



**Maryland**  
Department of  
the Environment

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



Tad Aburn and Joshua Shodeinde, MDE - Stakeholder Meeting # 5 - October 11, 2019



## Today's Meeting

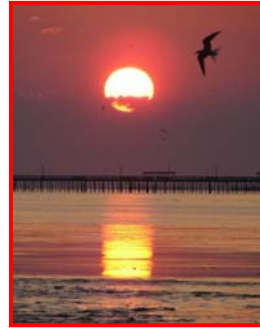
- We will focus mainly on comments received on discussion draft regulation
  - Priority to finalize regulation
  - Aiming for December 16<sup>th</sup> Air Quality Control Advisory Council (AQCAC)
- There will also be an update provided on voluntary program
- Different webinar format. Online participants will need to “raise hand” for comments and questions



## Presentation Outline

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- A Little Background for New Participants
- Comments Received/Addressed
- Draft Regulatory Requirements
- Discussion/Comments
- Next Steps





## Why is MDE Pushing this Issue

- Maryland has one of the country’s most aggressive programs to address climate change
- Methane is a highly potent greenhouse gas that needs to be acted upon quickly because it is a short-lived climate pollutant (SLCP)
- Leaking methane has been identified by researchers and regulators as a major issue that needs to be addressed
  - Reducing in-state methane leakage is a high priority

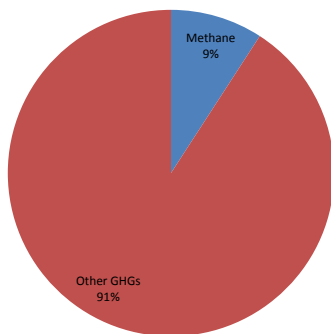


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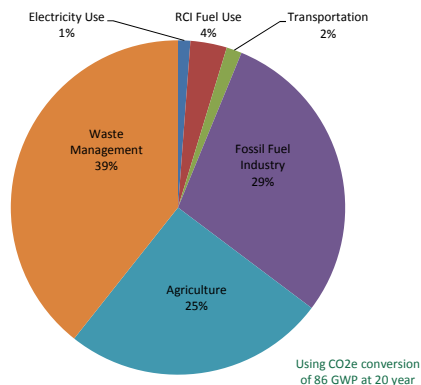


## Methane Emissions in Maryland

All GHGs (2017)

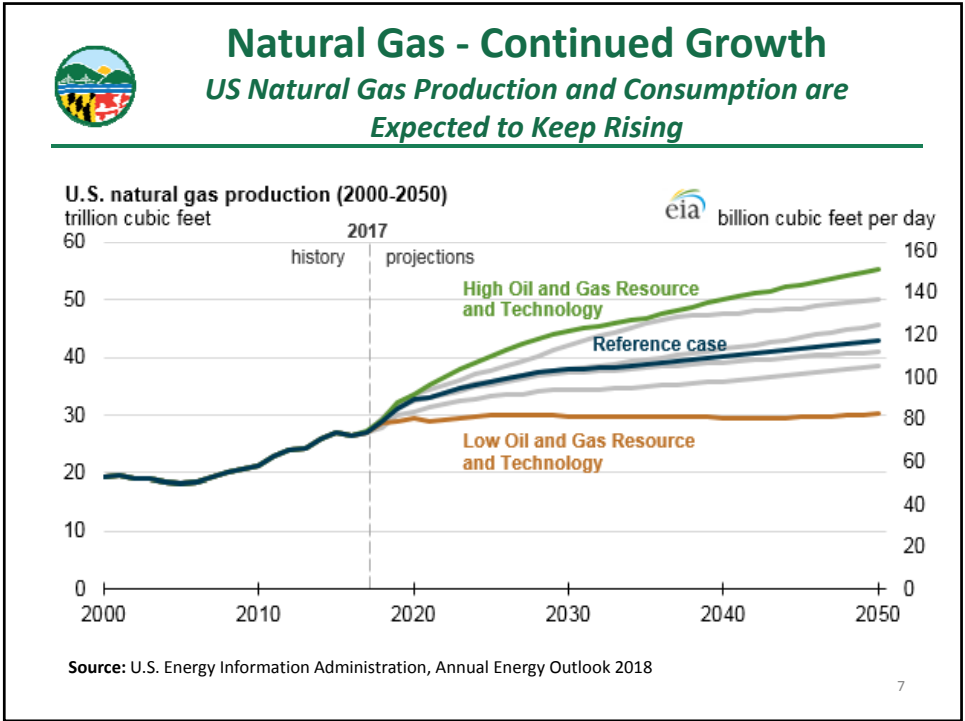


Methane Breakdown (2017)



