Regulations

Methane Emissions

Objectives

In this section, learn about the following:

- Why methane needs regulated
- What governments are doing about it
- What are the barriers to implement
- Regulatory development considerations
- Other areas of opportunity

Why methane needs regulated

While carbon dioxide is typically painted as the bad boy of greenhouse gases, methane is roughly 30 times more potent as a heat-trapping gas. As the United States moves toward energy independence, the use of natural gas has increased dramatically since hydraulic fracturing of wells has been further developed. This had lead to the addition of natural gas pipelines to get the product to end-users such as electric utilities. Natural gas is a gaseous fuel that can leak and be vented to the atmosphere, thus unintentionally wasting this resource. Regulators address this problem by regulating this resource using leak detection and repair standards.

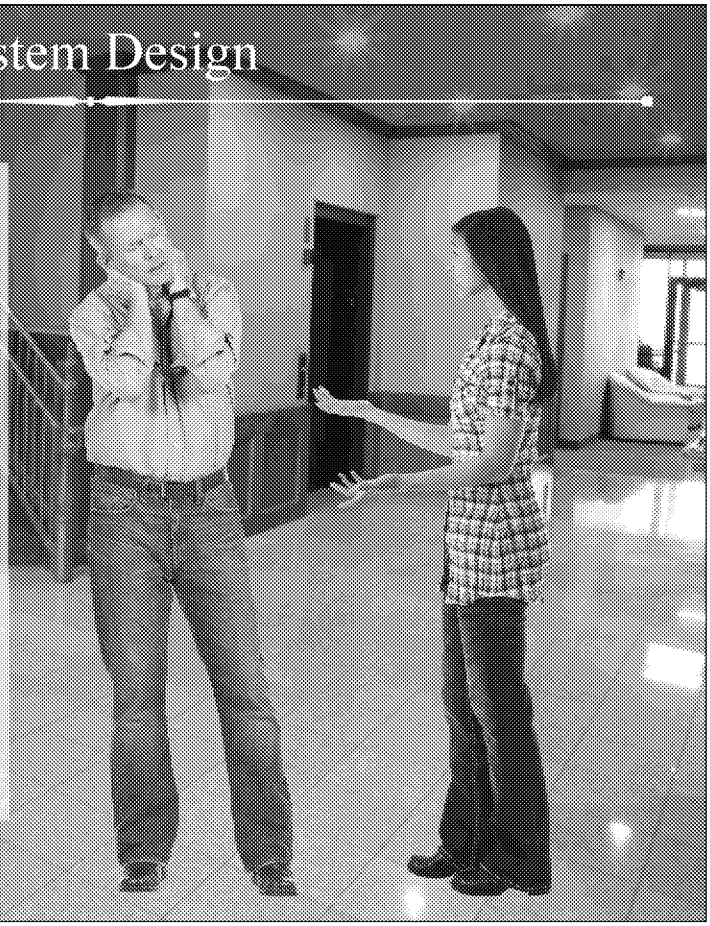
Barriers to Implement

Costs (Time and Money)
It's not cheap for companies to implement leak detection and repair. Companies have to hire personnel to perform the monitoring, allocate staff to figure out why it's leaking or venting and deploy personnel to fix or replace equipment. In some cases, the venting comes down to the design, operation and maintenance of the entire system. If it has to be redesigned the costs increase exponentially. This is where some regulations require companies to do the design analysis up front to avoid quickly starting production and fixing later.

