Inject Blowdown Gas into Low Pressure Mains or Fuel Gas System

Technology/Practice Overview

Description

When compressors and/or pipeline segments are taken out of service for operational or maintenance purposes, it is a common practice to depressurize the natural gas to the atmosphere. Partners report saving this gas and reducing methane emissions by depressurizing to a connected or nearby low-pressure fuel or product system.

Several options, driven by operational considerations, exist for performing this practice. In particular, companies can reroute gas to the low-pressure system by taking advantage of existing piping connections between high- and low-pressure systems, temporarily resetting or bypassing pressure regulators to reduce system pressure prior to maintenance, or installing temporary connections between high and low pressure systems.

Operating Requirements

This practice requires pre-planning and manual operation of valves.

Applicability

This practice can be employed wherever there are low-pressure gas systems that remain in service when nearby higher pressure systems are shut down.

Methane Emissions

Methane emissions reduction levels are site specific and depend on the operating pressure of the compressors and/or pipeline segments which are blown down, as well as the selected injection technology (e.g. simple piping connection versus portable compressor). Some of the partners reporting this practice used the

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

Applicable Sector(s)

- [ ] Production
- [ ] Processing
- [x] Transmission
- [x] Distribution

Other Related Documents:

Reducing Emissions When Taking Compressors Offline, Lessons Learned

Economic and Environmental Benefits

Methane Savings

Estimated annual methane emission reductions	*150 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	150 Mcf	$1120	$1,000	$0	11 Months
$5.00/Mcf	150 Mcf	$800	$1,000	$0	15 Months
$3.00/Mcf	150 Mcf	$480	$1,000	$0	25 Months

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

Additional Benefits

- Recovery of a valuable product
- Increased safety

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EPA default value of 15 Mcf per compressor blowdown and reported 3 to 40 blowdowns per year.

Economic Analysis

Basis for Costs and Emissions Savings

For example methane emissions reductions of 150 Mcf per year are associated with applying this practice for ten compressor depressurization events at one compressor station using one new piping connection.

Facility expenditures may be necessary to add additional piping from compressors to the low-pressure mains. In addition, labor for planning and making regulator set-point adjustments could offset gas emissions savings. In this analysis, it is estimated that facility modifications would cost $1,000.

Discussion

This practice can payback within a year depending on the number of blowdowns and the volume of gas released during each blowdown. The cost for minor facility modifications, such as installing additional piping to route the gas from a blowdown vent to a low pressure line, is estimated to be $1,000. The emissions savings are modeled as 15 Mcf per blowdown with 10 blowdowns per year. The primary justification for this project opportunity is the recovery of a valuable product. Secondary benefits could include increased safety.

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.