- MDE is also working on regulations to reduce leaking methane from landfills and wastewater treatment plants

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- ## Maryland's Climate Focus
- Greenhouse Gas Emission Reduction Act (GGRA)
    - 2009 aggressive reduction from 2006 baseline
    - 25 % Greenhouse Gas (GHG) Emission reduction by 2020
    - 2009 law reauthorized in 2016 ... new goals added
    - 40 % GHG reduction by 2030
  - Maryland Commission on Climate Change (MCCC)
    - Basic charge of the Commission: *Provide recommendations on how to reduce GHG emissions and adapt to the impacts of climate change, while considering economic impacts*
  - US Climate Alliance
    - Basic mission...to meet the goals of the Paris Climate Agreement ... at least 26-28 percent below 2005 levels by 2025
    - Multiple working groups - one on *Short-lived Climate Pollutants (SLCP)*

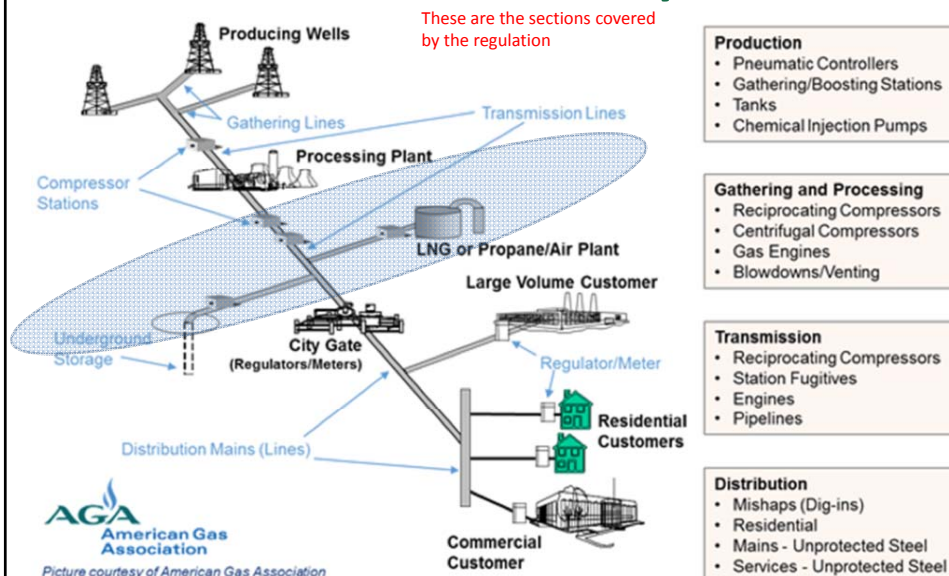


## Shifting EPA Requirements

- From 2014 to 2016, EPA was working to tighten methane emission reduction requirements
  - 2016: NSPS OOOOa also called “Quad Oa”
  - 2016: Control Technology Guideline (CTG) for existing sources finalized
- More recently EPA has moved to relax emission reduction requirements
  - 2018 proposal to repeal 2016 CTG
  - 2018 and 2019 ... EPA proposed relaxations to Quad Oa
- Maryland working with other states to challenge more recent relaxations
  - Reducing methane is not just a Maryland issue

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## Oil and Natural Gas Industry in General



Source: <https://www.epa.gov/natural-gas-star-program/overview-oil-and-natural-gasindustry#sources>

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## MDE's Stakeholder Process