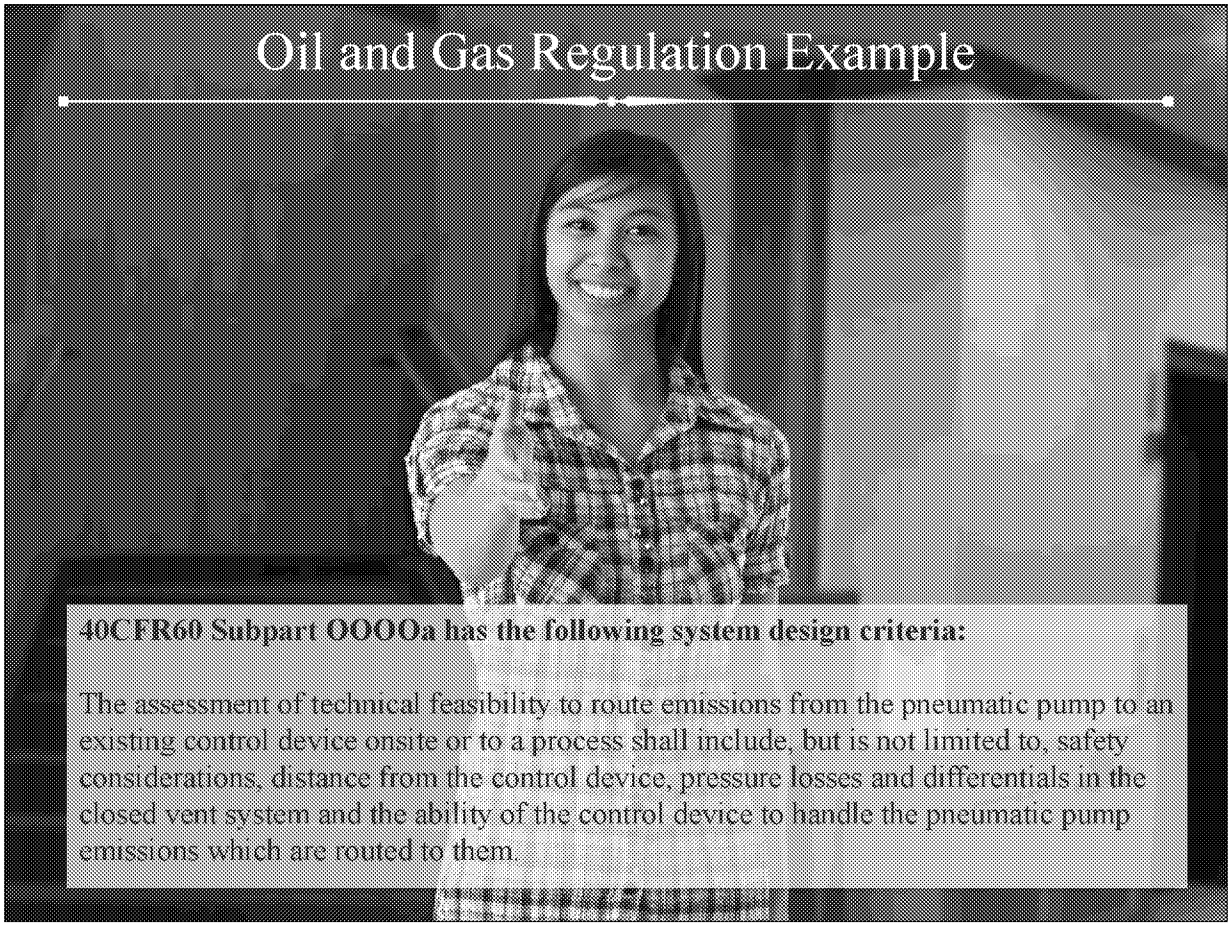
System Design

Can't we just find the leaks and fix them?

The company should realize that a "find-it fix-it" approach means all you will be doing is chasing leaks when the real problem comes down to was the system properly designed from the beginning to prevent leaks and venting. The company should routinely check the system's operating parameters to see if it is staying within the design and make adjustments as needed. Leak detection technology can help in this endeavor.



