



Maryland
Department of
the Environment

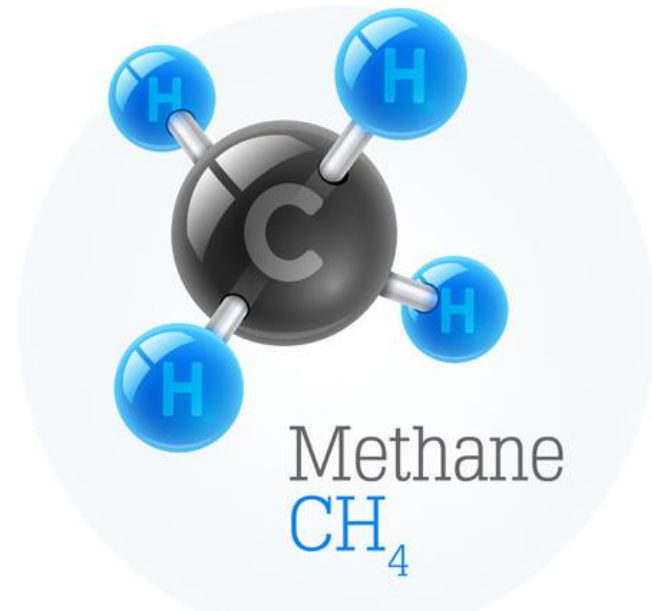
Minimizing Methane Emissions from Natural Gas Compressor Stations and other Related Equipment





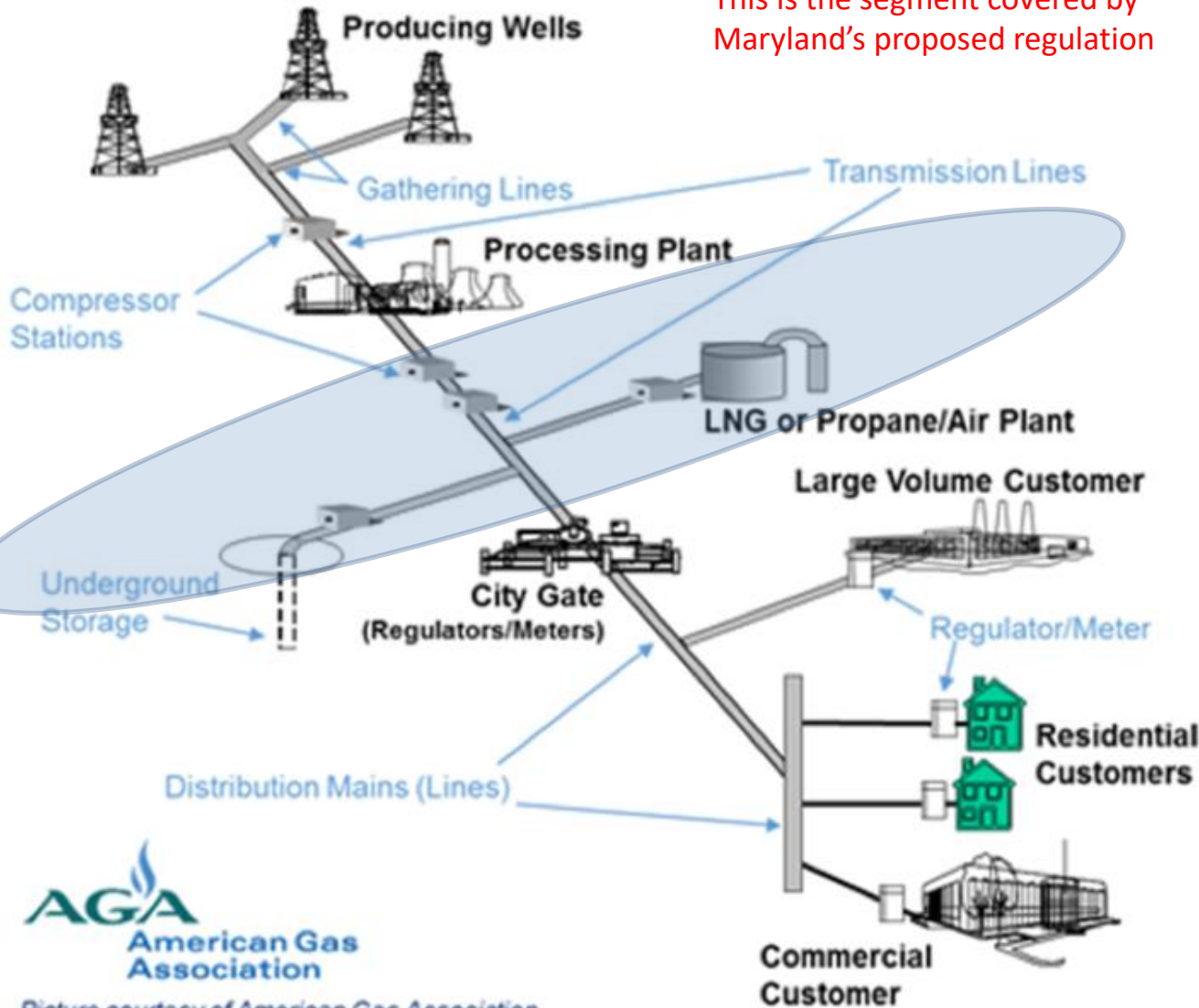
Presentation Outline

- Overview of Oil and Natural Gas Industry
- Federal New Source Performance Standards (NSPS)
- Proposed Regulatory Requirements
- Discussion/Questions