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

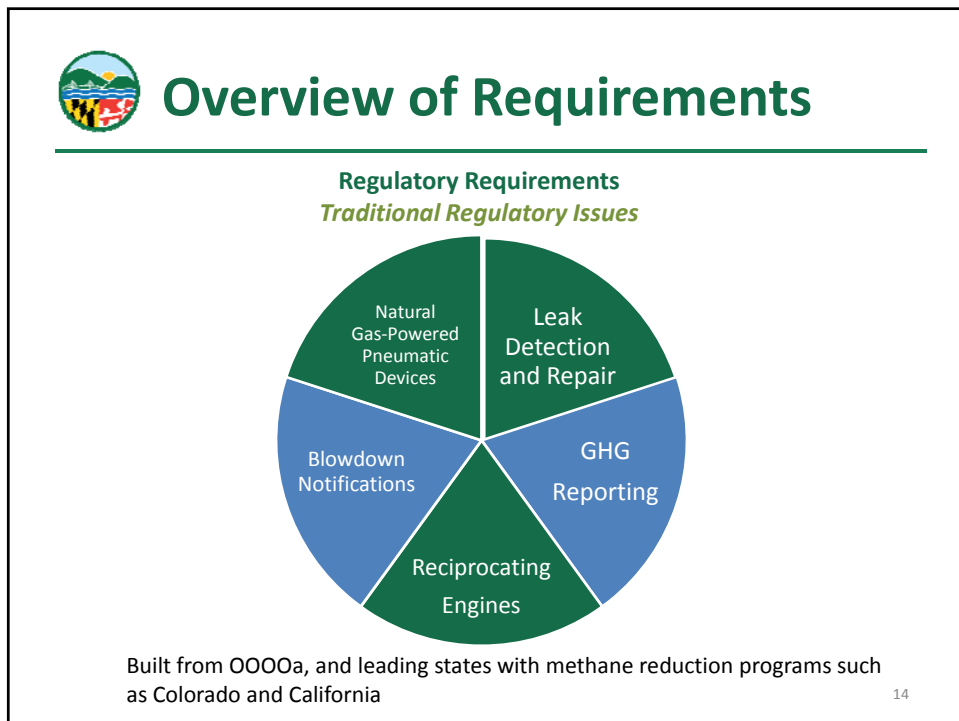
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## Draft Regulatory Review

- Today's Review Process
- Joshua will go through the full summary of the "Discussion Draft"
- When you have a question ... raise your hand ... Carolyn will acknowledge and log your name and question
- After completing the presentation... we will address questions in the order they were logged in

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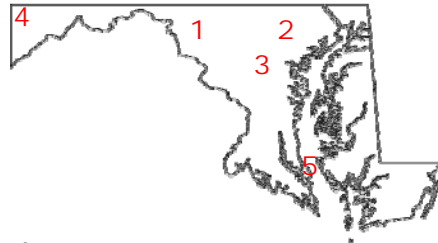


## Applicability

*No changes made*

- 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



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## Changes in Definitions

- “Fugitive emission component”
  - Includes “component”
  - Reflects EPA 40 CFR 60.5430a – when equipment is not actively venting as designed it can be a fugitive source
- “Process gas” instead of “Sale gas”
- Added “bubble test” and “intermittent bleed”
- Liquefied Natural Gas “Facility”, not “Station”
- Removed definitions not referenced

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## Leak Detection & Repair (LDAR): Comments Summary

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<b>Frequency</b>	<ul style="list-style-type: none"> <li>• More LDAR (monthly surveys)</li> <li>• Less LDAR (annual surveys) and audio, visual, olfactory (AVO) (monthly)</li> <li>• Apply same frequency to all facilities</li> </ul>
<b>Monitoring Plan</b>	<ul style="list-style-type: none"> <li>• LDAR steps should be clear for Optical Gas Imaging (OGI) vs. EPA Method 21</li> <li>• Extend timeframe for submittal</li> <li>• Maintain component list requirement....other comments requested this provision to be removed</li> </ul>
<b>Repair times &amp; Delay of Repair (DOR)</b>	<ul style="list-style-type: none"> <li>• Allow 1<sup>st</sup> attempt of repair to be done within 30 days, with 60 days to repair</li> <li>• Extend DOR to 30 days after receiving specialty ordered parts</li> </ul>

Additional comment: Make plan and reporting for all facilities transparent and publicly available

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## Leak Detection & Repair (LDAR): MDE Response to Comments

2<sup>nd</sup> Discussion Draft - Reg .03 (pgs. 2/3)

