

# Facts About ...

## New Regulations under new Chapter COMAR 26.11.41 Control of Methane Emissions from the Natural Gas Industry

12/2/2019

### Purpose

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The purpose of this action is to propose new Regulations .01 to .08 under new chapter COMAR 26.11.41 Control of Methane Emissions from the Natural Gas Industry. Methane Emissions from the natural gas industry account for approximately 30% of all methane emissions in Maryland. This action establishes requirements to reduce vented and fugitive emissions of methane from both new and existing natural gas facilities.

### Submission to EPA as Revision to Maryland's State 111(d) Plan

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The proposed regulations pertaining to methane reductions for Natural Gas Compression Stations and LNG Facilities will be submitted to the U.S. Environmental Protection Agency (EPA) for approval as part of Maryland's State Plan under CAA section 111(d).

### Background

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In 2009, the Maryland General Assembly adopted the Greenhouse Gas Emission Reduction Act (GGRA). This law required that the State develop and implement a plan to reduce greenhouse gas emissions by 25% by 2020. In 2015, the Maryland Commission on Climate Change (MCCC) was codified into law to provide guidance on greenhouse gas reductions while supporting a healthy economy and creating new jobs. The MCCC recommended to the Maryland General Assembly that several enhancements be made to the 2009 GGRA. In 2016, Governor Larry Hogan signed an updated version of the GGRA, establishing a new benchmark to reduce greenhouse gas emissions in Maryland by 40% by 2030.

The MCCC, through its Mitigation Working Group, recommended that Maryland focus on reducing methane emissions from landfills, natural gas infrastructure (e.g. compressor stations and underground storage), and waste water treatment plants. This action focuses on reducing methane emissions from the natural gas infrastructure in Maryland to protect and restore the environment for the health and wellbeing of all Marylanders.

Methane is the primary constituent of natural gas and is the second most prevalent greenhouse gas emitted by human activity in the U.S. While methane doesn't linger as long in the atmosphere as carbon dioxide, it is initially far more impactful to the climate because of how effectively it absorbs heat. Maryland began taking steps to restrict methane emissions from oil and natural gas operations by establishing law to ban hydraulic fracturing in the state. Hydraulic fracturing, a form of drilling to extract natural gas from underground depositories,

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poses the risk of emitting greenhouse gases into the atmosphere. The ban on hydraulic fracturing eliminates this environmental risk.

EPA also began to address methane emissions from the oil and natural gas industry. In June 2016, EPA finalized updates to its New Source Performance Standards (40 CFR Part 60, Subpart OOOOa or 2016 NSPS OOOOa) for the oil and natural gas industry to reduce emissions of greenhouse gases. The 2016 NSPS OOOOa set emission limits for methane, which is the principal greenhouse gas emitted by equipment and processes in the oil and gas sector. The EPA final rule also requires owners/operators to find and repair leaks, also known as “fugitive emissions,” which can be a significant source of both methane and volatile organic compound emissions.

On September 11, 2018, however, EPA proposed reconsideration amendments to certain provisions of the 2016 NSPS OOOOa. Among other proposed amendments, EPA considered relaxing the regulatory burden to industry by reducing the monitoring frequency of fugitive emissions and extending the required time for leaks to be repaired.

On September 24, 2019, EPA proposed to further relax the 2016 NSPS OOOOa. EPA’s new reconsideration amendments propose to (1) remove sources in the transmission and storage segment from the affected source category and rescind the NSPS (including both the volatile organic compounds (VOC) and methane requirements) applicable to those sources, and (2) rescind the methane-specific requirements of the NSPS applicable to sources in the production and processing segments. The EPA is also proposing, as an alternative, to rescind the methane requirements of the NSPS applicable to all oil and natural gas sources, without removing any sources from the source category. The Department strongly opposes these proposed amendments and any relaxation of NSPS OOOOa. In response, Maryland is proposing standards for new facilities and existing in the State to control methane emissions from the natural gas industry.

Specifically, this action proposes requirements to mitigate methane emissions through fugitive emissions detection and repair, and control measure requirements to limit emissions from compressors and pneumatic devices. Facility-wide greenhouse gas emission data will be required to be calculated and submitted to the Department annually. Additionally, owners and operators will be required to notify the Department and the public during “blowdown events” which are the release of pressurized natural gas from stations, equipment, or pipelines into the atmosphere so that maintenance, testing or other activities can take place.

The natural gas industry can be divided into four segments: (1) production; (2) gathering and processing; (3) transmission and storage; and (4) distribution. In the transmission and storage segment, compressors are used to maintain the pressure of the natural gas in transmission pipelines to deliver extracted gas to its eventual end-user. This action affects new and existing natural gas compressor stations, liquefied natural gas facilities, and underground storage facilities in the transmission and storage segment. In Maryland, there are four natural gas

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compressor stations, one liquefied natural gas import/export facility, and one underground storage facility. This action represents development of regulations with extensive input from public community groups, environmental advocates, the industry and EPA.

#### Sources Affected and Location

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- There are four natural gas compressor stations, one underground storage facility and one liquid natural gas (LNG) facility currently operating in Maryland that are subject to this regulation.
- The four compressor stations are: Dominion Myersville (Frederick County), Enbridge Texas Eastern (Garrett County), TC Energy (previously Transcanada) Rutledge (Harford County), and Williams Transcontinental (Howard County).
- The one underground storage facility is Enbridge Texas Eastern (Garrett County)
- The one LNG facility is Dominion Cove Point (Calvert County).
- All new NG compressor stations, underground storage facilities, and LNG facilities will be subject to this regulation.

#### Requirements

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The federal Clean Air Act provides that States may set more stringent standards and the proposed regulations are more stringent than existing federal rules. Maryland is proposing detection, testing, repair, reporting and record keeping requirements for all existing and new facilities in the State,

#### Leak Detection and Repair (LDAR)

Fugitive emissions can occur from leaking compressors, pipelines and other equipment components such as valves, connectors, pressure relief devices, and flanges. Unmonitored or faulty equipment with fugitive leaks exacerbates the methane emissions at a facility.