Oil and Natural Gas Industry in General

This is the segment covered by Maryland's proposed regulation



Production

- Pneumatic Controllers
- Gathering/Boosting Stations
- Tanks
- Chemical Injection Pumps

Gathering and Processing

- Reciprocating Compressors
- Centrifugal Compressors
- Gas Engines
- Blowdowns/Venting

Transmission

- Reciprocating Compressors
- Station Fugitives
- Engines
- Pipelines

Distribution

- Mishaps (Dig-ins)
- Residential
- Mains - Unprotected Steel
- Services - Unprotected Steel

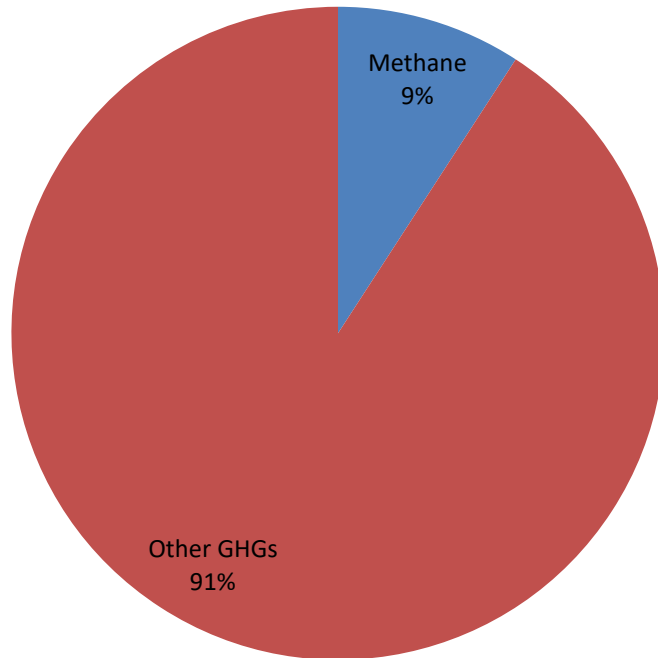


Picture courtesy of American Gas Association

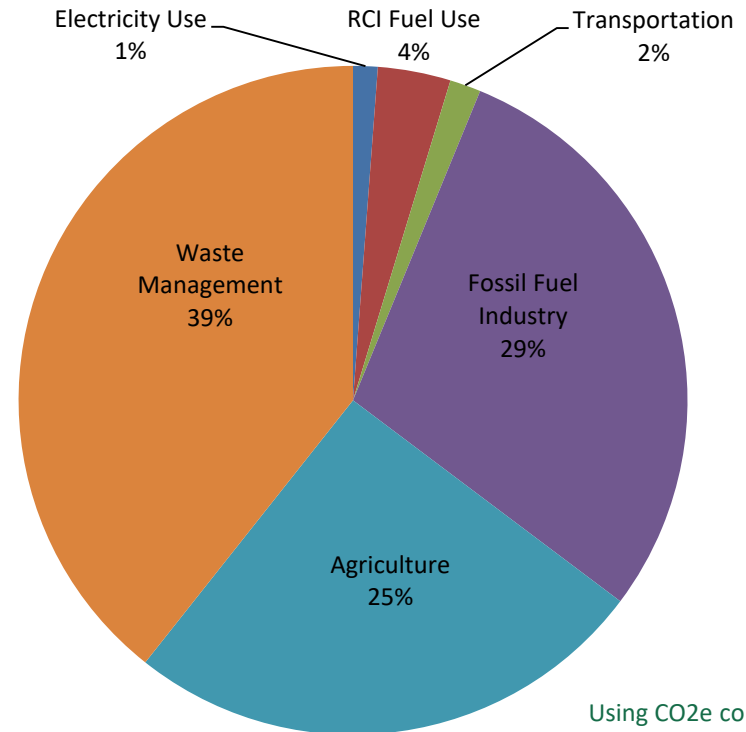


Methane Emissions in Maryland

All GHGs (2017)



Methane Breakdown (2017)

