping Requirements

- A list of all units and operations for which GHG emissions are calculated
- Data used to calculate GHG emissions categorized by fuel or material type
  - Actual GHG emissions calculations and methods
  - Analytical results for HHV, CC, fuel or feedstock parameters
  - Facility operating or process data used for GHG calculations
- Annual GHG report
- Missing data computations
- Written GHG Monitoring Plan

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GHG Monitoring Plan

- Identifies those with data collection responsibilities
- Explains the processes and methods used for data collection
  - Default emission factors from the rule, stack testing, or CEMs
  - Uses equations provided in the rule for certain sectors and emission units
- Describes QA/QC procedures for monitors (if used)
- References to existing corporate documents and SOPs
- May be revised when changes are made to monitoring equipment or procedures.
- May reflect “best available” monitoring methods until required monitoring equipment is purchased and installed.
- Must be available on-site for EPA review

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Best Available Monitoring: 1Q 2010

- **Best Available Monitoring** is allowed for the first quarter of 2010 (through March 31, 2010) in lieu of following monitoring and QA/QC requirements of applicable subparts
- Best Available Monitoring can be used "for any parameter (e.g., fuel use, carbon content of feedstock by process line) that can not be reasonably measured according to the monitoring and QA/QC requirements of the relevant subpart."
  - Facilities may use existing monitoring methods, engineering calculations, supplier data or other company records
  - Facilities must use the calculation equations that are specified in the rule starting Jan 1, 2010
  - Facilities must include all covered sources starting Jan 1, 2010

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Content of Annual Report (§98.3(c))

- Facility name or supplier name
- Data reporting year
- Date of submittal
- Annual emissions of CO2, CH4, N2O, and each fluorinated GHG
- Total electricity generated onsite in kw-hr
- Signed certification statement

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When do Reporting Obligations End?

- Reporting is once-in, always in, UNLESS:
  - Reported emissions <25,000 MT for five consecutive years; or
  - Reported emissions <15,000 MT for three consecutive years; or
  - If the GHG emitting activities or processes cease to operate
- *Provided notification requirements are met*

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For More Information

- EPA has developed series of fact sheets and tools to assist with implementation

http://www.epa.gov/climatechange/emissions/ghgrulemaking.html

http://www.epa.gov/climatechange/emissions/ghg_infosheets.html

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

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Questions?