

EPA MANDATORY REPORTING RULE (MRR) 40 CFR PART 98

4/5/2010



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**Ohio Gas Association Conference
March 26, 2010
Roberta Jackson, P.E.**

AGENDA

- Key Elements of the Rule
- Applicability
- Subpart A – General Provisions
- Subpart C – General Stationary Fuel Combustion Sources
- Subpart NN – Suppliers of Natural Gas and Natural Gas Liquids
- Subpart W – Petroleum and Natural Gas Systems
- Q&A

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 (facility total); capacity-based thresholds for some manufacturing businesses (electronics, etc.)

- Monitoring began January 1, 2010; first reports due March 31, 2011
- Direct reporting to EPA electronically
- EPA verification of emissions data

WHICH GHGs DOES THE MRR COVER NOW OR IN THE FUTURE?

- **CO₂**
- **CH₄ (methane)**
- **N₂O (nitrous oxide)**
- **Fluorinated GHGs (future)**
 - **HFCs (hydrofluorocarbons)**
 - **PFCs (perfluorocarbons)**
 - **SF₆ (sulfur hexafluoride)**
 - **Other fluorinated gases**

APPLICABILITY – FACILITIES & SUPPLIERS

- **Facilities** - must evaluate each source category separately to assess applicability to the rule.
 - “All-in” source categories: All of the facilities that have an “all-in” source category within their boundaries are subject to the rule. (These are certain electric generation and chemical manufacturing facilities.)
 - Threshold categories: Aggregate these categories to meet the 25,000 metric tons CO₂e per year reporting threshold
- **Suppliers** - Natural gas and Natural gas liquids
 - All fractionators
 - All local gas distribution companies
- If rule applies, report emissions for all source categories for which methods are provided in the rule.

APPLICABILITY

- An applicability analysis using EPA's Applicability Tool may be conducted for each facility on an annual basis.

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

- The results of the applicability tool should be printed and maintained with facility records and be available in the event of an EPA inspection or internal audit.
- The EPA applicability tool is not designed to be used by natural gas distribution or suppliers.

WHAT ABOUT MOBILE SOURCES?

- Facilities and suppliers do not need to worry about mobile sources in their emissions calculations for MRR purposes.
- Emissions from mobile sources will be captured by reports from fuel suppliers and manufacturers of vehicles and engines (outside of the light-duty sector).



SUBPART – A GENERAL PROVISIONS

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- Monitoring, Reporting, Recordkeeping and Verification – details on next slides
- Calibration - Requirement for calibration of fuel flow meters, and “other devices (e.g., belt scales)” used to collect data for the emissions calculations, **to an accuracy of “plus or minus five percent” by April 1, 2010.**
- Designated Representatives –
 - Must submit to EPA a certificate of representation¹ 60 days before the deadline for reporting (*i.e.*, by January 30, 2011 for existing sources).
 - EPA plans to establish an electronic data reporting system that provides for submission of certificates of representation for the Designated Representatives.
- Report Submittal – electronic system to be developed by EPA; not currently available
- Enforcement Provisions – Any violation of the MRR is a violation of the Clean Air Act

¹ shall represent and, by his or her representations, actions, inactions, or submissions, legally bind each owner and operator of such facility or supplier in all matters pertaining to this part, notwithstanding any agreement between the designated representative and such owners and operators. The owners and operators shall be bound by any decision or order issued to the designated representative by the Administrator or a court.