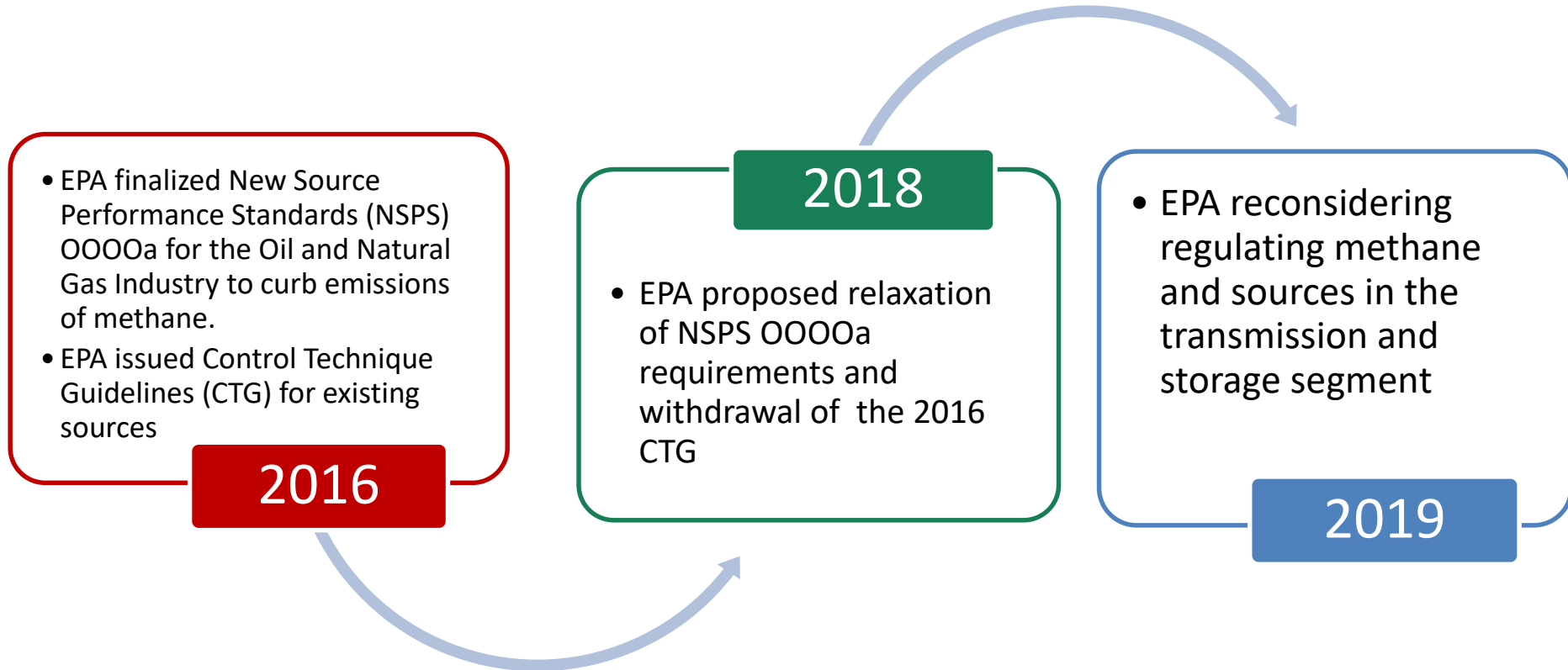


Using CO₂e conversion of 86 GWP at 20 year

- Fossil fuel industry methane emissions comprise of emissions in the transmission and storage segment and the distribution segment.



Shifting EPA Requirements



- Maryland working with other states to challenge more recent relaxations
 - Reducing methane is not just a Maryland issue