Maryland's proposed regulations require owners/operators to do the following:

- Develop and submit a leak monitoring plan to the Department within 90 days of the adoption of the rule. New, modified, or reconstructed facilities will have up to 90 days to submit a methane emissions monitoring plan from the startup of the facility's operation.
- Conduct leak monitoring surveys at prescribed intervals using optical gas imaging (OGI) or EPA Method 21 as well as inspecting for leaks audibly, visually, and olfactorily (AVO). The Department will consider any new and/or emerging leak detection technology as an alternative practice to monitor for leaks.
- Repair or replace identified leaking component(s) within 30 days of leak discovery and verify that the leak has been successfully repaired. Owners/operators may submit a delay of repair request to the Department if the leaking component(s) requires a

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specialty part, is unsafe to repair during the operation of the unit, and/or would require a vent or compressor station blowdown.

- Follow applicable annual and quarterly recordkeeping and reporting requirements.

*Facilities that use natural gas-powered equipment to compress natural gas and new liquefied natural gas (LNG) facilities:*

- These facilities shall conduct quarterly inspections of fugitive emissions components using an OGI instrument or EPA's Method 21. The initial monitoring survey shall be conducted within 180 days of the adoption of the regulation. New, modified, or reconstructed facilities will have up to 180 days to conduct an initial monitoring survey from the startup of the facility's operation.
- Weekly audio, visual, and olfactory inspection of all fugitive emissions components shall be conducted.

*Natural gas underground storage fields that use electric-powered equipment to compress natural gas:*

- These facilities shall conduct quarterly inspections of fugitive emissions components using an OGI instrument or EPA's Method 21. The initial monitoring survey shall be conducted within 180 days of the adoption of the regulation. New, modified, or reconstructed facilities will have up to 180 days to conduct an initial monitoring survey from the startup of the facility's operation.
- Electric- Monthly AVO inspections will be required for components at natural gas storage fields with additional monitoring and recordkeeping requirements.

*Facilities that use electric-powered equipment to compress natural gas:*

- Electric-powered equipment used to compress natural gas emits less methane than natural gas-powered equipment by eliminating the need for fuel gas. Furthermore, electric-powered compressors produce no exhaust byproduct.
- These facilities shall conduct annual inspections of fugitive emissions components using an OGI instrument or EPA's Method 21. The initial monitoring survey shall be conducted within 180 days of the adoption of the regulation. New, modified, or reconstructed facilities will have up to 180 days to conduct an initial monitoring survey from the startup of the facility's operation.
- Monthly audio, visual, and olfactory inspection of all fugitive emissions components shall be conducted.

*Dominion Cove Point LNG facility:*

- Cove Point has two existing LDAR plans with equivalent stringency as this proposal; The facility will be required to follow:
  - (a) The leak detection and repair requirements as specified by the Climate Action Plan, which is defined, prepared, and approved under COMAR 26.09.02.06.B - E.; and

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(b) The leak detection and repair plan defined and approved under the Certificate of Public Convenience and Necessity, issued by the Maryland Public Service Commission on June 2, 2014, Order No. 88565, Case No. 9318, as amended.

#### Natural Gas-Powered Pneumatic Devices

Pneumatic devices are used for maintaining a process condition such as liquid level, pressure, or temperature. As part of normal operations, natural gas-powered pneumatic devices release or bleed natural gas to the atmosphere. The Department is proposing a phase-out of all high bleed continuous natural gas-powered devices over. Additional requirements are summarized below:

- Beginning January 1, 2021, LDAR monitoring for all natural gas-powered pneumatic devices;
- Beginning January 1, 2022, continuous bleed natural gas-powered pneumatic devices cannot have a bleed rate greater than 6 standard cubic feet per hour; and
- Beginning January 1, 2023, continuous bleed natural gas-powered pneumatic devices shall be converted to electric or compressed air-powered devices.

The Department is proposing an exemption for continuous bleed natural gas-powered pneumatic devices with a low bleed rate that is needed for safety or operational purposes.

Furthermore, this action includes recordkeeping and reporting requirements to the Department.

#### Reciprocating Compressors

Reciprocating compressors are used to increase the pressure of the natural gas flowing through the transmission pipelines. Over time, rod packing systems within these reciprocating compressors can wear, resulting in leaking methane. Maryland's proposed rules provide two mitigation options for methane emissions from rod packing systems:

- Emissions from the rod packing shall be routed to a process or control device; or
- Rod packing flow rates shall be measured annually and rod packing systems with emissions greater than 1.0 standard cubic feet per minute (scfm) shall:
  - Be replaced; or
  - Measured every 6 months until the rod packing flow rate reaches 2 scfm, at which point the rod packing must be replaced.

Reciprocating compressor's fugitive emission components shall be subject to LDAR requirements. This action also includes recordkeeping and reporting requirements to the Department.

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#### Record Keeping and Reporting Requirements

An annual report is due to the Department on April 1<sup>st</sup> of each year, owners and operators can combine reporting sections together into one report for greenhouse gas reporting.

LDAR reports are due to the Department either quarterly or annually based on the regulatory section identified throughout Regulation .03.

- Quarterly LDAR reports are accepted from a 3<sup>rd</sup> party if the details are provided.
- The Department is requiring an LDAR summary be publicly posted after each monitoring survey.

#### Blowdown Events & Reporting

Blowdown events are common occurrences in which pressurized natural gas is released from stations, equipment, or pipelines into the atmosphere for maintenance and operational purposes. Maryland's rule requires owners and operators to notify the Department and the public whenever a blowdown activity with threshold of greater than 1.0 million cubic feet of methane will be released. Owners and operators will be required to record all blowdown events greater than 50 standard cubic feet and report annually. The following requirements apply to affected sources:

- Submit a public notification plan to the Department for approval;
- Notification of planned blowdowns in the excess of 1 million scf should be given at least 7 days prior to the start of the event;
- Notification of emergency blowdowns should be given within one hour of the start of the event; and
- Owners and operators shall calculate and submit to the Department annually the total methane emissions from all blowdown events.