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

SUBPART – A GENERAL PROVISIONS



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Monitoring Plan

- Explains processes and methods used for data collection
- Describes “positions of responsibility” associated with data collection
- Describes QA/QC, maintenance and repair procedures for monitors and other instrumentation used to report under the rule
- May rely on references to existing corporate documents (e.g., standard operating procedures)
- Does not have to be submitted to EPA - Not a reporting requirement, but must be prepared by **April 1, 2010**
- Must begin following all applicable monitoring and QA/QC requirements on **April 1, 2010**

SUBPART – A GENERAL PROVISIONS

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○ Reporting

- Will be done electronically through EPA’s “yet to be developed” system
- Must be submitted no later than March 31 for emissions in the previous calendar year (starts March 31, 2011)
- **Content of the Annual Report**
 - Facility or supplier name and address,
 - Year and months covered by the report
 - **For facilities** that directly emit GHGs:
 - Annual facility emissions in metric tons CO₂e aggregated for all source categories
 - Annual emissions for each source category located at the facility, in metric tons of each GHG.
 - Additional information, such as unit-or process-level emissions, activity data (e.g., fuel use, feedstock inputs), or quality assurance/quality control data specified in an applicable subpart.
 - **For suppliers:**
 - Annual quantity of GHG supplied, aggregated for all GHGs from all applicable supplier categories and expressed in metric tons CO₂e.
 - Annual quantity of each GHG supplied from each supplier category, expressed in metric tons of each GHG.
 - Additional information specified in each applicable subpart, such as data used to calculate GHG quantities or support QA/QC.

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○ Reporting

• Content of the Annual Report (con't)

- A description of any “best available monitoring method” used for calendar year 2010 (not generally applicable to natural gas sector).
- If missing data procedures were used to fill gaps in monitoring data, identify the data elements and total hours in the year during which missing data procedures were used.
- A signed and dated certification statement .

SUBPART – A GENERAL PROVISIONS

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○ Recordkeeping

- Each facility and supplier must retain the following records for **three years** in electronic or hardcopy format “*suitable for expeditious inspection*”:
 - A list of all units, operations, processes, and activities for which the reporter calculates GHG emissions.
 - Data used to calculate the GHG emissions for each unit, operation, process, and activity, categorized by fuel or material type. These data vary by source category and include, but are not limited to:
 - The GHG emission calculations and methods used.
 - Analytical results for the development of site-specific emission factors, if applicable.
 - Results of all required analyses of high heat value, carbon content, or other required fuel or feedstock parameters.
 - Any facility operating data or process information used for the GHG emissions calculation.
 - Annual GHG reports.
 - Missing data computations.
 - A written GHG monitoring plan.
 - The results of all required certification and quality assurance tests of monitoring systems used to provide data for the annual GHG report.
 - Maintenance records for monitoring instrumentation.

SUBPART – A GENERAL PROVISIONS

○ Verification

- 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 which will have built-in calculation and completeness checks for reporters
 - Additional EPA electronic QA and consistency checks
 - EPA will conduct site-specific and on-site audits

SUBPART – C GENERAL STATIONARY FUEL COMBUSTION SOURCES

- Definition of this Source Category
- Calculating GHG Emissions
- Monitoring and QA/QC Requirements
- Procedures for Estimating Missing Data
- Data Reporting Requirements
- Records That Must Be Retained
- Overview of which Dominion facilities are impacted

SUBPART - C GENERAL STATIONARY FUEL COMBUSTION SOURCES

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○ Definition of this Source Category

- includes... “devices that combust solid, liquid, or gaseous fuel, generally for the purposes of 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.”
- This source category *does not include* “portable equipment, emergency equipment, and emergency generators.” (§ 98.30(b)).

STATIONARY FUEL COMBUSTION SOURCES

○ Calculating GHG Emissions

- Must report annual emissions of CO₂, CH₄ and N₂O under Subpart C for those covered stationary fuel combustion units at the facility.
- Subpart C contains the four methodologies (referred to as Tiers) for calculating annual CO₂ emissions.
- Please note that for CO₂, Tier classification generally applies to the fuel (not to the unit). As a result, a unit that uses Tier 2 for one fuel (*e.g.*, uses Tier 2 for oil) can elect to use a lower tier for another fuel (*e.g.*, use Tier 1 for natural gas), even if the lower Tier could have been used for both fuels.
- However, a unit that uses Tier 4 (*i.e.*, CEMS), or one of the alternative Part 75 calculations (applicable to non-ARP units reporting under Part 75), for any fuel, must use CEMS or the alternative Part 75 calculations to calculate CO₂ emissions for *all fuels*.

