



Increase Walking Survey from a 5- to 3-Year Basis



Technology/Practice Overview

Description

Methane emissions from valves, flanges, and connectors on gas service connections can be significant, as well as a safety hazard. One partner has reported successfully reducing these emissions through an improvement in their inspection program.

By decreasing the time between fugitive emissions surveys on their gas service connections, from five to three years, methane leaks were discovered earlier. Those pieces of equipment that are found to be emitting gas are tightened, if applicable, or scheduled for maintenance.

Operating Requirements

Additional personnel and fugitive emissions detectors may be necessary.

Applicability

Gas delivery facilities for which leak surveys are being performed at the minimum regulatory frequency may be good candidates for this practice.

Methane Emissions

Methane emissions result from leaks at flanges, valves, and connectors throughout the gas delivery network. With early detection, methane leaks can be mitigated more promptly, therefore avoiding gas losses and reducing methane emissions. One partner reported finding and repairing one leaking service connection per 100 service connections inspected. A program that inspects all services in three years rather than five years will find about 15 percent of the leaks a year earlier. The partner reported methane savings ranging from 1,400 Mcf to 1,665 Mcf for one year.

- Compressors/Engines
- Dehydrators
- Directed Inspection & Maintenance
- Pipelines
- Pneumatics/Controls
- Tanks
- Valves
- Wells
- Other

Applicable Sector(s)

- Production
- Processing
- Transmission
- Distribution

Other Related Documents:

Directed Inspection and Maintenance at Gas Processing Plants and Booster Stations, Lessons Learned

Directed Inspection and Maintenance at Gate Stations and Surface Facilities, Lessons Learned

Directed Inspection and Maintenance at Compressor Stations, Lessons Learned

Conduct DI&M at Remote Sites, PRO No. 901

Economic and Environmental Benefits

Methane Savings

Estimated annual methane emission reductions 1,500 Mcf per year

Economic Evaluation

Estimated Gas Price	Annual Methane Savings	Value of Annual Gas Savings*	Estimated Implementation Cost	Incremental Operating Cost	Payback (months)
\$7.00/Mcf	1,500 Mcf	\$10,500	\$1,000	\$10,000	13 Months
\$5.00/Mcf	1,500 Mcf	\$7,500	\$1,000	\$10,000	18 Months
\$3.00/Mcf	1,500 Mcf	\$4,500	\$1,000	\$10,000	30 Months

* Whole gas savings are calculated using a conversion factor of 94% methane in pipeline quality natural gas.

Additional Benefits

- Avoid possible system upsets

Increase Walking Survey from a 5– to 3– Year Basis (Cont'd)

Economic Analysis

Basis for Costs and Emissions Savings

Methane emissions reductions of 1,500 Mcf per year were estimated for a distribution system with 250,000 service connections and one leak repair per 100 service connections inspected, saving 0.5 scf per hour per repair.

One partner reported an incremental cost of \$11,000 when increasing walking survey frequency from a 5– to 3– year basis for a pipeline system of 2,900 miles in length. It is estimated that about \$1,000 of the \$11,000 corresponds to additional equipment and repair materials, while the remaining \$10,000 correspond to labor costs. The same partner reported emissions savings of approximately 1,400 Mcf.

Discussion

This practice can provide a payback in less than three years. To implement more frequent surveys, additional costs may include new fugitive emissions detectors, extra personnel to perform surveys and repair the leaks, and new/replacement parts. These costs should be largely offset by the incremental benefits of detecting leaks earlier and preventing future methane losses in the service connections.

Methane Content of Natural Gas

The average methane content of natural gas varies by natural gas industry sector. The Natural Gas STAR Program assumes the following methane content of natural gas when estimating methane savings for Partner Reported Opportunities.

Production	79 %
Processing	87 %
Transmission and Distribution	94 %

EPA provides the suggested methane emissions estimating methods contained in this document as a tool to develop basic methane emissions estimates only. As regulatory reporting demands a higher-level of accuracy, the methane emission estimating methods and terminology contained in this document may not conform to the Greenhouse Gas Reporting Rule, 40 CFR Part 98, Subpart W methods or those in other EPA regulations.