#### Greenhouse Gas Emissions Reporting

Greenhouse gas emissions from the oil and natural gas industry account for approximately 20% of all greenhouse gas emissions in the United States. On October 20, 2009, the EPA published a rule for the mandatory reporting of greenhouse gases from oil and natural gas facilities that emit 25,000 metric tons or more of carbon dioxide equivalent per year. Oil and natural gas facilities that emit less than the 25,000 metric tons threshold were exempted from EPA's rules.

Maryland's proposed rule will require all facilities in the natural gas industry, regardless of their greenhouse gas emissions threshold, to report greenhouse gas emissions data to the Department. Natural gas facilities have the potential to emit greenhouse gases from a variety of sources, including fugitive emission components, stationary fuel combustion sources, and other site activities (i.e. blowdowns, maintenance, compressor startups, compressor shutdowns, etc.).

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Maryland's greenhouse gas emissions reporting requirements will require facilities to collect greenhouse gas data, calculate greenhouse gas emissions, and follow specified procedures for quality assurance, missing data, recordkeeping, and reporting. Maryland's requirements mirror EPA's Greenhouse Gas Reporting Program (40 CFR Part 98) to harmonize with federal rules and reduce regulatory burden.

#### Projected Emission Reductions

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MDE estimates the proposed regulations will minimize the release of methane emissions from the natural gas transmission and storage activities in the State. The proposed rule will minimize the release of methane emissions from existing sources in the range of 600 to 5,000 metric tons per year through leak surveys, replacement of leaking equipment and components and inspection practices.

Leak detection and repair (LDAR) surveys can produce varying results, but it is understood throughout the industry that technology is advancing to help minimize fugitive leaks. LDAR leads to reduced emissions, valuable product recovery and increased safety of operations. A leak survey is most effective when performed on a routine basis so as to capture the unknown nature of unintentional poor performance.

The Department has reviewed literature on the proposed impacts of a fugitive leak detection and repair program from EPA, California, environmental advocates and the industry. The potential emissions reductions, quoted in the EPA 2015 Regulatory Impact Analysis for the 2016 NSPS OOOOa, range from 40% – 80% depending on the frequency of surveys. Under California's rule-making for "Greenhouse Gas Emission Standards For Crude Oil And Natural Gas Facilities" finalized in 2017, CA assumes a 60% reduction in methane emissions due to quarterly LDAR. However they also note there can be a wide range of conditions that can disportion data from an average assumption. It is understood that the industry has skewed emissions distributions, where a small number of facilities can account for a large portion of emissions.

Vented methane emissions from reciprocating compressor engines and gas driven pneumatic devices will be reduced by equipment monitoring, repair and replacement. EPA Natural Gas STAR Program Partner Reported Opportunities (PROs) Fact Sheets and information from the equipment manufacturing industry estimate emissions reduction can be achieved up to 50%.

The operations at each specific station determine the yearly emissions at a facility. The Department has used existing federal reporting figures through the Greenhouse Gas Reporting Rule (40 CFR Part 98) and figures from the Department's annual emission certification reports to estimate methane reductions in Maryland. The Department has calculated a range of potential methane reductions per year. The Department assumed a range of 40% to 80% reduction from the proposed regulation applied to recently reported methane emissions.

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As the natural gas industry expands, any future sources in the production and transmission sector of the natural gas industry will be required to follow these state regulations, as well as federal rules. Advanced construction, maintenance and inspection practices will be utilized, and therefore large emission reductions will not be anticipated. Reporting is a key tool to understanding the emissions in the industry and the State. The documented mitigation strategies will be a tool to further analyze State and national inventories and industry emission factors.

Methane is a highly potent greenhouse gas that needs to be acted upon quickly because it is a short-lived climate pollutant (SLCP). Proposed methane reductions from this regulation can help to minimize greenhouse gases. Mitigation and adaptation measures help minimize losses to Maryland businesses and communities from climate risk such as severe weather events.

### Economic Impact on Affected Sources, the Department, other State Agencies, Local Government, other Industries or Trade Groups, the Public

The proposed regulation requires facilities in the natural gas industry to perform quarterly or annual leak surveys to identify and minimize unintentional fugitive emissions. The proposed regulation may require facilities to purchase, retrofit, and service capital equipment. Maryland estimates affected facilities will be required to spend, on average, in 2018 dollars, \$25,000 annually on leak surveys. Repairs and maintenance may be an additional cost; however, product loss will be decreased. Some capital investment may be required and can vary in cost depending on the sophistication of the engineering design and the age of existing equipment but are estimated to range from \$10,000 – \$100,000. Affected facilities are required to report to the Department however the LDAR survey includes reporting costs and the annual report harmonizes with the existing federal requirements therefore minimal expense for reporting were estimated.

MDE's mission is to protect and restore the environment for the health and wellbeing of all Marylanders. Working to mitigate and adapt to climate change are main components of this mission authorized by the GGRA. Marylanders are already witnessing firsthand the impacts of climate change, from more frequent, severe flooding that threatens the state's agricultural sector, to more powerful heat waves that put lives at risk. That's why the State's GGRA Plan to cut greenhouse gas emissions 40% by 2030, and Governor Hogan's commitment to develop a clean and renewable energy standard, are so important. Maryland has made great progress on reducing air pollution and greenhouse gas emissions, and adapting to the potential consequences of climate change while creating jobs and benefiting the economy. Comprehensive methane pollution regulation is a key part of making sure Maryland can continue to make progress and meet emission reduction goals.



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#### Economic Impact on Small Businesses

The proposed action has minimal or no economic impact on small businesses.

#### Comparison to Federal Standards

New sources, which are facilities built, modified, or reconstructed after September 18, 2015, are subject to federal 2016 NSPS OOOOa requirements. The proposed regulations require both new and existing facilities to monitor and reduce methane emissions. Therefore, the proposed regulations are more stringent than the federal standard. However, Maryland has tried to align requirements and reporting with the federal 2016 NSPS OOOOa whenever possible.