SUBPART – C GENERAL STATIONARY FUEL COMBUSTION SOURCES

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○ **Monitoring and QA/QC Requirements**

- Required measurements are determined as follows:
 - Annual fuel use can be determined either by use of company records (e.g., billing data, steam generation, unit operating hours) or by direct measurement using flow meters, depending on the size of the unit and the type of fuel burned.
 - Depending on the tier calculation method used and the fuel burned, reporters could be required to measure high heating value, molecular weight, or carbon content of fuel. Fuel sampling and analysis must be conducted daily, weekly, monthly, quarterly, semi-annually, or by lot depending on the fuel burned.

SUBPART – C GENERAL STATIONARY FUEL COMBUSTION SOURCES

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○ Procedures for Estimating Missing Data

- Whenever a quality-assured value of a required parameter is unavailable, a substitute value must be substituted for units using Tiers 1, 2, 3, or 4:
 - For HHV, carbon content, or molecular weight, substitute the arithmetic average of value “before” and the value “after.” If the value “after” has not been obtained by the time the report is due, the value “before” or the “best available estimate...based on all process data,” may be used. If no “before” value is available, the value after must be used.
 - For CO₂ concentration, volumetric stack flow rate, percent moisture, fuel usage, and sorbent usage, substitute the “best available estimate...based on all process data.”
- Records must be kept documenting the procedures used for all estimates.

STATIONARY FUEL COMBUSTION SOURCES

○ Data Reporting Requirements

- In addition to the facility-level information required under the General Provisions you must report annual mass emissions for each GHG for each combustion unit.
 - Emissions can be reported as the aggregated mass among multiple units under any of the three the following conditions:
 - Groups of units, if each unit has a maximum rated heat input capacity of 250 mmBtu/hr or less.
 - 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.**
- You also must 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.
- Existing facilities that are required to report emissions from stationary combustion sources only (and no other source categories) can submit an abbreviated emissions report using simplified calculation methods for reporting year 2010 only.

STATIONARY FUEL COMBUSTION SOURCES

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○ Records That Must Be Retained

- In addition to the facility-level information required under the General Provisions records that must be retained are specified in 40 CFR 98.37 (highly cross-referenced).
 - For natural gas industry - Fuel consumption
 - As part of the GHG Monitoring Plan required under [§98.3\(g\)\(5\)](#), you must document the procedures used to ensure the accuracy of the estimates of fuel usage, sorbent usage, steam production, and boiler efficiency, including but not limited to calibration of weighing equipment, fuel flow meters, steam flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices shall also be recorded, and the technical basis for these estimates shall be provided.
 - For missing records of CO₂ concentration, stack gas flow rate, percent moisture, fuel usage, and sorbent usage, the substitute data value shall be the best available estimate of the parameter, based on all available process data (e.g., electrical load, steam production, operating hours, etc.). You must document and retain records of the procedures used for all such estimates.
 - All data relied upon to determine reported GHG emissions.

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS (NGLs)

- Definition of this Source Category
- Calculating GHG Emissions
- Monitoring and QA/QC Requirements
- Procedures for Estimating Missing Data
- Data Reporting Requirements
- Records That Must Be Retained



SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

4/5/2010

○ Definition of this Source Category

- Suppliers of natural gas and NGLs are defined as natural gas liquids fractionators and local natural gas distribution companies (LDCs), as follows:
 - **Natural gas liquids fractionators** are installations that fractionate NGLs into their constituent liquid products (ethane, propane, normal butane, isobutene, or pentanes plus) for supply to downstream facilities.
 - **Local distribution companies** are companies that own or operate distribution pipelines that physically deliver natural gas to end users and that are regulated as separate operating companies by state public utility commissions, or that operate as independent municipally owned distribution systems. *Companies that operate interstate or intrastate pipelines are not part of this source category.*
- This supply category does not include the following facilities:
 - Field gathering and boosting stations.
 - Natural gas processing plants that separate NGLs from natural gas and produce bulk or y-grade NGLs but do not fractionate these NGLs into their constituent products.