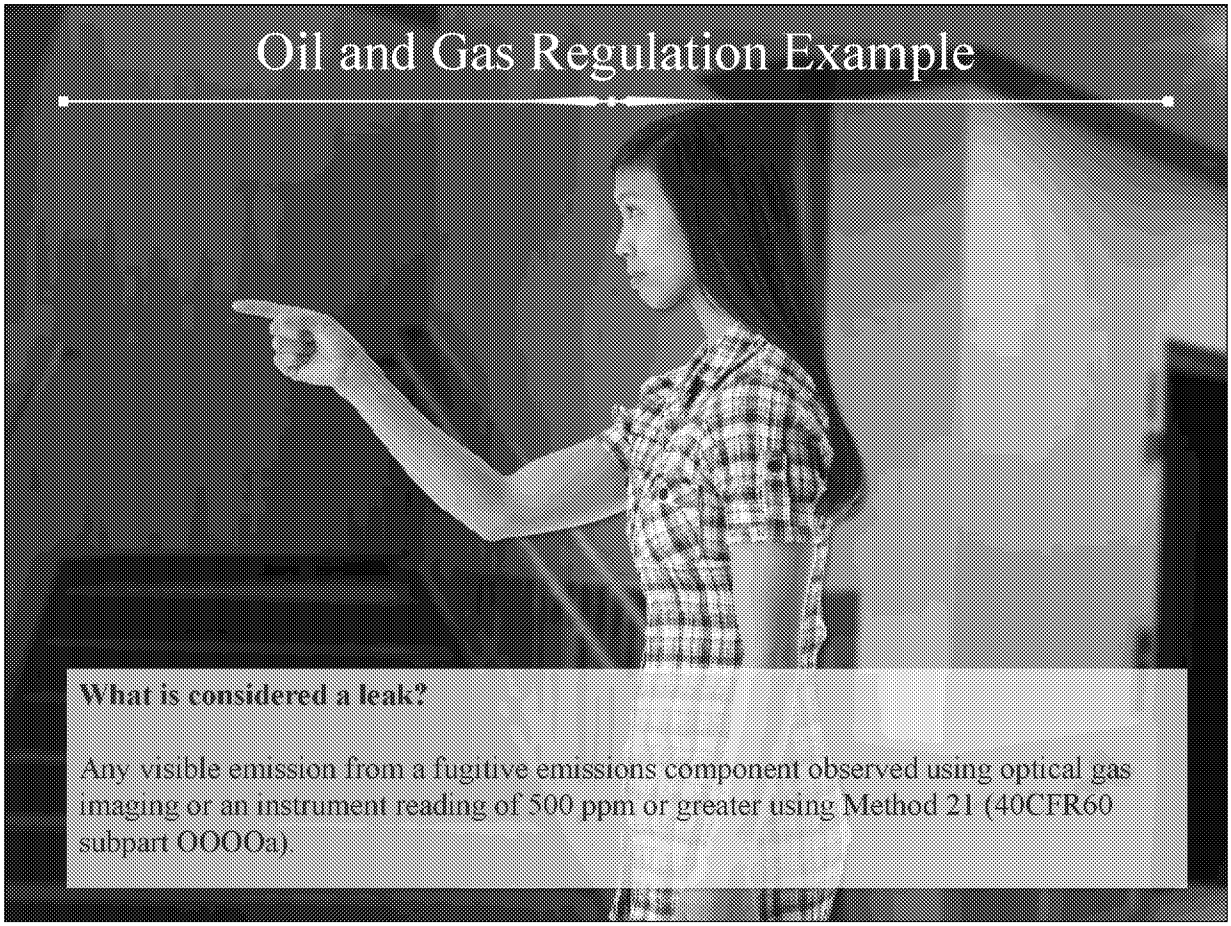
Oil and Gas Regulation Example



40CFR60 Subpart OOOOa has the following system design criteria:

The assessment of technical feasibility to route emissions from the pneumatic pump to an existing control device onsite or to a process shall include, but is not limited to, safety considerations, distance from the control device, pressure losses and differentials in the closed vent system and the ability of the control device to handle the pneumatic pump emissions which are routed to them.

Oil and Gas Regulation Example



What is considered a leak?