# Title 26

## DEPARTMENT OF THE ENVIRONMENT

### Subtitle 11 AIR QUALITY

#### Chapter 41 Control of Methane Emissions from the Natural Gas Industry

Authority: Environment Article, §§ 1-404, 2-103, 2-1202 and 2-1205, Annotated Code of Maryland

#### *All New Text*

##### **.01 Definitions.**

A. In this chapter, the following terms have the meanings indicated.

B. Terms Defined.

(1) "Affected facilities" means any one of the following facilities:

(a) Cove Point Liquefied Natural Gas Facility;

(b) Myersville Natural Gas Compressor Station;

(c) Accident Natural Gas Compressor Station and Storage;

(d) Rutledge Natural Gas Compressor Station;

(e) Ellicott City Natural Gas Compressor Station; and

(f) Any new, modified, or reconstructed natural gas compressor station, natural gas underground storage facility, or liquefied natural gas facility.

(2) "Audio, visual, olfactory inspection" means sensory monitoring to detect natural gas leaks utilizing a human ear, eyes, and nose.

(3) "Bubble test" means the alternative screening procedure as described at EPA Method 21 (40 CFR 60, Appendix A-7, Section 8.3.3)

(4) Blowdown.

(a) "Blowdown" means the release of pressurized natural gas from station, equipment, or pipelines into the atmosphere conducted with the intent to lower the pressure in a vessel or pipeline.

(b) "Blowdown" does not refer to natural gas pneumatics, fugitive components, or pressure seal leakage.

(5) "Component" means a valve, fitting, flange, threaded-connection, process drain, stuffing box, pressure-vacuum valve, pressure-relief device, pipes, seal fluid system, diaphragm, hatch, sight-glass, meter, open-ended line, well casing, natural gas powered pneumatic device, natural gas powered pneumatic pump, reciprocating compressor rod packing/seal, metal to metal joint or seal of non-welded connection separated by a compression gasket, screwed thread (with or without thread sealing compound), metal to metal compression, or fluid barrier through which natural gas or liquid can escape to the atmosphere.

(6) "Continuous bleed" means the continuous venting of natural gas from a gas powered pneumatic device to the atmosphere.

(7) "Difficult-to-monitor" means fugitive emissions components that cannot be monitored for natural gas leakage without the monitoring personnel needing specialized equipment to reach components above the grade.

(8) "Direct measurement" means use of high volume sampling, calibrated bagging, calibrated flow measuring instrument, or a temporary meter.

(9) "Fuel gas system" means components and equipment that collect and transfer natural gas to be used as a fuel source to on-site natural gas powered equipment other than a vapor control device.

(10) Fugitive Emissions Component.

(a) "Fugitive emission component" means any component that has the potential to emit fugitive emissions of natural gas, including but not limited to valves, connectors, pressure relief devices, open-ended lines, flanges, covers, vapor collection systems.

(b) "Fugitive emission component" does not include devices that vent as a part of normal operations, such as natural gas-driven pneumatic device, insofar as the natural gas discharged from the device's vent is not considered a fugitive emission.

(c) "Fugitive emission component" includes thief hatches or other openings on a storage vessel, compressor, instrument, natural-gas powered pneumatic device, or meter, that are not venting.

(11) "Intermittent bleed" means a pneumatic controller that is designed to vent non-continuously.

(12) "Leak or fugitive leak" means any visible emission from a fugitive emissions component observed by optical gas imaging or an instrument reading of 500 ppm or greater of methane using U.S. EPA Method 21 (40 CFR 60, Appendix A-7) or any emissions discovered from a fugitive emissions component observed using an auditory, visual or olfactory inspection.

(13) "Leak detection and repair" or "LDAR" means the inspection of fugitive emissions components to detect leaks of total methane and the repair of components with leaks above the standards specified in this chapter and within the timeframes specified in this chapter.

(14) "Liquefied natural gas" or "LNG" means natural gas or synthetic gas having methane as its major constituent which has been changed to a liquid.

(15) "LNG facility" means a pipeline facility that is used for liquefying natural gas or synthetic gas or transferring, storing, or vaporizing liquefied natural gas, and includes all components and stationary equipment within the fence-line.

(16) "Natural gas" means a naturally occurring mixture or process derivative of hydrocarbon and non-hydrocarbon gases, which has methane as its major constituent.

(17) "Natural gas compressor station" means all equipment and components located within a facility fence-line associated with moving natural gas from production fields or natural gas processing plants through natural gas transmission pipelines, or within natural gas storage fields.

(18) "Natural gas storage well" means a well located and used in a natural gas storage reservoir for injection or withdrawal purposes, or an observation well.

(19) "Natural gas underground storage" means all equipment and components associated with the temporary subsurface storage of natural gas in depleted crude oil or natural gas reservoirs or salt dome caverns, not including gas disposal wells.

(20) "Observation well" means a well used to monitor the operational integrity and conditions in a natural gas storage reservoir, the reservoir protective area, or strata above or below the gas storage horizon.

(21) "Optical gas imaging or OGI" means an instrument that makes emissions visible to the naked eye that may otherwise be invisible.

(22) "Pneumatic device" means an automation device that uses natural gas or compressed air to control a process.

(23) "Process gas system" means components and equipment that collect and transfer the natural gas to be used through the intended process of the facility, including storage, transmission, or liquefaction.

(24) "Reciprocating natural gas compressor" means equipment that increases the pressure of natural gas by positive displacement of a piston in a compression cylinder and is powered by an internal combustion engine or electric motor with a horsepower rating designated by the manufacturer.

(25) "Reciprocating natural gas compressor rod packing" means a seal comprising of a series of flexible rings in machined metal cups that fit around the reciprocating compressor piston rod to create a seal limiting the amount of compressed natural gas that leaks into the atmosphere.