MDE's Stakeholder Process

MEETING 1 – June 29, 2017

Overview of the Natural Gas Industry



MEETING 2 – July 10, 2018

Regulatory and Voluntary Concepts - General



MEETING 3 – March 8, 2019

Regulatory and Voluntary Concepts - Specifics



MEETING 4 – June 28, 2019

Summary and Discussion of “Discussion Draft” of Regulation



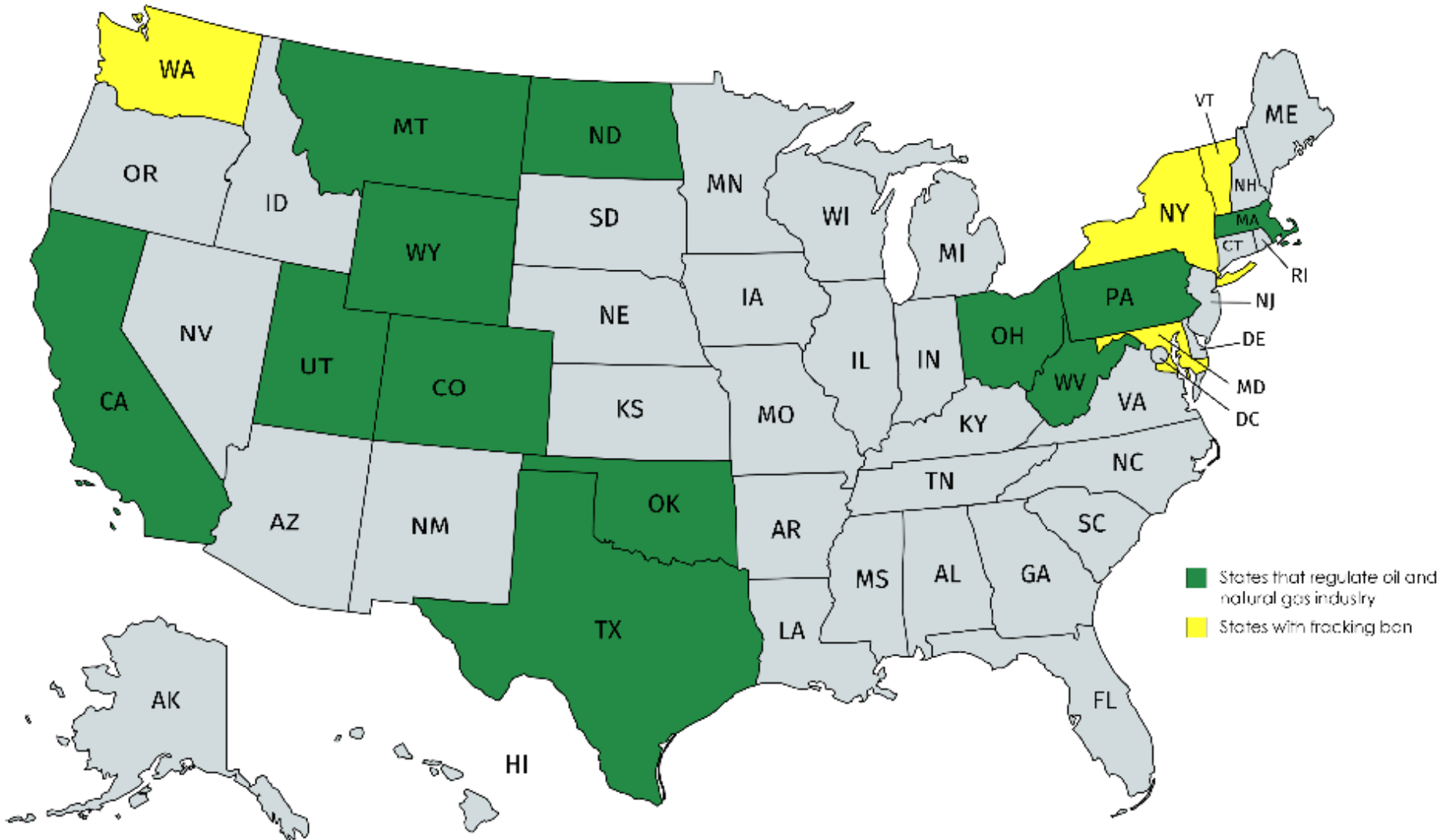
MEETING 5 – October 11, 2019

Responded to comments received and presented updated “Discussion Draft”

- MDE has also been meeting with affected businesses, communities, environmental advocacy groups and other stakeholders in 1-on1 meetings or calls since 2017



Other State Programs



USCA also has working group on this issue

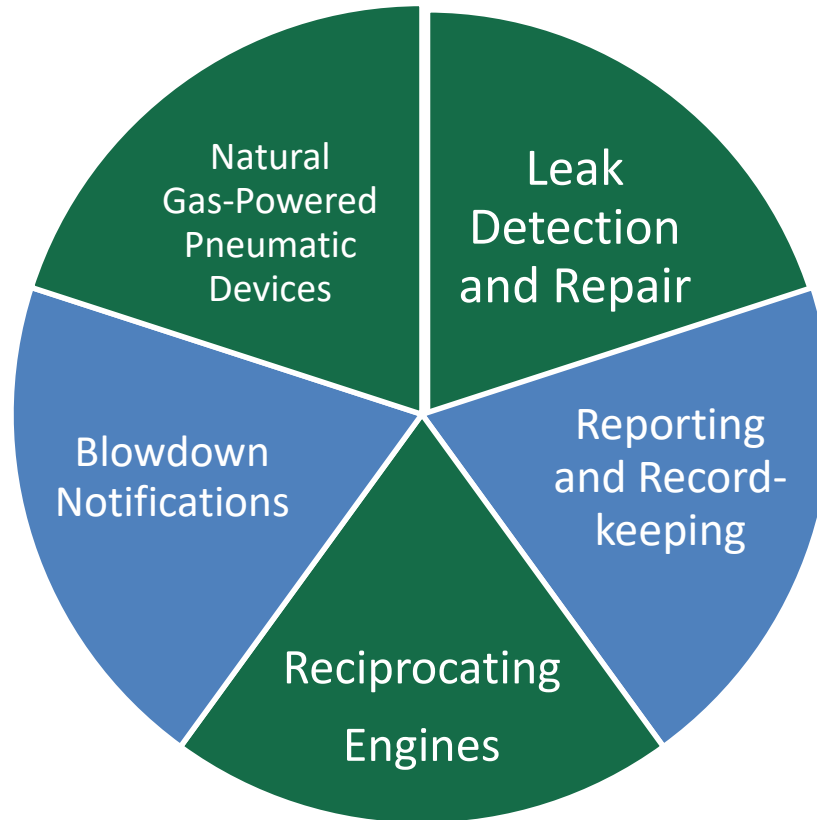
A bright sun is positioned in the upper right quadrant of the image, casting a strong glow and creating a lens flare effect. The sky is a deep, clear blue, and several large, fluffy white cumulus clouds are scattered across the scene, particularly in the middle and lower portions. The overall atmosphere is bright and clear.