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS



○ Calculating GHG Emissions

- Two different methods can be used to calculate CO₂ emissions that would result from the complete oxidation or combustion of the product supplied:
 - **Calculation Methodology 1:** Calculate CO₂ mass emissions from a natural gas or NGL product by multiplying the volume of product by its higher heating value (HHV) and its CO₂ emission factor (EF). Use either measured or default fuel HHVs and CO₂ EFs.
 - **Calculation Methodology 2:** Calculate CO₂ mass emissions from a natural gas or NGL product by multiplying the volume of product by its CO₂ EF. Use either measured or default CO₂ EFs.

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

4/5/2010

Monitoring and QA/QC Requirements

For local distribution companies (LDCs), measure these parameters:

- Annual volume of natural gas received at the city gate stations for redelivery on the LDC's distribution system (million standard cubic feet)
- Annual volume of vaporized liquefied natural gas produced at on-system vaporization facilities for delivery on its distribution system (not included above in the annual volume of natural gas received at its city gate for redelivery) (million standard cubic feet)
- Annual volume of natural gas delivered to downstream gas transmission pipelines and other LDCs (million standard cubic feet)
- Carbon content and/or British thermal units (Btu) content of natural gas supplied, if developing a site-specific higher heating value and/or emission factor (Calculation Methodology 1)
- Btu content of natural gas supplied, if developing a site-specific emission factor (Calculation Methodology 2)
- Annual volume of natural gas delivered to each meter registering greater than 460,000 million standard cubic feet per year (million standard cubic feet)
- Annual volume of natural gas delivered directly to its systems from producers or natural gas processing plants from local production (million standard cubic feet)
- Annual volume of natural gas delivered to each of the following types of customers: residential, commercial, industrial, and electricity generating facilities (million standard cubic feet)
- Daily meter readings of all volumes monitored (million standard cubic feet)
- Annual volume of natural gas withdrawn from on-system storage for delivery on its distribution system (million standard cubic feet)
- Annual volume of natural gas received at its city gate and stored on-system or liquefied and stored (million standard cubic feet)

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

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○ Monitoring and QA/QC Requirements (con't)

- For **NGL fractionators, measure these parameters...**
 - Annual volume of each NGL product (ethane, propane, normal butane, isobutene, and pentanes plus) received from other NGL fractionators (barrels, or bbl)
 - Annual volume of each NGL product (ethane, propane, normal butane, isobutene, and pentanes plus) supplied (bbl)
 - Annual volume of natural gas received for processing (million standard cubic feet)
 - Annual quantity of propane odorized at the facility and delivered to others (bbl)
 - Carbon content and/or Btu content of each NGL product supplied (ethane, propane, normal butane, isobutene, and pentanes plus), if developing site-specific higher heating values and/or emission factors (Calculation Methodology 1)
 - Btu content of each NGL product supplied (ethane, propane, normal butane, isobutene, and pentanes plus), if developing site-specific emission factors (Calculation Methodology 2)
 - Annual quantity of y-grade, bulk NGLs received from others for fractionation (bbl)
 - Daily meter readings of all volumes monitored (million standard cubic feet)

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

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- **Procedures for Estimating Missing Data**
 - **NGL fractionators** must substitute *meter records* provided by pipeline(s) for all pipeline receipts of NGLs; by manifests for deliveries made to trucks or rail cars; or metered quantities accepted by the entities purchasing the output from the fractionator whether by pipeline or by truck or rail car.
 - In cases where the metered data from the receiving pipeline(s) or purchasing entities are not available, fractionators may substitute estimates based on contract quantities required to be delivered under purchase or delivery contracts with other parties.