(26) "Reciprocating natural gas compressor seal" means any device or mechanism used to limit the amount of natural gas that leaks from a compression cylinder into the atmosphere.

(27) "Successful repair" means tightening, adjusting, or replacing equipment or a component for the purpose of stopping or reducing fugitive leaks below the minimum leak threshold or emission flow rate standard specified in this chapter.

(28) "Unsafe-to-monitor" means fugitive emissions components that cannot be monitored for natural gas leakage because monitoring personnel would be exposed to immediate danger while conducting a monitoring survey.

(29) "Vapor collection system" means equipment and components installed on pressure vessels, separators, tanks, or sumps including piping, connections, reciprocating compressors, natural gas-powered pneumatic devices, and flow-inducing devices used to collect and route emission vapors to a processing gas, or fuel gas system; or to a vapor control device.

(30) "Vapor control device" means destructive or non-destructive equipment used to control otherwise vented emissions.

## **.02 Applicability.**

The provisions of this chapter apply to an affected facility as that term is defined in Regulation .01B of this chapter.

## **.03 Leak Detection and Repair Requirements.**

A. Affected facilities that are natural gas compressor stations or natural gas underground storage facilities, that use natural gas-powered equipment to compress natural gas, shall comply with the following leak detection and repair requirements.

(1) Owners and operators of affected facilities subject to this section shall develop and submit to the Department an initial methane emissions monitoring plan that includes a technique for determining fugitive emissions (e.g., EPA Method 21 at 40 CFR part 60, appendix A-7, or optical gas imaging).

(2) If an affected facility uses optical gas imaging for leak detection, the following information shall be included in the initial methane emissions monitoring plan:

- (a) A list of the unsafe-to-monitor components;
  - (b) Procedures and timeframes for identifying and repairing fugitive emissions components;
  - (c) A defined observation path throughout the site to confirm all components can be viewed and recorded; and
  - (d) Manufacturer and model number of fugitive emissions detection equipment to be used.
- (e) Equipment specifications and procedures as specified in 40 CFR §60.5397a (c)(7), as published in July 2017.

(3) If an affected facility uses EPA Method 21 (40 CFR 60, Appendix A-7) for leak detection, the following information shall be included in the initial methane emissions monitoring plan:

(a) A list of all fugitive emission components, difficult-to-monitor components, and unsafe-to-monitor components at an affected facility;

- (b) Procedures and timeframes for identifying and repairing fugitive emission components; and
- (c) Equipment specifications and procedures as specified in 40 CFR §60.5397a (c)(8), as published in July 2017.

(4) Each difficult-to-monitor and unsafe-to-monitor component shall be identified in the written initial methane monitoring plan explaining the location and why the fugitive emissions components are difficult-to-monitor and unsafe-to-monitor.

(5) Owners and operators of the affected facilities subject to this section shall submit the initial methane emissions monitoring plan required in §A(1)—(4) to the Department within 90 days of the adoption of this regulation.

(6) Owners and operators of affected facilities that modify or reconstruct a natural gas compressor station or underground storage facility shall submit an initial monitoring plan with the elements in §A(1)—(4) of this regulation within 90 days of the facility startup operation for each new collection of fugitive emissions components at the modified or reconstructed compressor station or underground storage facility.

(7) Except for unsafe-to-monitor components, owners or operators of affected facilities subject to this section shall conduct an audio, visual, and olfactory inspection of all fugitive emission components for leaks or indications of leaks at least once per calendar week.

(8) Leak Monitoring Survey.

(a) Owners and operators of affected facilities shall follow the initial monitoring methane plan and shall inspect all fugitive emission components, except for unsafe-to-monitor components, for leaks using OGI or EPA Method 21 within 180 days of the adoption of this regulation and quarterly thereafter.

(b) Owners and operators of affected facilities that install any new, modified, or reconstructed natural gas compressor station or underground storage facility that uses natural gas-powered equipment to compress natural gas shall meet the requirements of §A(8)(a) of this regulation within 180 days of the startup of the facility's operations.

(c) At least annually, all difficult-to-monitor fugitive emissions components shall be inspected for leaks using an OGI camera.

(9) Repair Requirements.

(a) Any leaking fugitive emissions component identified during a leak monitoring survey shall be successfully repaired, replaced, or removed from service as soon as practicable, but no later than 30 calendar days after leak detection.

(b) Each repaired or replaced fugitive emissions component shall be resurveyed within 30 days after being repaired or replaced using either OGI or EPA Method 21 (40 CFR 60, Appendix A-7).

(i) Owners and operators of facilities subject to this section that use EPA Method 21 (40 CFR 60, Appendix A-7) to resurvey the repaired or replaced fugitive emissions component shall consider the fugitive emissions component repaired when the EPA Method 21 (40 CFR 60, Appendix A-7) instrument indicates a concentration of less than 500 ppm of methane or when no soap bubbles are observed during a bubble test.

(ii) Owners and operators of affected facilities subject to this section that use OGI to resurvey the repaired or replaced fugitive emissions component shall consider the fugitive emissions component repaired when the OGI instrument shows no indication of visible emissions or when no soap bubbles are observed during a bubble test.

(c) A delay of repair may occur when, upon request, the owner or operator provides documentation to the Department that supports the following:

(i) The parts or equipment required to make necessary repairs will take longer than 30 days to be ordered and delivered, but said repair shall not exceed one year;

(ii) The repair is unsafe to perform during the operation of the unit; or

(iii) The repair requires a blowdown or facility shutdown in order to complete.

(d) Leaking fugitive emission components awaiting repair or replacement under a delay of repair shall be clearly marked or identified in the facility's records

(e) Leaking fugitive emission components under a delay of repair according to §A(9)(c)(i) of this regulation must:

(i) Be repaired or replaced within 7 days after the owner or operator receives parts or equipment; or

(ii) Be repaired or replaced at the next vent or compressor station blowdown if the owner or operator has identified this fugitive emission component as needing a vent or compressor station blowdown.