Changes Made from 1 <sup>st</sup> Draft	Remains the Same
<ul style="list-style-type: none"> <li>• Initial monitoring plan for OGI vs. EPA method 21 separated for clarity</li> <li>• Extended submittal time for initial monitoring plan and initial leak survey by 30 days</li> <li>• Requirement for summary of fugitive emission components for OGI</li> <li>• Requirement for list of DTM &amp; UTM components and explanation of why</li> <li>• DOR for specialty parts must be done within 7 days unless vent or compressor station blowdown needed and administrative amendments for clarity</li> </ul>	<ul style="list-style-type: none"> <li>• Quarterly surveys for facilities and annual surveys for facilities with electric compressors. Weekly AVOs</li> <li>• Repairs for leaks to be completed within 30 days unless placed on DOR</li> <li>• Cove Point to follow Certificate of Public Convenience and Necessity (CPCN) and Climate Action Plan – which will be made public</li> <li>• Allowance for new technology and practices to identify leaking components</li> </ul>

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## Leak Detection & Repair (LDAR): Summary of Requirements

*2<sup>nd</sup> Discussion Draft - Reg .03 (pgs. 2/3)*

- Facilities to submit initial methane emissions monitoring plan within **90** days of regulation adoption - §A(5)
  - Procedures, equipment and observation path
  - **Include DTM and UTM components with explanation**
- Weekly Audio/Visual/Olfactory (AVO) Inspections - §A(7)
- 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 **CPCN LDAR** requirements - §.03(C) – **MDE will make these available**

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## Leak Detection & Repair (LDAR): Summary of Requirements

*2<sup>nd</sup> Discussion Draft – Reg .03 (pg. 3)*

- *Repair Requirements - §A(9)*
- Repairs should be made and confirmed within 30 days of discovering a leak
- DOR provisions for **documentation** showing:
  - Repair will take longer than 30 days due to 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, will require a plan to be approved by the Department**

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## Pneumatic Devices: Comments Summary

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1. Apply standards to continuous bleed devices and exempt intermittent pneumatic controllers
2. Consider exemption criteria for functional and safety needs as in OOOOa
3. Remove requirement for annual testing of continuous bleed devices
4. Extend phase out of continuous bleed devices to two years after rule effectiveness date

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## Pneumatic Devices: MDE Response to Comments

*2<sup>nd</sup> Discussion Draft - Reg .04 (pgs. 3/4)*

Changes Made from 1 <sup>st</sup> Draft	Remains the Same
<ul style="list-style-type: none"> <li>Rearranged for clarity</li> <li>Includes intermittent bleed device provisions</li> <li>Added exemption criterion for continuous bleed device use after January 1, 2022, with additional requirements for those devices</li> <li>No annual testing as devices will be phased-out. Monthly inspection for devices that will continually be in use</li> </ul>	<ul style="list-style-type: none"> <li>Pneumatic devices subject to LDAR</li> <li>Bleed rate shall be less than 6 standard cubic feet per hour (scfh)</li> <li>Continuous bleed natural-gas powered pneumatics to be phased out beginning January 1, 2022 (unless exemption is granted)</li> </ul>

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## Pneumatic Devices: Summary of Requirements

*2<sup>nd</sup> Discussion Draft - Reg .04 (pgs. 3/4)*

- Pneumatic devices will be subject to LDAR - §B(1)
- Bleed rate cannot exceed 6 standard cubic feet per hour - §B(2)
- Beginning Jan. 1, 2022 switch to electric or compressed air - §C(1)
- **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

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## Reciprocating Engines: Comments Summary

1. Use a time-based replacement schedule, similar to OOOOa, and not conditioned-base

2. Allow for a higher emission threshold for rod packing replacement....another commenter suggested leaving at lower threshold

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## Reciprocating Engines: MDE Response to Comments

*2<sup>nd</sup> Discussion Draft - Reg .05 (pg. 4)*

Changes Made from 1 <sup>st</sup> Draft	Remains the Same
<ul style="list-style-type: none"> <li>Rearranged for clarity</li> <li>Emission threshold for rod packing replacement changed to 1 scfm</li> </ul> <p>(MDE seeking comment and requesting additional real-world data on this standard)</p>	<ul style="list-style-type: none"> <li>Two mitigation options for emissions are use of VCS or replace rod packing system</li> <li>Condition-based maintenance schedule</li> <li>DOR provisions</li> </ul>

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## Reciprocating Engines: Summary of Requirements