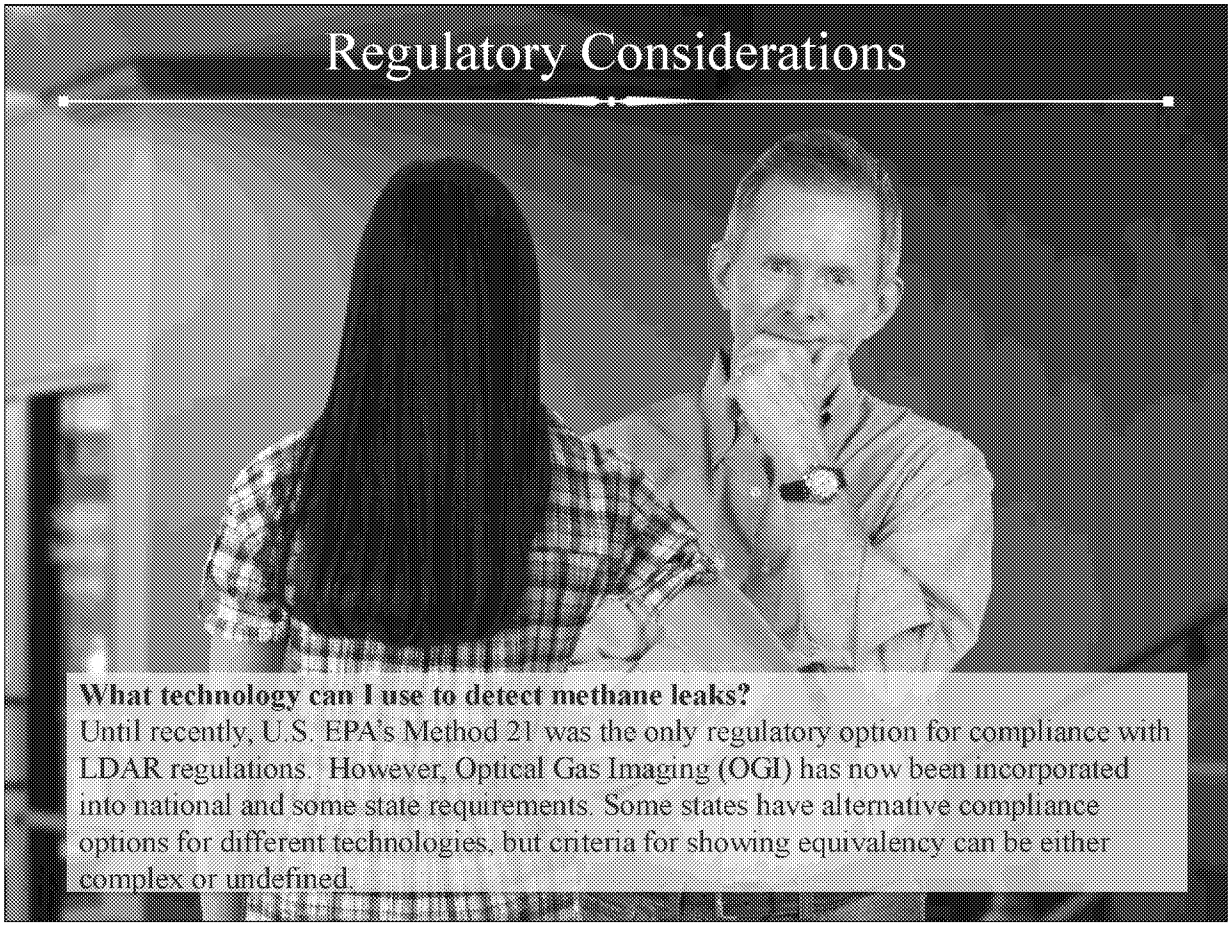
Any visible emission from a fugitive emissions component observed using optical gas imaging or an instrument reading of 500 ppm or greater using Method 21 (40CFR60 subpart OOOOa).

Jurisdictional Layers

Multiple Overlapping Regulations

There are multiple jurisdictional layers of rules for leak detection and repair requirements at oil and gas facilities. Depending on where the oil and gas facility is located it might have federal, state, city and even local regulations to comply with.