(f) Fugitive emission components under a delay of repair according to §A(9)(c)(ii) and (iii) of this regulation must be repaired or replaced within one year, at the next vent blowdown or facility shutdown, whichever occurs first.

(g) If a repair of a leak cannot be successfully completed according to this subsection, the owner or operator of the affected facility shall prepare a plan, for Department approval, that includes:

(i) An explanation of the technical difficulty;

(ii) A timeline to successfully repair the fugitive emission components;

(iii) A calculation of the additional methane that is expected to be released while on delay of repair; and

(iv) Upon written request from the Department, any other information that the Department determines is necessary to evaluate the plan.

(h) The owner or operator of the affected facility shall submit any plan required under §A(9)(g) of this regulation to the Department within 30 days from identifying the leak.

(10) Natural Gas Storage Field Inspections.

(a) Owners and operators of natural gas underground storage facilities shall inspect every natural gas storage well and observation well in the natural gas storage field at least once each month.

(b) For each inspection according to §A(10)(a), owners and operators shall record:

(i) The well-head pressure or water level measurement, as appropriate;

(ii) The open flow on the annulus of the production casing or the annulus pressure if the annulus is shut in;

(iii) A measurement of gas escaping the well if there is evidence of a gas leak; and

(iii) Evidence of progressive corrosion, rusting, or other signs of equipment deterioration.

(c) For each natural gas storage well with emissions that exceed 5,000 cubic feet per day, owners and operators shall:

- (i) Notify the Department within one business day of discovering the leak; and
- (ii) File a written report within 10 days which shall include an explanation of the problem and corrective action taken

or planned.

B. Affected facilities that are natural gas compressor stations and natural gas underground storage facilities, that exclusively use electric-powered equipment to compress natural gas, shall comply with the following leak detection and repair requirements.

(1) Owners and operators of facilities in this section shall meet the requirements of §A(1)— (6) and (9) of this regulation.

(2) Except for unsafe-to-monitor components, owners or operators of facilities in this section shall conduct an audio, visual, and olfactory inspection of all fugitive emission components for leaks or indications of leaks at least once per calendar month.

(3) Leak Monitoring Survey

(a) Except for unsafe-to-monitor components, owners and operators of affected facilities subject to this section shall inspect all fugitive emission components, including difficult-to-monitor components , for leaks using OGI or EPA Method 21 (40 CFR 60, Appendix A-7) within 180 days of the adoption of this regulation and annually thereafter.

(b) Owners and operators of affected facilities that install any new, modified, or reconstructed natural gas compressor station or underground storage facility that uses electric-powered equipment to compress natural gas shall meet the requirements of §B(3)(a) within 180 days of the startup of the facility's operations.

C. Cove Point Liquefied Natural Gas facility shall comply with:

(a) The leak detection and repair requirements as specified by the Climate Action Plan, which is defined, prepared, and approved under COMAR 26.09.02.06.B – E.; and

(b) The leak detection and repair plan defined and approved under the Certificate of Public Convenience and Necessity, issued by the Maryland Public Service Commission on June 2, 2014, Order No. 88565, Case No. 9318, as amended.

D. Any new liquefied natural gas facility that begins operations or repairs after the effective date of this chapter shall comply with §A of this regulation.

E. If an owner requests approval, the Department may approve a new technology or alternative practice to identify leaking fugitive emissions components as an equivalent substitution for the requirements in §§A or B of this regulation.

#### **.04 Natural Gas-Powered Pneumatic Devices Methane Emission Control Requirements.**

A. Beginning January 1, 2021, each continuous and intermittent bleed natural gas-powered pneumatic device shall comply with the leak detection and repair requirements specified in Regulation .03 of this chapter, as applicable, when the device is idle and not controlling.

B. Beginning January 1, 2022, continuous bleed natural gas-powered pneumatic devices shall not vent natural gas at a rate greater than six (6) standard cubic feet per hour.

C. Beginning January 1, 2023, each continuous bleed natural gas-powered pneumatic device shall use compressed air or electricity to operate unless an exemption is provided in §D of this regulation.

D. Exemption. Continuous bleed natural gas-powered pneumatic devices may be used if:

(1) The owner and operator collect all vented natural gas from the pneumatic device with the use of a vapor collection system according to Regulation .06 of this chapter; or

(2) The owner and operator submit justification for approval to the Department which demonstrates the need for the continuous bleed pneumatic device for safety or process purposes.

(a) Each continuous bleed pneumatic device that is approved for use shall be tagged with the month and year of installation, reconstruction, or modification and shall also have a permanent tag that identifies the natural gas flow rate as less than or equal to six (6) standard cubic feet per hour; and

(b) The owner and operator must:

(i) Inspect each continuous bleed pneumatic device on a monthly basis;

(ii) Perform necessary maintenance (including cleaning, tuning, and repairing leaking gaskets, tubing fittings, and seals; tuning to operate over a broader range of proportional band to eliminate unnecessary valve positioners);

(iii) Maintain the pneumatic device according to manufacturer specifications to ensure that the device's natural gas emissions are minimized;

(iv) By April 1<sup>st</sup>, test each pneumatic device annually using a direct measurement method (high volume sampling, bagging, calibrated flow measuring instrument); and

(v) Successfully repair any device with a measured emissions flow rate that exceeds six (6) standard cubic feet per hour within 14 calendar days from the date of the exceedance.

#### **.05 Reciprocating Natural Gas Compressor Methane Emission Control Requirements.**

A. All reciprocating natural gas compressor components at an affected facility shall comply with the leak detection and repair requirements in Regulation .03 of this chapter where applicable.

B. Control Measures for Reciprocating Natural Gas Compressor.

(1) Beginning January 1, 2021, compressor vent stacks used to vent rod packing/seal emissions shall be controlled with the use of a vapor collection system as specified in Regulation .06 of this chapter; or

(2) By April 1<sup>st</sup>, the reciprocating natural gas compressor rod packing/seal emission flow rate through the rod packing/seal vent stack shall be measured annually through direct measurement (high volume sampling, bagging, calibrated flow measuring instrument) while the compressor is operating at normal operating temperature.

