

Petroleum and Natural Gas Systems



Proposed Rule: Subpart W, Mandatory Reporting of Greenhouse Gases

Under this proposed amendment to the Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain petroleum and natural gas operations (as defined below) and that emit 25,000 metric tons or more of GHGs per year (expressed as carbon dioxide equivalents) from process operations, stationary combustion, miscellaneous use of carbonates, and other source categories (see information sheet on General Provisions) would report emissions from all source categories located at the facility for which emission calculation methods are defined in the rule. Owners or operators would collect emission data; calculate GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.¹

How Is This Source Category Defined?

Under this proposal, this source category consists of emission sources in the following segments of the industry:

- Onshore petroleum and natural gas production
- Offshore petroleum and natural gas production
- Onshore natural gas processing plants
- Onshore natural gas transmission compression
- Underground natural gas storage
- Liquefied natural gas storage
- Liquefied natural gas import and export equipment
- Natural gas distribution

What Gases Would Be Reported?

Under this proposed rule facilities would report:

- Fugitive and vented carbon dioxide (CO₂) and methane (CH₄) emissions from each of the sources listed in Table 1 (shown on page 2).
- For offshore petroleum and natural gas production, report emissions from all “stationary fugitive” and “stationary vented” sources as identified in the Minerals Management Service (MMS) Gulfwide Offshore Activity Data System (GOADS) study.
- CO₂, CH₄, and nitrous oxide (N₂O) emissions from each flare.
- CO₂, CH₄, and N₂O emissions for stationary combustion sources following the requirements of 40 CFR 98, subpart C (General Stationary Fuel Combustion Sources).

¹ EPA will protect any information claimed as Confidential Business Information (CBI) in accordance with regulations in 40 CFR, subpart B. However, note that in general, emission data collected under CAA sections 114 and 208 shall be available to the public and cannot be withheld as CBI. Although CBI determinations are usually made on a case-by-case basis, EPA has discussed in an earlier Federal Register notice what constitutes emissions data that cannot be considered CBI (956 FR 7042 - 7043, February 21, 1991). In addition, as discussed in the Mandatory Reporting Greenhouse Gas rule's preamble, section II.R, EPA will be initiating a separate notice and comment process to make CBI and emissions data determination for the categories of data collected under this rule.

Table 1. Sources Proposed for Reporting in the Petroleum and Natural Gas Industry, by Segment

Source Type	Industry Segment						
	Onshore Production	Natural Gas Processing	Natural Gas Transmission Compression	Under-ground Storage	LNG Storage	LNG Import and Export Equipment	Distribution
Natural gas pneumatic high bleed device venting	X		X	X			
Natural gas pneumatic low bleed device venting	X		X	X			
Natural gas driven pneumatic pump venting	X						
Well venting for liquids unloading	X						
Gas well venting during conventional well completions	X						
Gas well venting during unconventional well completions	X						
Gas well venting during conventional well workovers	X						
Gas well venting during unconventional well workovers	X						
Gathering pipeline fugitives	X	X					
Onshore production and processing storage tanks	X	X					
Transmission storage tanks			X				
Reciprocating compressor rod packing venting	X	X	X	X	X	X	
Well testing venting and flaring	X						
Associated gas venting and flaring	X						
Dehydrator vent stacks	X	X					
Coal bed methane produced water emissions	X						
Enhanced Oil Recovery injection pump blowdown	X						
Acid gas removal vent stack	X	X					
Hydrocarbon liquids dissolved CO ₂	X						
Centrifugal compressor wet seal degassing venting	X	X	X	X	X	X	
Produced water dissolved CO ₂	X						
Other fugitive emissions	X	X	X	X	X	X	
Blowdown vent stacks		X	X			X	
Flare stacks		X					
Above ground meter regulators and gate station fugitives							X
Below ground meter regulators and vault fugitives							X
Pipeline main fugitives							X
Service line fugitives							X

How Would Greenhouse Gas Emissions be Calculated?

Under this proposal, for the sources listed in Table 2 (shown on page 4), facilities would detect, as applicable, and calculate greenhouse gas (GHG) emissions according to the quantification method listed. Where volumetric emissions are measured, mass emissions of carbon dioxide (CO₂) and methane (CH₄) would be estimated based on the annual mole percentage and density of each GHG.

- The engineering calculation methods use monitored process operating parameters and, depending on the source, either simulation models, engineering calculations, or emission factors provided by the equipment manufacturer.
- Direct measurement involves use of optical gas imaging instrument for emissions detection and the use of the high-volume sampler; or calibrated bagging; or rotameters, turbine meters, or other meters, as appropriate, depending on the individual component for emissions measurement.
- For the use of leaking factors or population factors, the relevant emission factors would be applied to leaking components (determined using optical gas imaging instrument and applying leaking factors) and all components (population factors), as appropriate.

What Information Would be Reported?

Under the proposal, facilities would report the following information:

- Annual carbon dioxide (CO₂), methane(CH₄), and nitrous oxide (N₂O) emissions reported separately for onshore and offshore petroleum and natural gas production, onshore natural gas processing, onshore natural gas transmission compression, underground storage, liquified natural gas (LNG) storage, LNG import and export terminals, and distribution.
- Within each industry segment, CO₂, CH₄, and N₂O emissions aggregated for each source type. For example, an onshore natural gas processing plant would report emissions for all pump seals combined, flare stacks combined, etc.
- CO₂, CH₄, and N₂O emissions reported separately for equipment in standby mode.
- Activity data aggregated for each source type.
- Minimum, maximum and average throughput for each facility.
- CO₂, CH₄, and N₂O emissions reported separately for portable equipment.
- For offshore petroleum and natural gas production facilities, the number of connected wells, and whether they are producing oil, gas, or both.

For More Information

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Visit EPA's web site (www.epa.gov/climatechange/emissions/ghgrulemaking.html) for more information and additional information sheets, or go to www.regulations.gov to access the rulemaking docket EPA-HQ-OAR-2009-0923.

Table 2. Proposed Emission Calculation Methods

Source Type	Engineering Estimates	Direct Measurement	Leak Detection and Leaker Emission Factor	Equipment Count and Population Emission Factor
Natural gas pneumatic high bleed device venting	X			
Natural gas pneumatic low bleed device venting				X
Natural gas driven pneumatic pump venting	X			
Well venting for liquids unloading	X	X		
Gas well venting during conventional well completions	X			
Gas well venting during unconventional well completions	X	X		
Gas well venting during conventional well workovers	X			
Gas well venting during unconventional well workovers	X	X		
Gathering pipeline fugitives				X
Onshore production and processing storage tanks	X ^{1,2}			
Transmission storage tanks		X ³		
Reciprocating compressor rod packing venting		X		
Well testing venting and flaring	X			
Associated gas venting and flaring	X			
Dehydrator vent stacks	X			
Coal bed methane produced water emissions				X
EOR injection pump blowdown	X			
Acid gas removal vent stack	X			
Hydrocarbon liquids dissolved CO ₂		X		
Centrifugal compressor wet seal degassing venting		X		
Produced water dissolved CO ₂		X		
Other fugitive emissions			X ^{2,3,4,5,6,7}	X ¹
Blowdown vent stacks	X			
Flare stacks	X	X		
Above ground meter regulators and gate station fugitives			X	
Below ground meter regulators and vault fugitives				X
Pipeline main fugitives				X
Service line fugitives				X

Note: Applicable only to the industry segments enumerated as follows: 1. Production 2. Processing 3. Transmission Compression 4. Underground storage 5. LNG storage 6. LNG Import and Export 7. Distribution. Sources with multiple methods indicate options for monitoring.