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

○ Procedures for Estimating Missing Data (con't)

- **LDCs** must either substitute their delivering pipeline metered deliveries at the city gate or substitute nominations and scheduled delivery quantities for the period when metered values of actual deliveries are not available.
- Whenever an LDC that makes its own HHV measurements according to established business practices cannot follow the quality assurance procedures for developing a reporter-specific HHV, as specified in § 98.404, during any period for any reason, the reporter shall use either its delivering pipeline measurements or the default HHV provided in Table NN-1 of the MRR for that period.
- Whenever an LDC that does not make its own HHV measurements according to established business practices or an NGL fractionator cannot follow the quality assurance procedures for developing a reporter-specific HHV, as specified in § 98.404, during any period for any reason, the reporter shall use the default HHV provided in Table NN-1 of the MRR for that period.
- Whenever a NGL fractionator cannot follow the quality assurance procedures for developing a reporter-specific HHV, as specified in § 98.404, during any period for any reason, the NGL fractionator must use the default HHV provided in Table NN-1 of the MRR for that period.
- Whenever a reporter cannot follow the quality assurance procedures for developing a reporter-specific EF, as specified in § 98.404, during any period for any reason, the reporter shall use the default EF provided in § 98.408 for that period.

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

4/5/2010

○ Data Reporting Requirements

- In addition to the facility-level information required under the General Provisions:
 - **Natural gas fractionators** must report carbon dioxide (CO₂) emissions that would result from the complete combustion or oxidation of the annual quantity of ethane, propane, normal butane, isobutane, and pentanes plus that is sold or delivered to others.
 - **Local distribution companies** must report CO₂ emissions that would result from the complete combustion or oxidation of the annual volumes of natural gas provided to end users on their distribution systems.
- Further listed details of what needs to be reported is specified at 40 CFR 98.406. Basically, all data that would be required to perform a mass-balance around the facility for products and CO₂.

SUBPART NN – SUPPLIERS OF NATURAL GAS AND NATURAL GAS LIQUIDS

○ Records That Must Be Retained

- In addition to the facility-level information required under the General Provisions (see slide 14), you must retain the following records:
 - Records of all daily meter readings and documentation to support volumes of natural gas and NGLs that are reported under this part.
 - Records documenting any estimates of missing metered data and showing the calculations of the values used for the missing data.
 - Calculations and worksheets used to estimate CO₂ emissions for the volumes reported under this part.
 - Records related to the large end-users identified in § 98.406(b)(6)
 - Records relating to measured Btu content or carbon content showing specific industry standards used to develop reporter-specific higher heating values and emission factors.
 - Records of such audits as required by Sarbanes Oxley regulations on the accuracy of measurements of volumes of natural gas and NGLs delivered to customers or on behalf of customers.

SUBPART W


PETROLEUM AND NATURAL GAS SYSTEMS

On March 23, U.S. EPA proposed three separate rules that would expand its mandatory greenhouse gas (GHG) reporting requirements to:

- include fugitive methane emissions reporting from the entire natural gas sector,
- include new monitoring requirements for facilities that inject carbon dioxide underground for the purpose of long-term geologic sequestration or to enhance oil and gas recovery, and
- include emissions of sulfur hexafluoride (SF₆) and/or perfluorocarbons (PFCs) from electric power transmission and distribution systems.

The draft rules, if finalized as drafted, would require additional reporting for Dominion compressor stations, natural gas drilling, gathering, and distribution, facilities that use underground carbon dioxide injection for sequestration or oil and gas recovery and electric power transmission and distribution systems beginning in 2012 for 2011 emissions.

EPA will accept comments for 60 days from the date of publication in the Federal Register – approximately June 1.



SUBPART W

PETROLEUM AND NATURAL GAS SYSTEMS

The latest proposal requires petroleum and natural gas facilities that emit a total of 25,000 metric tons of carbon dioxide equivalent or more from combustion and fugitive and vented emissions to report their greenhouse gas emissions annually beginning in 2012 for the reporting year 2011.

Covered facilities include:

- onshore petroleum and natural gas producers (well drilling and all gathering stations),
- onshore natural gas processing,
- natural gas transmission,
- underground natural gas storage,
- LNG storage, import and export facilities, and
- natural gas distribution.