(a) Direct measurements shall use one of the following methods:

- (i) Vent stacks shall be equipped with a meter or instrumentation to measure the rod packing or seal emissions flow rate; or
- (ii) Vent stacks shall be equipped with a clearly identified access port to measure individual or combined rod packing or seal emission flow rates.
- (b) If the measurement is not obtained because the compressor is not operating for the scheduled test date, testing shall be conducted within seven calendar days of resumed operation.
- (3) A reciprocating natural gas compressor with a rod packing/seal with a measured emission flow rate that exceeds 1.0 standard cubic feet per minute, or a combined rod packing or seal emission flow rate that exceeds the number of compression cylinders multiplied by 1.0 standard cubic feet per minute shall:
  - (a) Be successfully repaired or replaced within 30 calendar days from the date of the exceedance; or
  - (b) Conduct natural gas compressor rod packing/seal emission flow rate measurements every 6 months or when the compressor resumes operation, whichever is later.
- (4) A reciprocating natural gas compressor with a measured emission flow rate that exceeds 2.0 standard cubic feet per minute, or a combined rod packing or seal emission flow rate that exceeds the number of compression cylinders multiplied by 2.0 standard cubic feet per minute, shall be successfully repaired or replaced within 30 calendar days from the date of the exceedance.

C. Delay of Repair for Reciprocating Natural Gas Compressor.

- (1) A delay of repair may occur provided the owner or operator provides documentation, upon request from the Department, that the delivery of parts or equipment required to make necessary repairs will take more than 30 days from the last emission flow rate measurement and that the parts have been ordered.
- (2) A delay of repair to obtain parts or equipment shall not exceed 60 days from the date of the last emission flow rate measurement unless the owner or operator notifies the Department, in writing, of the extended delay and provides an estimated time by which the repairs will be completed.
- (3) A reciprocating natural gas compressor with a rod packing/seal emission flow rate measured above the standard specified in §B(2) of this regulation, and which has leaking parts deemed unsafe to monitor or requiring a facility shutdown, shall be successfully repaired by the end of the next planned process shutdown or within 12 months from the date of the flow rate measurement, whichever is sooner.

**.06 Vapor Collection System and Vapor Control Devices.**

- A. Owners or operators of affected facilities that utilize vapor collection systems and vapor control device to comply with this chapter shall follow the requirements as specified in §§B and C of this regulation.
- B. If a vapor collection system does not route all gases, vapors, and fumes to either a process gas system or a fuel gas system, beginning January 1, 2021, a vapor control device shall be installed which meets the requirements of §E of this regulation.
- C. The vapor collection system shall have no detectable emissions, as determined using auditory, visual, and olfactory inspections as specified in Regulation .03A(7) of this chapter.
- D. The vapor collection system shall comply with the leak monitoring survey and repair requirements as specified in Regulation .03 of this chapter, where applicable.
- E. Vapor control devices shall meet one of the following requirements:
  - (1) A non-destructive vapor control device manufacturer-designed to achieve at least 95 percent vapor control efficiency of methane emissions and shall not result in emissions of nitrogen oxides (NOx); or,
  - (2) A destructive vapor control device manufacturer-designed to achieve at least 95 percent vapor control efficiency of methane emissions and not more than 15 parts per million volume (ppmv) NOx when measured at 3 percent oxygen; and does not require the use of supplemental fuel gas, other than gas required for a pilot burner, to operate.

**.07 Record Keeping and Reporting Requirements**

- A. Owners or operators of affected facilities shall maintain, submit as described in this section, and make available upon request by the Department a copy of records necessary to verify compliance with the provisions of this chapter.
  - (1) For each leak monitoring survey and audio, visual, olfactory inspection conducted according to Regulation .03 of this chapter, owners and operators shall:
    - (a) Submit a report to the Department within 60 days of each leak monitoring survey with the following information:
      - (i) Date of the survey;
      - (i) A list of each fugitive emission and repair;
      - (ii) Any deviations from the initial methane monitoring plan or a statement that there were no deviations from the initial methane monitoring plan;
      - (iii) Number and type of components for which fugitive emissions were detected;
      - (iv) Number and type of difficult-to-monitor fugitive emission components monitored;
      - (v) Instrument reading of each fugitive emissions component that requires repair when EPA Method 21 (40 CFR 60, Appendix A-7) is used for monitoring;
      - (vi) Number and type of fugitive emissions components that were not repaired;
      - (vii) Number and type of fugitive emission components placed on delay of repair and explanation for each delay of repair;
      - (viii) The date of successful repair of the fugitive emissions component; and

(ix) Instrumentation used to resurvey a repaired fugitive emissions component that could not be repaired during the initial fugitive emissions finding.

(b) Maintain, for a minimum of five (5) years, record of each leak monitoring survey along with the following information:

(i) Reports submitted according to §A(1)(a) of this regulation;

(ii) Beginning and end time of the survey;

(iii) Name of operator(s) performing survey;

(iv) Monitoring instrument used including the manufacturer, model number, serial number, and calibration documentation;

(v) When optical gas imaging is used to perform the survey, one or more digital photographs or videos, captured from the optical gas imaging instrument used for conduct of monitoring, of each required monitoring survey being performed;

(vi) Fugitive emissions component identification when EPA Method 21 (40 CFR 60, Appendix A-7) is used to perform the monitoring survey;

(vii) Ambient temperature, sky conditions, and maximum wind speed at the time of the survey;

(viii) Any deviations from the initial methane monitoring plan or a statement that there were no deviations from the initial methane monitoring plan;

(ix) Proof that parts or equipment required to make necessary repairs, as required by this chapter, have been ordered;

(x) If a fugitive emissions component is not tagged, a digital photograph or video of each fugitive emissions component that could not be repaired during the leak monitoring survey at the time the fugitive emissions were initially found; and

(xi) Repair methods applied in each attempt to repair the fugitive emissions components;

(c) Post a quarterly report summary to a publicly available website of each leak monitoring survey, including the information required in §A(1)(a) of this regulation, 60 days after the leak monitoring survey.

