



AGA Guidelines for Reducing Natural Gas Emissions From Distribution Systems

May 17, 2014

The American Gas Association (AGA) believes that ongoing efforts to modernize natural gas distribution systems and to enhance pipeline safety can be used to continue the downward trend in natural gas (methane) emissions. These voluntary guidelines have been developed as a resource for AGA members to assist in evaluating potential options for distribution systems. It should be understood that many of the options for distribution described on this list would not be considered “cost-effective” purely for purposes of emission reduction, but that to the extent they are undertaken for other reasons, such as to replace pipe based on fitness for service, they may result in additional emission reduction co-benefits. In addressing these actions, AGA and its individual operators recognize the significant role that their state regulators or governing body will play in supporting and funding these actions.

The following list describes measures that a natural gas distribution company may use in appropriate circumstances to help continue the trend of declining natural gas emissions. It provides general guidelines to assist member companies in developing their own company-specific procedures. It is the consensus of AGA members that the actions listed below can help to continue the downward trend in natural gas emissions. However, both the need to implement and the timing of any implementation of these actions will vary with each operator. Each operator serves a unique and defined geographic area and their system infrastructures vary widely based on a multitude of factors, including facility condition, past engineering practices and materials. Each operator will need to evaluate the actions in light of system variables, the operator’s independent integrity assessment, risk analysis and mitigation strategy and what has been deemed reasonable and prudent by their state regulators. It is recognized that not all of these recommendations will be applicable to all operators due to the unique set of circumstances that are attendant to their specific systems.

Measures for Reducing Emissions

- 1. Modernize Distribution Systems.** Replace cast iron, unprotected steel, or other distribution lines prioritized based on fitness for service with polyethylene (PE) plastic pipe (including sleeving with plastic pipe) or protected steel pipe,– with utility commission approval for accelerating the pace of replacing pipe. Note: Given that it generally costs \$1 million to \$5 million per mile of replaced pipe, this would not be cost-effective if done solely for emission reduction purposes. However, to the extent pipe replacement can be accelerated for purposes of modernizing distribution systems, replacing pipe can yield important emission reductions as a side benefit. The applicable state utility commission typically must approve a utility’s pipe replacement program, including the number of miles to be replaced per year.
- 2. Replace high-bleed pneumatic valves and pilot regulators with low- or no-bleed devices.** Generally, high-bleed pneumatic devices are being replaced over time with low-bleed devices as utilities update and replace equipment based on fitness for service. Depending on the circumstances, a company may consider designing a targeted program to accelerate the process of replacing high-bleed pneumatic devices, where practicable.
- 3. Damage prevention programs.** Beyond Miss Utility and urging the public to call 811 “before you dig,” several states have increased their enforcement and penalties to deter dig-ins. In addition, utilities may create outreach and education programs for contractors, or they may send letters to frequent violators including education materials along with a bill for damages incurred. Utilities may also reduce damages by enhanced locating practices, technology and training.
- 4. Use pressure reduction or other methods to reduce emissions venting due to blowing down pipe – either for repairs or replacement projects.** As a safety measure, lines must be clear of natural gas before repairs or replacement work begins. Several alternative techniques may be used in different situations to clear the lines in a manner that minimizes emissions.
- 5. Directed inspection and maintenance (DI&M) programs at custody-transfer city gate stations and metering and pressure regulating (M&R) stations.** Annual DI&M pursuant to pipeline safety regulations have contributed to the downward trend of emissions, by helping to detect, measure, prioritize, and repair equipment leaks to reduce methane emissions.
- 6. Composite wrap to repair non-leaking pipe defects, to avoid venting the line.** Depending on the type of damage to be repaired, this method may be used to repair non-leaking defects (such as pits, dents, gouges, or external

corrosion) without having to take the pipe out of service, thereby eliminating the methane emissions that otherwise would have occurred from venting the pipe prior to the repair. For example, some utilities have used this method on certain risers, in some cases with an outer shell, to address atmospheric corrosion above ground, in order to avoid replacing the riser. This technique may mitigate corrosion, provide additional strength, and avoid having to vent methane – which may otherwise be required in order to replace the riser.

7. **Encapsulate or replace joints.** An alternative for replacing cast iron pipe in some situations -- or for reducing repair-related venting -- may be to wrap or encapsulate joints. This option may be appropriate in situations where a utility cannot replace the cast iron pipe yet, and/or where a state requires a utility to fix all leaks, including all low-level grade 2 and 3 leaks, over a short timeframe.
8. **Modernize systems by lining existing pipe as appropriate.** Insert flexible composite liners in cast iron or unprotected steel pipe. This option may be appropriate for large diameter cast iron pipe (e.g. 42 inch diameter) with thick walls (e.g. 3 inches thick) with mechanical couplings. Such pipe typically retains its integrity and does not need to be replaced. Lining such pipe with a thin, flexible plastic liner has been shown to reduce emissions from joints.