Pacific Gas and Electric Company

Natural Gas Leakage Abatement Report

In partial fulfillment of

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent with Senate Bill 1371, Leno.

And In Response to Data Request
Pacific Gas and Electric Company R15-01-008 2017 Annual Report

By: Pacific Gas and Electric Company

Date: 6/16/2017
Introduction

The following data have been prepared to comply with Senate Bill 1371 (Leno, 2014), Section 2, Article 3, Order Instituting Rulemaking (OIR) 15-01-008, and to provide our responses to Data Requests Pacific Gas and Electric Company R.15-01-008 2017 Annual Report.

Pursuant to SB 1371, Leno - Natural gas: leakage abatement, the California Public Utilities Commission (CPUC) requests that the following information be transmitted to the CPUC and the State Air Resources Board (ARB):

(1) A summary of changes to utility leak and emission management practices from January 1st, 2016 to December 31st, 2016. The report must include a detailed summary of changes, including the reasoning behind each change and an explanation of how each change will reduce methane leaks and emissions.

Response:


Additionally, at its storage facilities, PG&E began performing daily leak surveys in January 2016. At McDonald Island, PG&E conducted both aerial surveys and installed three methane sensors next to a row of wellheads, at a processing platform, and at a compressor. This project was performed in collaboration with the Pipeline Research Council International (PRCI). PG&E also collaborated with the Environmental Defense Fund (EDF) to pilot leak measurement technologies at its Los Medanos facility, and installed a Sensit monitor on November 22, 2016. Finally, PG&E tested the use of vehicle based leak detection system (Picarro) to identify larger leaks on wellheads at its Los Medanos facility in August 2016.
PG&E is currently evaluating how these technologies can be integrated into these facilities and align with new monitoring requirements outlined in the Air Resources Board’s (ARB’s) Oil and Gas Regulation.

**Changes to 2016 Reporting**

**Emission Factor**

*Distribution M&R Stations – Station Leaks & Emission:*

Emissions from this source were calculated using the Washington State University (WSU) emission factor (EF) that were published in April 2015\(^1\) and replaced the GRI emission factor used in the two previous annual gas leak reports. This resulted in the emissions from this sector decreased. Above ground emissions found within Distribution M&R stations still used the 1996 GRI EF, since the WSU Study did not provide new EF’s for these leaks.

For more information relating to these emissions, please see Appendix 5.

**Changes to Data and Assumptions**

*Transmission Pipelines – Blowdowns:*

In previous reports, PG&E conservatively assumed 125 mcf was released from blowdowns for the smaller clearances. Due to new EPA requirements and more granularity, PG&E updated its numbers to show more accurate emissions for transmission blowdowns overall.

For more information relating to these emissions, please see Appendix 1.

*Appendix 2 – Transmission M&R Stations – Station Leaks & Emission:*

The emissions within this sector increased due to the inclusion of Large Volume Customer (LVC) stations. Previously, these were not included within the total count for farm taps, and have now been added to the overall inventory.

For more information relating to these emissions, please see Appendix 2.

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Appendix 4 – Distribution Mains & Service Pipelines – All Damages:
PG&E revised its methodology for calculating leaks from all damages. Historically, PG&E has conservatively applied the maximum operating pressure for calculating emissions. In this report, PG&E used the normal operating pressure which accurately captures the pressure that the system generally operates at. Additionally, PG&E modified its initial assumption and believes a majority of the damages caused from external forces, such as dig-ins, result in damage which is inward (puncture) rather than outward (burst). PG&E modified the coefficient for this factor within its calculations, which resulted in the overall emissions decreasing.

For more information relating to these emissions, please see Appendix 4.

Appendix 4 – Distribution Mains & Service Pipelines – Pipeline Leaks:
The emissions in this sector decreased due to the inclusion of emissions from unsurveyed pipelines, which historically were not included.

For more information relating to these emissions, please see Appendix 4.

(2) A list of new graded gas leaks discovered, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered and annual volume of gas leaked for each, by month, from January 1, 2015 through December 31, 2015.
Response:

See Appendices 1, 4, 8 and 9
A list of graded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1, 2015 through December 31, 2015. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, date of repair, annual volume of gas leaked for each and the number of days from the time the leak was discovered until the date of repair.

Response:

See Appendices 1, 4, 8 and 9

A list of ALL open graded leaks, regardless of when they were found, tracked by geographic location in a Geographic Information System (GIS) or best equivalent that are being monitored, or are scheduled to be repaired, by month, from January 1, 2015 through December 31, 2015. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of gas leaked for each.

Response:

See Appendices 1, 4, 8 and 9

The system-wide gas leak rate, as defined in Data Request Pacific Gas & Electric Company R15-01-008 2016 June 17, 2016 Report, along with any data and computer models used in making that calculation, for the 12 months ending December 31, 2015.