SUBPART W

PETROLEUM AND NATURAL GAS SYSTEMS

For the *natural gas production sector*, the rule will require reporting of GHG emissions from well completion and operation including those from:

- Natural gas driven pneumatic devices and pumps,
- Field crude oil and condensate storage tanks,
- Glycol dehydration units,
- Release and flaring during well completion, well workovers, and well blowdowns for liquids unloading,
- Releases and flaring of associated gas, and
- Blowdowns of compressors and Enhanced Oil Recovery (EOR) pumps.

EPA proposes that emission from onshore natural gas production be reported at the basin level by the operating entity listed on the state well drilling permit.



SUBPART W

PETROLEUM AND NATURAL GAS SYSTEMS

- For the *natural gas processing and transmission sector, as well as LNG facilities*, EPA is proposing to require reporting of vented and fugitive methane emission from compressors, vents, connectors, drain lines, dehydration units, tanks, and pipelines associated with compressor and processing stations. Condensate tank vents would be required to use optical imaging instruments and direct measurement to quantify emissions.
- EPA is not proposing to include reporting of fugitive emissions from natural gas pipeline segments between compressor stations. However, for natural gas gathering pipelines, EPA is proposing that producers who own or operate gathering lines associated with their production fields and natural gas processors who own or operate gathering lines associated with their processing plant should include those gathering lines in their field or processing plant reported emissions.



SUBPART W

PETROLEUM AND NATURAL GAS SYSTEMS

- For the *natural gas distribution sector*, EPA is proposing to require reporting of fugitive GHG emissions from gate stations, vaults, and distribution pipelines.
- Fugitive emissions inaccessible to plain view (buried or below grade in vaults) in gas distribution would be allowed to use only estimation using population emission factors.



SUBPART W

PETROLEUM AND NATURAL GAS SYSTEMS

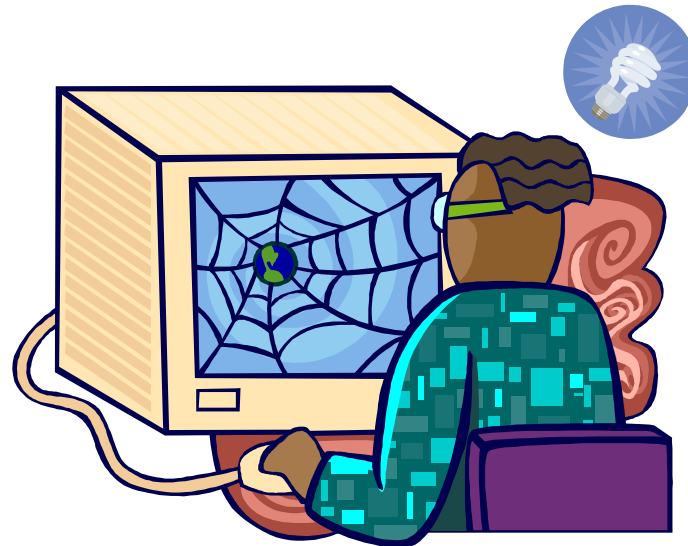
- Emissions monitoring methods have been expanded in the proposal to include:
 - Direct measurement to develop site and source-specific emission factors,
 - Engineering estimation,
 - Combination of direct measurement and engineering estimation,
 - Leak detection and use of leaker emission factor, and
 - Population count and population emission factors.
- Five source types would require direct measurement:
 - tanks at transmission facilities that exhibit gas bypass from scrubber dump valves,
 - centrifugal compressor wet seal oil degassing vents,
 - large reciprocating compressor rod packing vents,
 - large compressor blowdown vent valve leaks, and
 - large compressor blowdown vents.



ADDITIONAL INFORMATION

For the pre-amble and final rule, along with many other exciting fact sheets, Q&A, presentations ,etc....please see EPA's website at:

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



QUESTIONS AND DISCUSSION

