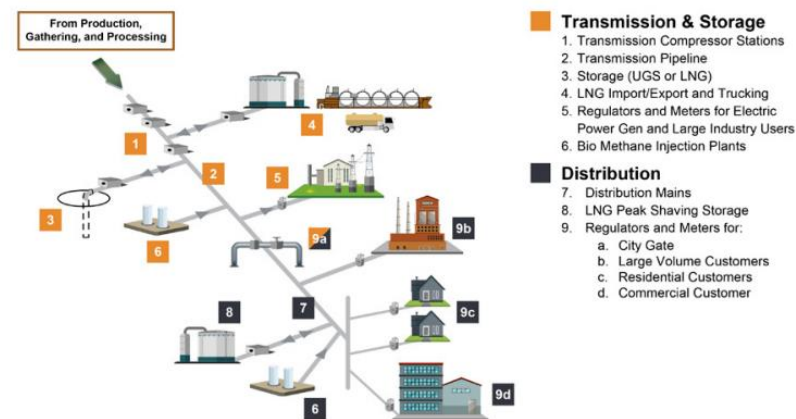


Methane Emissions Reduction Update

Transmission, Storage and Distribution Supply Chain



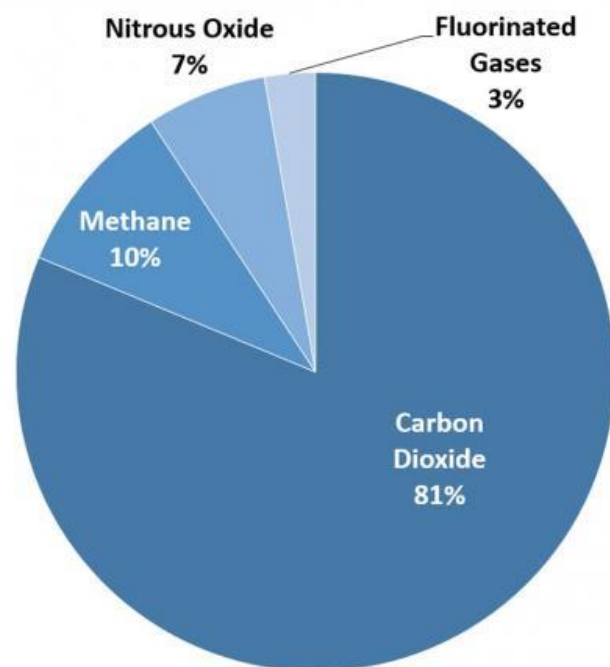
Contractor Committee Meeting
April 20, 2022

David Grande, Northeast Gas Association

Background

Natural gas is composed largely of methane, a greenhouse gas more potent than carbon dioxide. The impact of methane on global warming is significant, according to scientific research and the United States Environment Protection Agency.

Overview of Greenhouse Gas Emissions in 2018



Carbon dioxide (CO₂): Carbon dioxide enters the atmosphere through burning natural gas.

Methane (CH₄): Methane is emitted during the production and transport of natural gas.

Nitrous oxide (N₂O): Nitrous oxide is emitted during combustion of fossil fuels.

Global Warming Potential (GWP) comparison of the global warming impacts of different gases.

CO₂ has a GWP of 1 regardless of the time period.

CH₄ is estimated to have a GWP of 28–36 over 100 years.

N₂O has a GWP of 265–298 over 100-years.

Background

- Methane emissions occur through the natural gas life cycle of production, storage and distribution. Over the past decade, the natural gas industry worked with policy makers and regulators to address methane emissions in a more comprehensive and accelerated manner. Federal and State programs were introduced to modernize the natural gas infrastructure, reducing associated emissions and improving safety. Pipeline replacement programs, for example, will take 10-15 years to complete. Depending on the age and composition of a particular distribution system, the replacement plan can take 20-plus years.
- In the Northeast US region, the push to reduce the role of natural gas in the energy system is strong as part of state efforts, codified in legislation and/or regulation, to reduce greenhouse gas emissions in all end-use sectors, by identified dates. As an industry, it is critical that we continue to prioritize reducing methane leaks - to identify, quantify and eliminate leaks.

Discussion Topic – Member Survey

The Methane Emissions Reduction Committee developed survey around common sources of Methane Emissions and technologies, procedures, processes, and current industry best practices to reduce Methane Emissions.