Response:

See Appendices 8 and 9
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Pacific Gas & Electric Company R15-01-008 2016 June 17, 2016 Report for the 12 months ending December 31, 2015. Response:

See All Appendices

(7) An annual report on measures that will be taken in the following year to reduce gas leaks and emissions to achieve the goals of SB 1371. The report must include a detailed summary of changes, including the reasoning behind each change and an explanation of how each change will reduce methane leaks and emissions. Response:

In 2017, PG&E is focusing on driving emission reductions in the areas outlined below:

**In-line Inspection**

PG&E will not only be increasing the miles of transmission pipe assessed through in-line inspection (ILI), but will also be increasing the mileage of pipe that can be assessed using in-line inspection tools. In-line inspection allows for PG&E to gather additional integrity information about its facilities, and take preventative, maintenance, and mitigative actions.

Approximate number of miles assessed (2016): 260
Approximate planned number of miles to be assessed (2017): 240

Approximate number of miles upgraded (2016): 108
Approximate number of miles to be upgraded (2017): 132
**Distribution Pipeline Replacement**

PG&E continues to modernize its pipeline system, as outlined within its 2017 GRC, and has focused its replacements on specific materials and vintages of pipe. Additionally, PG&E has continued to reduce its distribution pipeline backlog. The numbers summarize the anticipated replacements from the programs identified below:

- PG&E established the Gas Pipeline Replacement Program (GPRP) in 1985. This program has enabled PG&E to systematically deactivate all cast iron (over 830 miles of pipe) over the past 30 years. With the completion of the deactivation of all cast iron pipe in 2014, the scope of the program focuses on replacement of priority pipe, pre-1940 bare steel and non-cathodically protected steel pipe.
- The Reliability Main Replacement Program focuses on the replacement of gas facilities to improve safety and reliability, and to maintain compliance with pipeline regulations. This program covers pipe that does not qualify for replacement under the GPRP or Aldyl-A Plastic Replacement Program.

Approximate main miles replaced (2016): 126  
Approximate planned main miles to be replaced (2017): 130

**Service Replacement**

PG&E has two proactive service replacement programs, the Copper Service Replacement Program (CSRP) and the Reliability Service Replacement Program. The CSRP focuses on copper services installed from the 1930s to the late 1960s, which are susceptible to internal and external corrosion. The Reliability Service Replacement Program focuses on replacing services to improve system safety and maintain compliance with pipeline regulations.

Approximate number of services replaced CSRP (2016): 305  
Approximate planned services to be replaced CSRP (2017): 485

Approximate number of services replaced Reliability Service Replacement Program (2016): 1,487
Approximate planned number of services to be replaced Reliability Service Replacement Program (2017): 437

**Plastic Tee Cap Replacement**
Plastic Tee Caps are one of the major sources of leaks on the plastic distribution system. PG&E developed the Plastic Tee Cap Replacement Program to reduce risk associated with this type of leak. This program involves identifying areas with a history of tee cap leaks and proactively replacing the tee caps in those areas prior to a leak occurring.

Approximate number of Tee Caps replaced (2016): 1,390
Approximate planned number of Tee Caps to be replaced (2017): 350

**Distribution Leak Management**
The Distribution Integrity Management Program (DIMP) Leak Survey Program is a targeted risk mitigation program that goes beyond a required routine leak survey. As part of the DIMP annual risk assessment cycle, PG&E identifies locations where clusters of historical leaks have occurred on the gas system. Leak clusters are determined by geospatial analysis and a 100-foot buffer is created around each leak location.

Approximate number of services and main surveyed (2016): 24,603 services; 1,609,478 feet of main
Approximate planned number of services and main to be surveyed (2017): 36,069 services; 1,670,595 feet of main

The Picarro Surveyor is 1,000 times more sensitive than any other commercial leak detection instrument available today, and finds substantially more leaks than other leak detection instruments. In 2014, PG&E surveyed the total service count equivalent to three of its 19 divisions with the Picarro Surveyor. In 2016, PG&E used Picarro Surveyor in all divisions. However, it will never be possible to survey the entire system with the Picarro Surveyor due to required physical inspections for Abnormal Operating Conditions (AOC) and atmospheric conditions that lessen the coverage area of the technology. PG&E expects to survey 100 percent of its distribution system assets on a compliance 4-year or more frequent leak survey cycle. Picarro Surveyor will continue to be used in all divisions in 2017 and plans to survey
approximately 75 percent coverage of the distribution system it surveys.
Approximate number of services and feet of main surveyed by the Picarro Surveyor (2016): 516,202 services; 35,711,947 feet of main
Approximate planned number of services and feet of main to be surveyed by the Picarro Surveyor (2017): 615,921 services; 41,019,336 feet of main

**Reducing Blowdown Emissions**
As part of its participation in the EPA’s Methane Challenge, PG&E will be decreasing the amount of natural gas released to the atmosphere, and using methods such as routing natural gas and flaring to achieve this.

Amount of gas avoided during Transmission Blowdowns (2016): 237,001 MCF
Amount of gas avoided during Transmission Blowdowns (Q1 2017): 5,702 MCF