PROPOSED REGULATORY REQUIREMENTS



Overview of Requirements

Proposed Regulatory Requirements



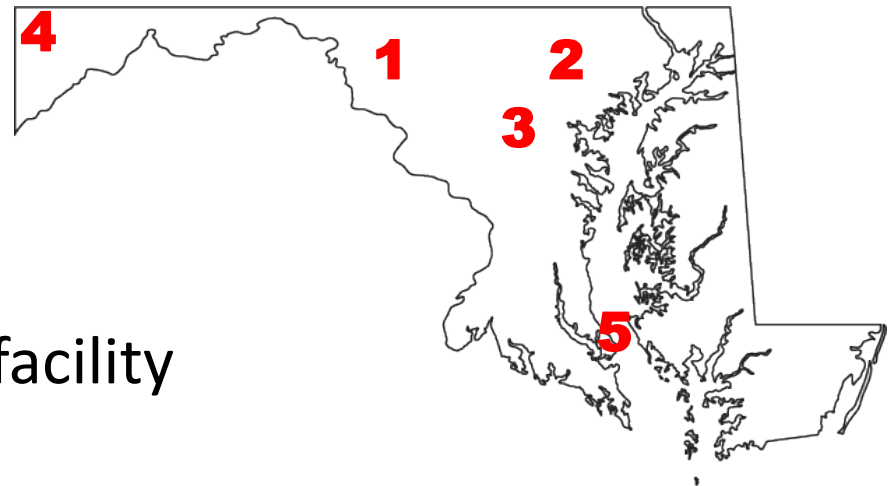
- Built from 2016 NSPS OOOOa, and leading states with methane reduction programs such as Colorado and California



Applicability

- Existing and “Any new, modified, or reconstructed natural gas compressor station, natural gas underground storage facility, or liquefied natural gas facility.”
- Four compressor stations
 1. Dominion, Myersville
 2. TC Energy, Rutledge
 3. Transco, Ellicott City
 4. Texas Eastern, Accident
- One underground storage facility
 - Texas Eastern, Accident
- One import and liquefaction/export facility
 5. Dominion, Cove Point

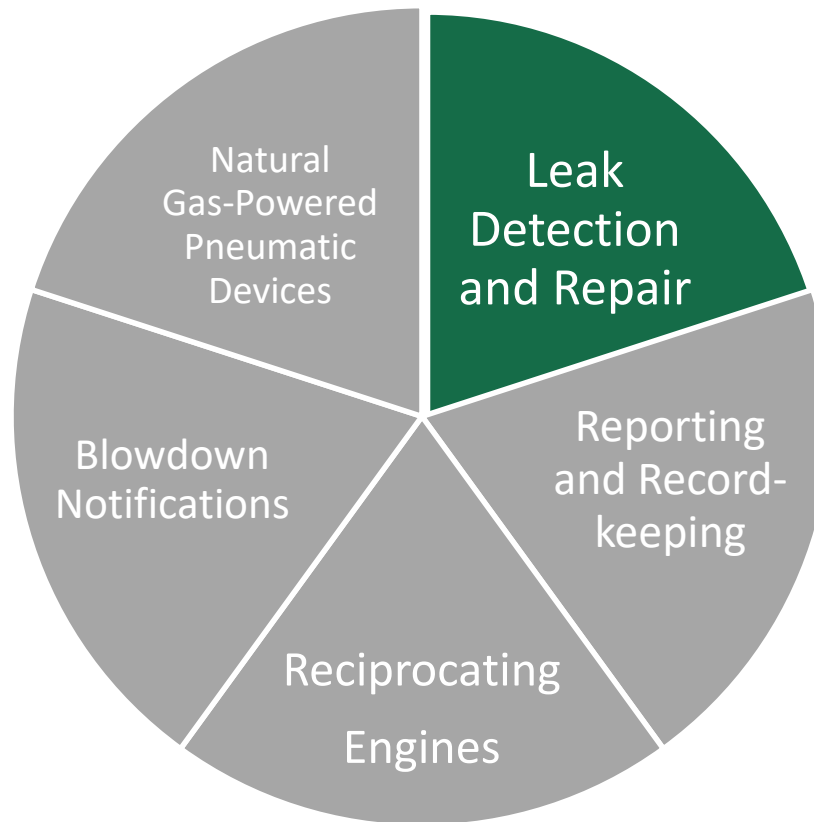
Existing facilities location





Overview of Requirements

Proposed Regulatory Requirements





Leak Detection & Repair (LDAR): Summary of Requirements

Reg .03 (pgs. 2-4)

- Facilities to submit initial methane emissions monitoring plan within 90 days of regulation adoption - §A(5)
 - Procedures, equipment and observation path
 - Unsafe-to-monitor (UTM) and difficult-to-monitor (DTM) components with explanation
- First LDAR monitoring survey due within 180 days of effective date of regulation. - §A(8)(a)
 - Within 180 days at the startup of new facility
- Quarterly monitoring survey using Optical Gas Imaging (OGI) or Method 21 - §A(8)(a)
 - Exception for electric engines (monthly AVO, annual LDAR inspections) - §.03(B)
 - LNG specific requirements: Climate Action Plan and Maryland's Public Service Commission Certificate of Convenience and Public Necessity (CPCN) LDAR requirements - §.03(C)
- Weekly Audio/Visual/Olfactory (AVO) Inspections - §A(7)
 - **Natural Gas Storage field specific requirements §A(10)**