The survey focused on the following:

- Methane Emission Sources
- Mitigation Process
- Mitigation Tools
- Opportunities/R&D

Source Areas Reviewed - Transmission

Transmission

- Transmission Line Venting
 - Using ZEVAC as transfer compressor for "zero venting". Depressurization is considered for other location where ZEVAC is not a feasible option

- Compressor Stations
 - Isolation valves to reduce emission.
 - Electric actuators

- Purging & Blowdowns
 - Using flares where conditions allow

Source Areas Reviewed - Transmission

Transmission

Above Ground M&R City Gate Stations

- Connector
 - Use only highest quality connectors and fittings. All our meter station and compressor station buildings have gas detectors. Leak(s) detected is signaled back to SCADA for an immediate fix

- Block Valve
 - Electric actuators

- Control Valve
 - Electric actuators

- Pressure Relief Valve
 - Test using air or inert gas, isolation under the valve is needed

- Orifice Metering
 - Use only highest quality connectors and fittings. All our meter station and compressor station buildings have gas detectors. Leak(s) detected is signaled back to SCADA for an immediate fix

Source Areas Reviewed - Distribution

Distribution:

Above Ground M&R City Gate Stations

- Block Valve
 - Electric actuators

- Control Valve
 - Convert to intermittent bleed, Use instrument air or mechanical controller

- Pressure Relief Valve
 - Test using air or inert gas

Source Areas Reviewed - Distribution

Distribution:

Distribution Mains

- Unprotected Steel
 - Accelerated main replacement, Increased frequency of leak survey, Advanced leak detection, rapid leak repair timeframes, prioritize high emitters.
 - Supporting the electrification of the distribution system where appropriate. Offering extensive rebates to customers for heat pump installation. Working with other utilities to pilot and research advanced leak detection equipment.
- Protected Steel
 - Rapid leak repair timeframes, prioritize high emitters.
- Ductile Iron

Source Areas Reviewed - Distribution

Distribution:

- Plastic
 - Rapid leak repair timeframes, prioritize high emitters.
- Vintage Plastic
 - Aldyl
- Cast Iron
 - Accelerated main replacement, Increased frequency of leak survey, Advanced leak detection, rapid leak repair timeframes, prioritize high emitters.
 - Supporting the electrification of the distribution system where appropriate. Offering extensive rebates to customers for heat pump installation. Working with other utilities to pilot and research advanced leak detection equipment.
- Fittings
 - Couplings

Source Areas Reviewed - Distribution

Distribution:

Distribution Services

- - Unprotected Steel
 - Accelerated service replacement, Increased frequency of leak survey, Advanced leak detection, rapid leak repair timeframes, prioritize high emitters.
 - Protected Steel
 - Rapid leak repair timeframes, prioritize high emitters.
 - Plastic
 - Rapid leak repair timeframes, prioritize high emitters.
 - Vintage Plastic
 - Accelerated service replacement, Increased frequency of leak survey, Advanced leak detection, rapid leak repair timeframes, prioritize high emitters.
 - Copper
 - Accelerated service replacement, Increased frequency of leak survey, Advanced leak detection, rapid leak repair timeframes, prioritize high emitters.
 - Fittings
 - Rapid leak repair timeframes, prioritize high emitters.

Source Areas Reviewed - Distribution

Distribution:

Inside Leaks

- Jurisdictional Piping
 - Increased frequency of leak survey
 - Respond within 30mins. Make repairs or replace

- Non-jurisdictional Piping
 - Customer piping
 - Residential methane detectors

Source Areas Reviewed - Distribution

Distribution:

Residential M&R Sets

- Testing a ball valve vs plug valve
- Using improved thread sealant
- Find it fix it same day

Commercial M&R Sets

- Testing a ball valve vs plug valve
- Using improved thread sealant
- Find it fix it same day

Industrial M&R Sets

- Testing a ball valve vs plug valve
- using improved thread sealant
- Find it fix it same day

Source Areas Reviewed - Distribution

Transmission/Distribution:

Other Methane Emissions Sources - Distribution Operations

- Purging and Blowdowns
 - Vacuum Purging (ZEVAC, Southern Cross, ULC Robotics), Draw down pressure prior to purge, No blow test devices?, Flaring vs. Blowdown?, Run blow down gas through generator?
- Main Pickling
 - Use internally coated steel pipe
- Pipe Tapping and Stopping
 - Utilize no blow tapping/stopping equipment.
- Pipeline Dig-Ins
 - Excess flow valves, consumer education, contractor education.

Mitigation Tools

Mitigation Tools:

- Recompression equipment.
- Air or Inert Gas
- Portable Flare
- Gas Drawdown through existing regulator stations.
- Use of hot taps vs shutdown and cutting in tees
- Excess flow valves
- consumer education

Opportunities/R&D

Opportunities/R&D

- Currently all of our stations use full capacity relief valves as our primary overpressure protection. CH₄ gas strategic plan looks to evaluate adding wide open monitor valves as a primary means of overpressure protection and have the relief valve as a redundancy. This will reduce unnecessary releases to the environment.
- Supporting the electrification of the distribution system where appropriate. Offering extensive rebates to customers for heat pump installation.
- working with other utilities to pilot and research advanced leak detection equipment.
- Vacuum Purging (ZEVAC, Southern Cross, ULC Robotics), Flaring
- Evaluating best practice opportunities to incorporate methane emission reductions in our work methods and procedures.

Questions?

➤ Discussion

➤ Thank you!

David M. Grande – Staff Engineer
Northeast Gas Association
75 Second Avenue, Suite 510
Needham, MA 02494
Office: 781-455-6800
Mobile: 413-344-7650
dgrande@northeastgas.org