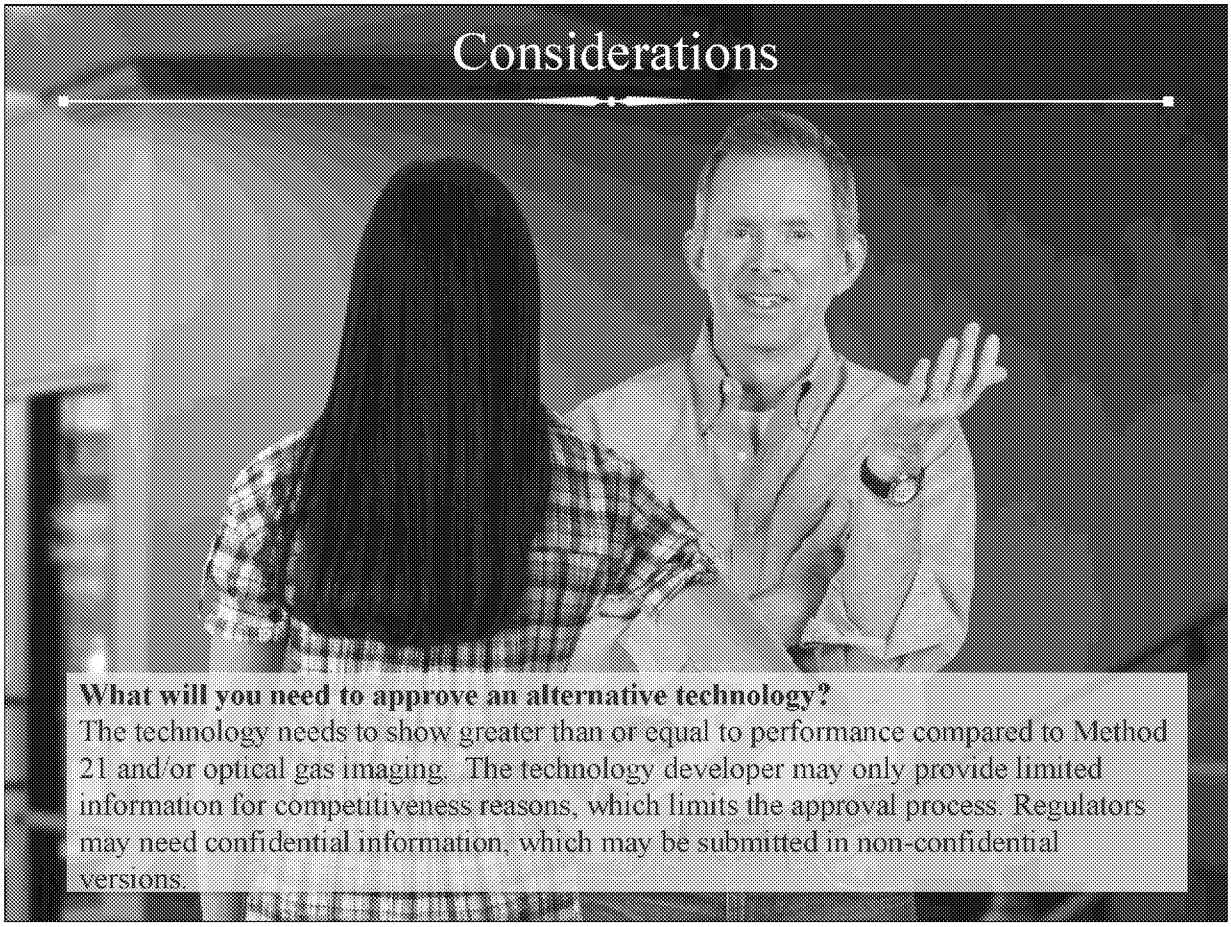
Regulatory Considerations



What technology can I use to detect methane leaks?

Until recently, U.S. EPA's Method 21 was the only regulatory option for compliance with LDAR regulations. However, Optical Gas Imaging (OGI) has now been incorporated into national and some state requirements. Some states have alternative compliance options for different technologies, but criteria for showing equivalency can be either complex or undefined.

Considerations



What will you need to approve an alternative technology?

The technology needs to show greater than or equal to performance compared to Method 21 and/or optical gas imaging. The technology developer may only provide limited information for competitiveness reasons, which limits the approval process. Regulators may need confidential information, which may be submitted in non-confidential versions.

Areas of Opportunity

Gas Composition
Inspecting equipment carrying predominantly dry gas, it may not be necessary for an alternate technology to be capable of detecting VOCs and methane. Programs should remain flexible in approvals depending on the application of the alternate technologies.

Compliance Orders / Decrees
Some Federal and State Consent Decrees require the use of leak detection technology that is currently not specifically required by regulations. This gives regulators an opportunity to implement proven technology ahead of regulations.

Activity

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Key Points

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