Leak Detection & Repair (LDAR): Summary of Requirements

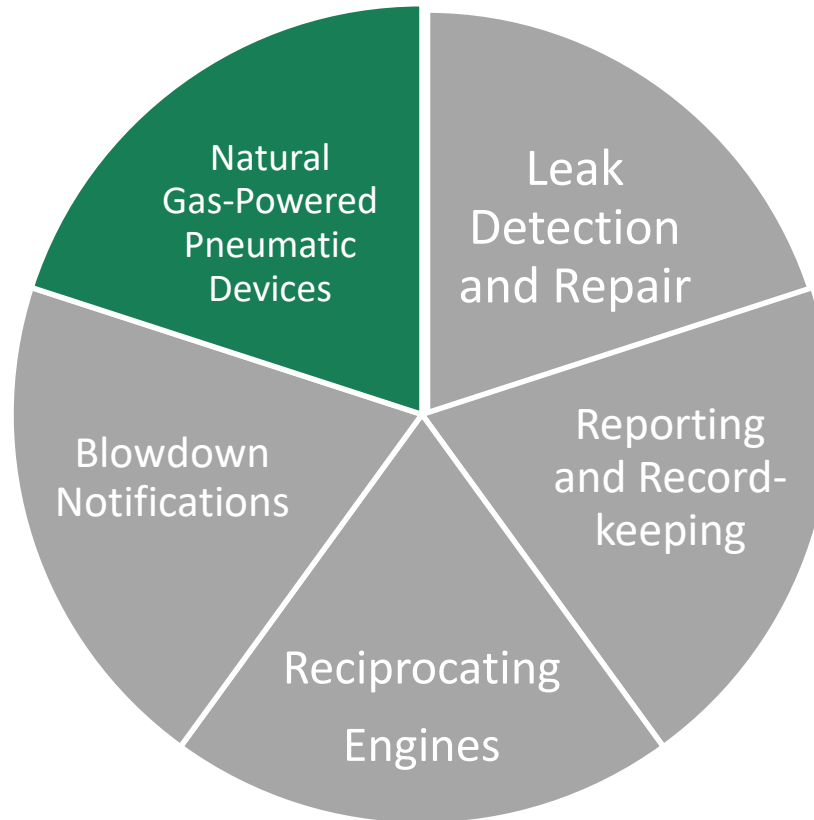
Reg .03 (pg. 3) – Repair Requirements

- Repairs should be made and confirmed within 30 days of discovering a leak
- Delay of Repair (DOR) provisions for documentation showing:
 - Repair will take longer than 30 days due to need of specialty part
 - Repair requires a vent or station blowdown
 - Repair is unsafe to repair due to the operation of unit
 - Repair can not be successfully completed due to technical issue, will require a plan to be approved by the Department