*2<sup>nd</sup> Discussion Draft - Reg .05 (pg. 4)*

- Subject to LDAR - §A
- Two mitigation options:
  1. Vented gas is routed to a vapor control device - §B(1); OR
  2. Rod packing required to be measured annually and replaced if exceeds emission threshold of **1 scfm** – §B(2) and (3)
    - Canada's threshold is 0.81 scfm (~0.04 scfm for equipment installed after January 2023)
    - California's threshold is 2 scfm
    - CATF threshold recommends 0.50 scfm

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## Vapor Collection System (VCS): Comments Summary

1. Non-destructive vapor control devices are ineffective at controlling methane

2. VCS and VCD should not be required as a methane control for all applications, e.g. pneumatic controllers

3. MDE should reexamine the NO<sub>x</sub> limits and fuel gas use for vapor recovery and control due to technical and economic feasibility issues.

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## Vapor Collection System: Summary of Requirements

*2<sup>nd</sup> Discussion Draft - Reg .06 (pg. 4/5)*

**NO CHANGES MADE**

- Rearranged for clarity
- 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

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## Reporting and Blowdowns: Comments Summary

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Reporting and Recordkeeping

- Reports should be submitted annually and not 60 days after LDAR surveys...other commenters requested reports be sent to MDE in a timely manner
- Remove requirement to submit reports to MDE and instead be maintained in-house
- Make reports publicly available

Blowdowns

- Establish reporting threshold for intentional and unplanned releases
- Expand definition of blowdowns to include a wider range of operation activities
- Communication signaling and notification for blowdowns...one commenter did not support blowdown notification
- Focus on blowdowns within facility fence-line

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## Reporting and Blowdowns: MDE Response to Comments

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2<sup>nd</sup> Discussion Draft - Reg .07 (pgs. 5/6)

Changes Made from 1 <sup>st</sup> Draft	Remains the Same
<ul style="list-style-type: none"> <li>Industry to publicly post LDAR surveys monthly on their website</li> <li>AVO and continuous bleed device inspection records to be maintained</li> <li>Threshold for notifying and reporting blowdown emissions within the facility fence-line</li> <li>Greenhouse gas emission reports to include expanded list of components</li> </ul>	<ul style="list-style-type: none"> <li>LDAR survey report to be submitted to the Department within 60 days of completion</li> <li>Blowdown event reporting</li> <li>GHG emission reporting</li> </ul>

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## Reporting and Recordkeeping: Summary of Requirements

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*2<sup>nd</sup> Discussion Draft - Reg .07 (pg. 5)*

- LDAR reports 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 for AVO and continuous bleed natural gas-powered device inspections on-site

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## Blowdowns: Summary of Requirements

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*2<sup>nd</sup> Discussion Draft - Reg .07 (pg. 6)*

- Significant blowdown events to be announced
  - Blowdowns in the excess of 1 million standard cubic feet (scf) to report to MDE and communities
  - 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 greater than 50 scf to be reported to MDE annually
  - Blowdown is required within the fence-line. All methane emissions from blowdown events shall be reported to the Department annually by April 1st

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## GHG Reporting: Summary of Requirements

*2<sup>nd</sup> Discussion Draft - Reg .07 (pg. 6)*

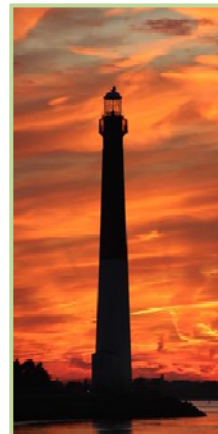
- All facilities, regardless of the size of GHG emissions, will be required to report their GHG emissions to the Department annually - §§ C(1) and (3)
- MDE's reporting requirements, calculation methodology, and procedures mirror EPA's Greenhouse Gas Reporting Program - § C(2)
- Maryland reporting requirement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

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## Submitting Additional Comments

- To meet AQCAC deadlines, we are asking for any additional comments by October 28, 2019
  - Hard deadline because of Regulation Proposal requirements
- Requesting specific additional comments and data for:
  - Reciprocating engine rod packing replacement threshold
  - Format and threshold for blowdown notifications



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## Schedule

- Stakeholder Meeting: Today
- Comments Due:  
October 28, 2019
- Air Quality Control Advisory Council:  
December 16, 2019
  - Public comment included
- 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

*STARTING WITH QUESTIONS LOGGED  
DURING THE PRESENTATION*