AGA Guidelines for Natural Gas Emission Reduction:

Examples of Emission Reduction Measures in Action

June 17, 2014

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.

   Examples:

   Here are just a few of *many* examples. All AGA members have programs for replacing pipe based on fitness for service, and AGA members have sought and obtained approval in 38 states for obtaining the necessary cost recovery mechanism for accelerating the pace of pipe replacement, balancing costs to consumers. See our attached compendium.

   - National Grid operates distribution systems in several states, where they have a plan to methodically replace their inventory of over 11,000 miles of cast iron and bare steel pipe prioritized based on pipeline safety and fitness for service. Under a new accelerated replacement program, they replaced 166 miles of cast iron and 140 miles of unprotected steel pipe in 2013.
   - Consolidated Edison has approximately 2,300 miles of cast iron and bare steel pipe in their inventory in New York, and they replaced about 50 miles per year over the past three years. Under Con Edison's new accelerated program approved by the PSC, they will replace 60 miles in 2014, 65 miles in 2015 and 70 miles in 2016. Con Edison also has a separate PSC-approved program to replace cast iron and unprotected steel pipe within FEMA 100-year flood zones (designated in 2013) to improve resilience – at a rate of 2 miles in 2014, 3 miles in 2015, and 4 miles in 2016.
   - Northwest Natural began working on pipe replacement 31 years ago, with PUC approval, and they completed replacement of all their cast iron pipe in 2000. All bare steel pipe has been replaced except for the final 10 miles that should be replaced by the end of 2015.
   - Piedmont Natural Gas based in North Carolina embarked on a 15-year replacement program of the cast iron pipe in their Nashville, Tennessee system, and completed the replacement in 2005. Piedmont has *no* remaining cast iron pipe or unprotected steel pipe anywhere in its service territories.

2. **Replace high-bleed pneumatic valves and pilot regulators with low- or no-bleed devices.**

   Examples: In the process of modernizing systems, as high-bleed pneumatic valves are scheduled for replacement operators typically replace them with low or no-bleed devices.

3. **Damage prevention programs.**

   Examples:

   - Piedmont Natural Gas has a very robust damage prevention program. Repeat offenders receive an automated phone call reminding them to call 811 before they dig, in addition to receiving via U.S. mail an excavation guide book in both English and Spanish with detailed diagrams and instructions to prevent damage to underground utilities. The company's compliance team has worked diligently with state legislators to increase penalties to deter excavation damage to pipes.
   - One company has a pilot program with their "locate vendor" in which they rate the "risk" of a locate based on the contractor's past hit rate, type of excavation, and the facilities involved. Tickets with the higher risk scores get extra attention including pre-emptive calls to the excavator and a locator on site while facilities are uncovered. However, the biggest improvement in excavator performance has been achieved through the imposition of a fine of $3,000 per incident imposed by a board that meets monthly.
   - AGA and many members participate and support the Common Ground Alliance, which shares best practices for preventing excavation damage. See http://www.commongroundalliance.com/Template.cfm?Section=Best_Practices

4. **Use pressure reduction or other methods to reduce emissions venting due to blowing down pipe – either for repairs or replacement projects.**

   Examples:

   There are many examples of techniques used on low, medium and higher pressure distribution lines as well as high pressure transmission lines. Not all are applicable everywhere, but AGA members deploy measures that make sense in the circumstances. Here are some examples of techniques members have used on low pressure mains.

   - Some members use a booster compressor.
   - One company developed its own device for incremental compression and reinjection.
   - Another reported it bags off the pipe and does not vent to atmosphere (other than main being taken out of service).
   - Yet another uses a CNG compressor to pump the gas across the stopper or valve to the live side.
   - Another company uses "hot tapping/squeezing and flaring."

5. **Directed inspection and maintenance (DI&M) programs at custody-transfer city gate stations and metering and pressure regulating (M&R) stations.**

   Examples: All AGA members conduct annual DI&M programs as required by DOT pipeline safety regulations under 49 C.F.R. Part 192.

6. **Composite wrap to repair non-leaking pipe defects, to avoid venting the line.**

   Examples:

   - One company reports that if line is exposed and a non-leaking defect is observed, composite wrap is used.

7. **Encapsulate or replace joints.**

   Examples:

   - One company used this measure on portions of their medium pressure system. If a cast iron joint is found leaking, the joint may be sealed or a leak clamp may be installed.

8. **Modernize systems by lining existing pipe as appropriate.** Insert flexible composite liners in cast iron or unprotected steel pipe. This may make sense in some situations involving large diameter pipe.

   Examples:

   - One company finds this method is useful for very large diameter cast iron pipe with thick walls and mechanical couplings.
   - Another reported that it used this method in the past, but found that at least for its system, the measure was not cost-effective compared to programs to methodically replace pipe based on fitness for service, over a multi-year period.