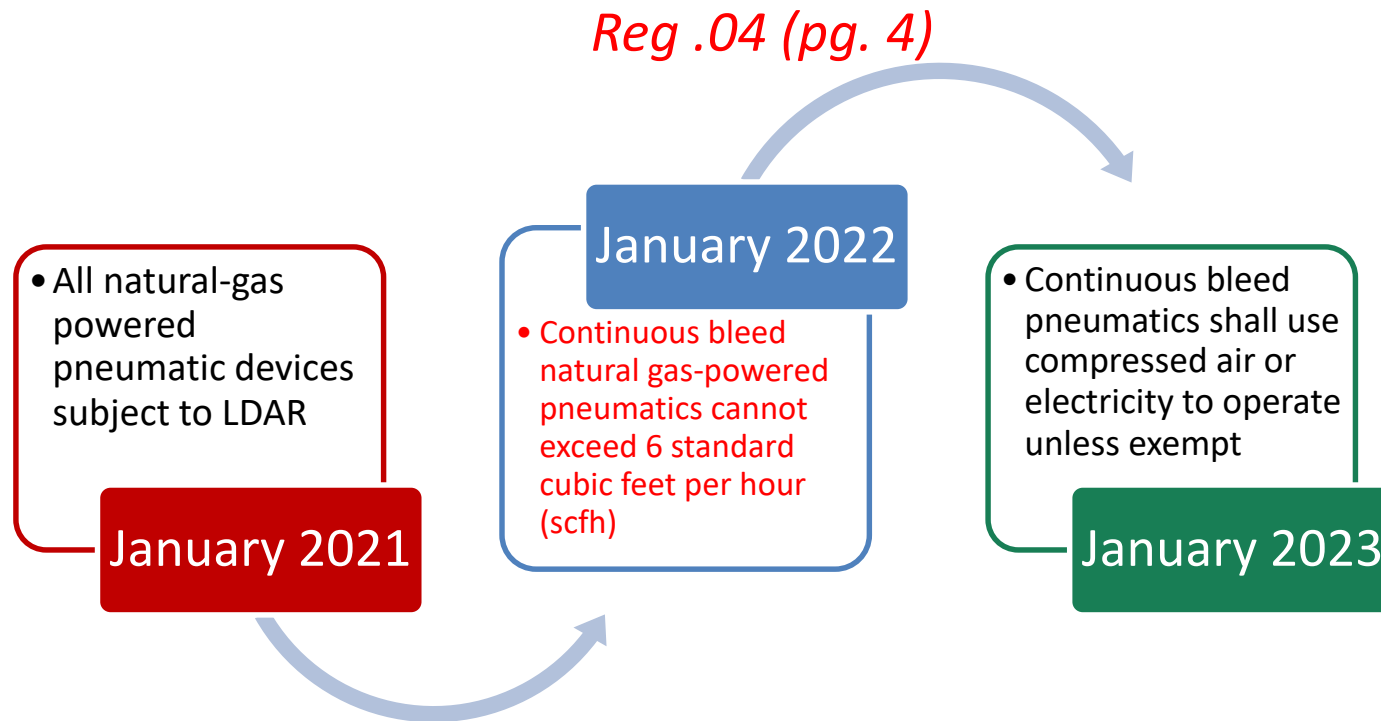
Overview of Requirements

Proposed Regulatory Requirements





Pneumatic Devices: Summary of Requirements

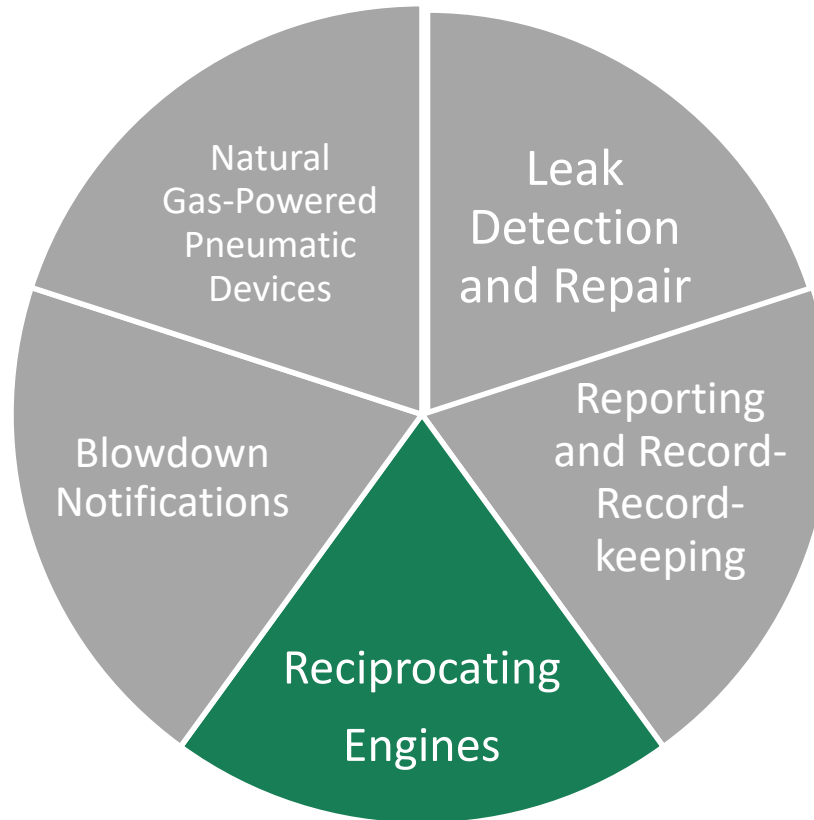


- Additional requirements for exempt continuous bleed natural gas-powered devices - §D(1):
 1. Use a vapor collection system; or
 2. Tag device, inspect monthly, and perform maintenance



Overview of Requirements

Proposed Regulatory Requirements





Reciprocating Engines: Summary of Requirements

Reg .05 (pg. 4-5)

- Subject to LDAR - §A
- Two mitigation options:
 1. Vented gas is routed to a vapor control device - §B(1); OR
 2. Rod packing flow rate required to be measured annually and if exceeds emission threshold of 1 scfm:
 1. Replace rod packing; or
 2. Measure rod packing flow rate every six months until rod packing reaches 2 scfm, then replace within 30 days



Reciprocating Engines: Rod Packing Replacement Schedule

Manufacturer Rod Packing Replacement Guidelines*

Condition	Rod packing flow rate (scfm)
Past Normal lubed packing, New	0.2 – 0.5
Past Non-lube Packing, New	0.5 – 1.0
Past Normal lubed packing, Partially Worn	1.0 – 2.0
Recommended Alarm Set point	2.0 – 3.0
Recommended Shutdown Set point	4.0 – 5.0

- The Department also reviewed information used to establish California standard (2 scfm) and Canada standard (0.81 scfm).

* November 7, 2019 e-mail from Cook Compression



Vapor Collection System: Summary of Requirements

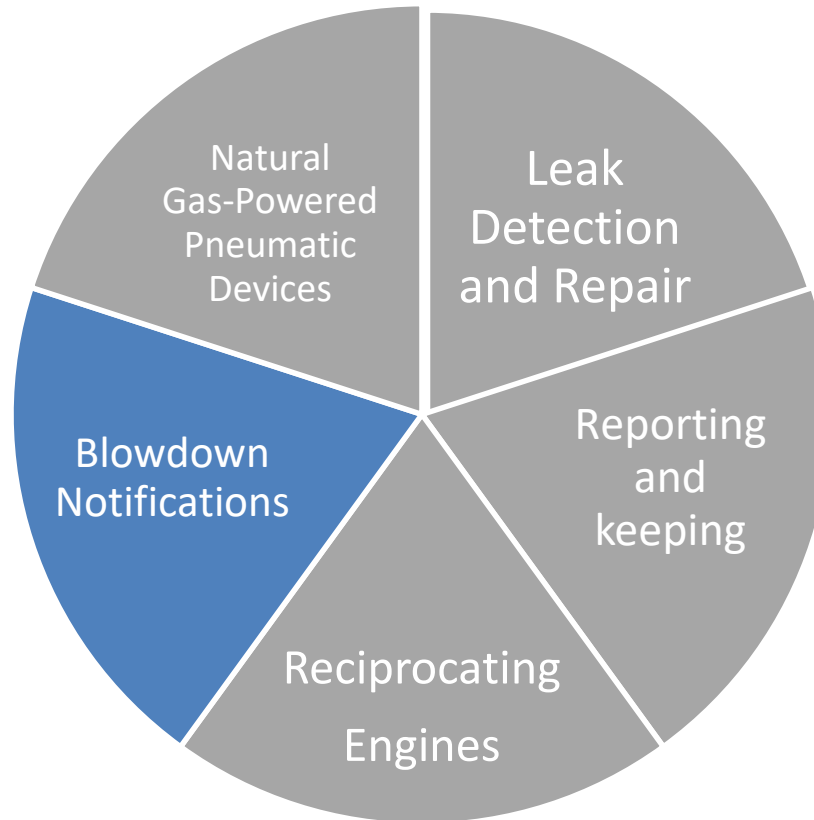
Reg .06 (pg. 5)