(d) Maintain records of audio, visual, and olfactory inspections for at least five (5) years from the date of inspection.

(2) For each natural gas-powered continuous bleed pneumatic device, owners and operators shall:

(a) Maintain a record of the emission flow rate measurement and report annually beginning April 1, 2021 for at least five (5) years from the date of each emissions flow rate measurement;

(b) Maintain records of the date, location and manufacturer specifications for each continuous bleed pneumatic device constructed, modified or reconstructed and report annually beginning April 1, 2021;

(c) Maintain records of the manufacturer's specifications indicating that the device is designed such that natural gas bleed rate is less than or equal to 6 standard cubic feet per hour, if applicable;

(d) Maintain records of deviations in cases where the pneumatic device was not operated in compliance with the requirements specified in Regulation .04 of this chapter and report annually beginning April 1, 2021;

(e) Maintain purchase orders, work orders, or any in-house or third-party reports produced or provided to the affected facility relating to the device for at least five (5) years; and

(f) Maintain, record of each continuous bleed pneumatic inspection and any corrective or maintenance action taken for at least five (5) years.

(3) For each reciprocating natural gas compressor, owners and operators shall:

(a) Maintain a record of each rod packing leak concentration measurement found above the minimum leak threshold and report annually beginning April 1, 2021 for at least five (5) years from the date of each leak concentration measurement;

(b) Maintain a record of each rod packing or seal emission flow rate measurement and report annually beginning April 1, 2021 for at least five (5) years from the date of each emissions flow rate measurement;

(c) Maintain a record that documents the date(s) and hours of operation a compressor is operated in order to demonstrate compliance with the rod packing leak concentration or emission flow rate measurement in the event that the compressor is not operating during a scheduled inspection for at least one calendar year;

(d) Maintain records that provide proof that parts or equipment required to make necessary repairs required by this chapter have been ordered;

(e) Report annually the cumulative number of hours of operation or the number of months since initial startup or the previous reciprocating compressor rod packing replacement, whichever is later, beginning April 1, 2021;

(f) If applicable, submit a statement that emissions from the rod packing are being routed to applicable vapor control system under Regulation .06 of this chapter;

(g) Report records of deviations from of this chapter that occurred during the reporting period annually beginning April 1, 2021; and

(h) Maintain a record of purchase orders, work orders, or any in-house or third-party reports produced or provided to the affected facility necessary to demonstrate compliance with the delay of repair provisions of this regulation for at least five (5) years.

#### B. Blowdown Events and Reports.

(1) Within 90 days of the effective date of this regulation, affected facilities shall submit a blowdown notification plan to the Department for approval of any blowdown event in excess of one million standard cubic feet.

(2) The blowdown notification plan according to §B(1) of this regulation shall include:

(a) The notification format (e.g. website, e-mail, robocall, text message, social media announcement) to local authorities, the Department, and interested parties for blowdown emissions in excess of one million standard cubic feet;

(b) A public outreach plan to inform interested parties of the availability to be notified of blowdown events in excess of one million standard cubic feet;

(c) The affected facility's responsible personnel for blowdown notifications; and

(d) A sitemap of the facility with clearly marked designated area(s) for blowdown emissions in excess of one million standard cubic feet;

(3) For any blowdown event in excess of one million standard cubic feet affected facilities shall make information publicly available in accordance with the facility's approved blowdown notification plan, including notification to the Department, at least seven (7) days prior.

(4) For any blowdown event in excess of one million standard cubic feet that is scheduled less than seven (7) days prior to the blowdown event, affected facilities shall, as soon as practicable:

(a) Make information publicly available in accordance with the facility's approved blowdown notification plan; and

(b) Provide an explanation to the Department of the reason for the blowdown event.

(5) For any emergency or unplanned blowdown event in excess of one million standard cubic feet, affected facilities shall make information publicly available in accordance with the facility's approved blowdown notification plan and notify the Department within one hour of the emergency or unplanned blowdown event.

(6) When safety concerns preclude a facility from providing prior notification of an emergency or unplanned blowdown under §B(5) of this regulation, the facility shall send notice to the Department within 24 hours indicating the reason(s) why prior notice was not possible.

(7) Affected facilities shall report the following information to the Department of blowdown emissions in excess of 50 standard cubic feet within the facility's fence-line annually by April 1 of each year:

(a) Date and type (i.e. planned or emergency) of each blowdown event;

(b) Methane emissions in metric tons released from each blowdown event; and

(c) Annual methane emissions in metric tons from all blowdown events.

(8) Methane emissions shall be calculated according to procedures in 40 CFR Part 98 Subpart W §98.233.

#### C. Greenhouse Gas Emissions Reporting.

(1) Owners and operators of affected facilities shall report methane, carbon dioxide, and nitrous oxide mass emissions to the Department annually by April 1 of each year.

(2) Owners and operators of affected facilities shall follow the procedures for emission calculation, monitoring, quality assurance, missing data, recordkeeping, and reporting that are specified in 40 CFR Part 98 Subpart C and 40 CFR Part 98 Subpart W.

(3) When reporting to the Department, Owners and operators of affected facilities shall expand the fugitive emissions reporting requirements of 40 CFR Part 98 Subpart W to include a Microsoft Excel format list providing calculations summarized by category under 40 CFR §98.232(e) – (h) as applicable.

(4) The reporting threshold in 40 CFR §98.2, §98.31 and §98.231 of 25,000 metric tons of CO<sub>2</sub> equivalent does not exempt an affected facility from following the requirements in §C(1) and (2) of this regulation.

D. All required reports shall be submitted to the Industrial Compliance Division in written or electronic format:

Maryland Department of the Environment  
Air Quality Compliance Program  
1800 Washington Boulevard, 7<sup>th</sup> floor  
Baltimore MD 21230  
Attention: Industrial Compliance Division