- All gases collected with a VCS shall route all gases, vapors and fumes to:
 - Process gas system;
 - Fuel gas system; or
 - Vapor control device (VCD)
- VCS subject to LDAR and AVO inspections - §§ C and D
- VCD standards for destructive and non-destructive types - §E



Overview of Requirements

Proposed Regulatory Requirements





Blowdowns: Summary of Requirements

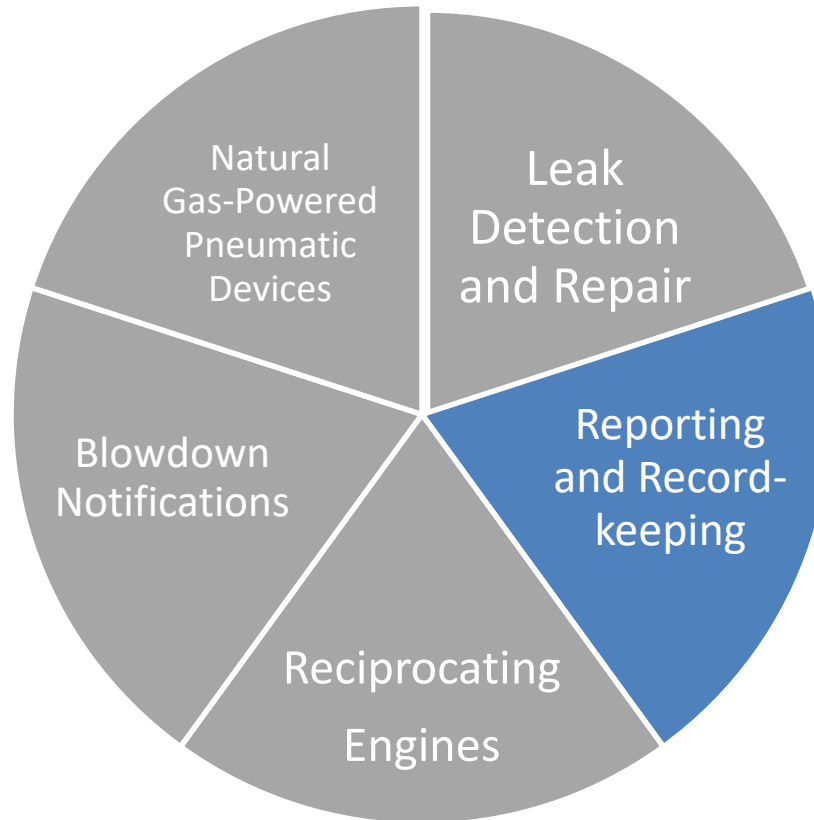
Reg .07 (pg. 6-7)

- Affected facilities shall submit **blowdown notification plan** to the Department for blowdown events in the excess of 1 million standard cubic feet (scf). Plans shall include:
 - Notification format (e.g. website, e-mail, text message, social media announcement)
 - Public outreach plan
- Affected facilities shall notify the Department and make blowdown information publicly available at least 7 days prior to any planned blowdown event. Any planned blowdown less than 7 days before event should be explained
 - Emergency blowdowns notification within one hour of occurrence, if possible
- All blowdown events within the facility fence-line that is greater than 50 scf shall be reported to MDE annually
 - Reporting format similar to EPA's Greenhouse Gas Reporting Program.



Overview of Requirements

Proposed Regulatory Requirements





Reporting and Recordkeeping: Summary of Requirements

Reg .07 (pg. 5)

- LDAR report summary to be publicly posted on company website and submitted to the Department
- LDAR is part of the annual GHG reporting
- DOR records on-site unless requested
- Recordkeeping requirements



GHG Reporting: Summary of Requirements

Reg .07 (pg. 7)

- All facilities, regardless of the size of GHG emissions, will be required to report their GHG emissions to the Department annually - §§ C(1) and (3)
- MDE's reporting requirements, calculation methodology, and procedures mirror EPA's Greenhouse Gas Reporting Program - § C(2)
- Maryland reporting requirement will harmonize reporting with federal rule with modification
 - Facilities will be required to provide back-up calculation details



Tentative Schedule

- Air Quality Control Advisory Council: Today
- Proposed Regulation in the Maryland Register: May 2020
- Public Hearing and final comment period: June 2020
- Rule Adoption and Effective: Fall 2020



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QUESTIONS AND DISCUSSION