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**BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA**

Order Instituting Rulemaking to Adopt  
Rules and Procedures Governing  
Commission-Regulated Natural Gas  
Pipelines and Facilities to Reduce Natural  
Gas Leakage Consistent with Senate Bill  
1371.

Rulemaking 15-01-008  
(Filed January 15, 2015)

**COMMENTS OF SOUTHWEST GAS CORPORATION (U 905 G) ON  
ADMINISTRATIVE LAW JUDGE'S RULING ENTERING CALIFORNIA AIR  
RESOURCES BOARD AND CALIFORNIA PUBLIC UTILITIES COMMISSION  
JOINT STAFF ANNUAL REPORT ON ANALYSIS OF JUNE 16, 2017 UTILITIES'  
REPORTS INTO THE RECORD AND SEEKING COMMENTS**

Catherine M. Mazzeo  
Assistant General Counsel  
5241 Spring Mountain Road  
Las Vegas, NV 89150-0002  
Telephone: (702) 876-7250  
Facsimile: (702) 252-7283  
Email: [catherine.mazzeo@swgas.com](mailto:catherine.mazzeo@swgas.com)

*Attorney for Southwest Gas Corporation*

December 12, 2017

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9 On January 22, 2015, the California Public Utilities Commission (Commission) opened  
10 the instant rulemaking consistent with Senate Bill (SB) 1371, which requires, “...the adoption of  
11 rules and procedures to minimize natural gas leakage from Commission-regulated natural gas  
12 pipeline facilities consistent with Public Utilities Code Section 961(d), §192.703(c) of Subpart M  
13 of Title 49 of the Code of Federal Regulation, the Commission’s General Order 112-E, and the  
14 state’s goal of reducing greenhouse gas emissions.”<sup>1</sup> SB 1371 was codified in Sections 975,  
15 977 and 978 of Article 3 of the Public Utilities Code (Code).

16 On June 19, 2017, the Commission issued Decision (D.)17-06-015, approving a natural  
17 gas leak abatement program consistent with SB 1371. The Decision requires the Commission’s  
18 Safety Enforcement Division (SED), in consultation with the California Air Resources Board  
19 (CARB), to manage the annual emissions reporting process, enforce the Annual Reporting  
20 Framework, and provide ongoing enhancements to the Annual Spreadsheet Template.<sup>2</sup> It  
21 further requires SED and CARB (collectively, Joint Staff) to post a draft annual report on the

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24 <sup>1</sup> Order Instituting Rulemaking (OIR), at p.1.

25 <sup>2</sup> D.17-06-015, at Ordering Paragraph (OP) 2, p.158.

1 Commission's website and, after allowing an opportunity for parties to comment, post a final  
2 draft report by December 31, or as soon as practicable thereafter.<sup>3</sup>

3 The Assigned Administrative Law Judge issued a Ruling Entering California Air  
4 Resources Board and California Public Utilities Commission Joint Staff Annual Report on  
5 Analysis of June 16, 2017 Utilities' Reports (Joint Staff Annual Report) into the Record, and  
6 Seeking Comments (Ruling), November 30, 2017. The Ruling seeks comments on the Joint  
7 Staff Report, which represents a compilation and analysis of 2016 data provided by operators  
8 in their June 16, 2017 Methane Leak and Emissions Reports. The Joint Staff Annual Report  
9 also provides proposed changes to the Data Request Template, to be discussed in an upcoming  
10 workshop.

11 Southwest Gas Corporation (Southwest Gas or Company) commends SED and CARB  
12 Staff on assembling a Joint Staff Annual Report that thoroughly evaluates and reports on the  
13 data obtained from the June 2017 Methane Leak and Emissions Reports. Overall, Southwest  
14 Gas believes the Joint Staff Annual Report correctly interprets the information provided and it  
15 generally concurs with the Joint Staff's findings. The Company also appreciates Joint Staff's  
16 continued efforts to refine the Data Request Template, and looks forward to its continued  
17 participation in that process.

18 With regard to the specific questions set forth in the Ruling, Southwest Gas responds  
19 as follows:

20 **1. Does the November 2017 Joint Staff Annual Report clearly illustrate the trends of**  
21 **findings based on Commission/CARB staff's analysis of the June 16, 2017 reports?**

22 In general, Southwest Gas agrees with the Joint Staff Annual Report's findings. The  
23 Company appreciates Joint Staff's recognition that many of the emissions factors (EF) being  
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25 <sup>3</sup> Id. at OP 1, p.157-58.

1 used for emissions reporting are outdated and are not specific to California.<sup>4</sup> Southwest Gas  
2 believes the effect of EFs on the data reported and on the measurement of future emissions  
3 reductions cannot be understated. In the absence of a scientific tool that can be used to  
4 measure actual leak volumes, the parties must rely on EFs to calculate the estimated methane  
5 emissions from a particular source. Outdated and inapplicable EFs could significantly overstate  
6 emissions from various infrastructure sources. The Joint Staff Annual Report appears to  
7 acknowledge this risk in referencing recent studies which indicate that emissions for distribution  
8 mains and services, and metering and regulation stations, are much lower than those calculated  
9 using the 1996 USEPA and Gas Research Institute (GRI) EFs.<sup>5</sup> Similarly, Joint Staff  
10 acknowledges that because certain categories of emissions are calculated based on population  
11 (i.e., the number of units multiplied by an EF), a reduction in emissions is not likely to be  
12 recognized unless the EF is modified.<sup>6</sup> This is particularly important with respect to customer  
13 meters. Since each installed meter set assembly is considered a “unit” for purposes of the  
14 emissions calculation, utilities will inevitably show increased emissions in this category simply  
15 by adding new customers. Southwest Gas therefore fully supports Joint Staff’s efforts to improve  
16 the accuracy and reliability of emissions data through continued review and refinement of the  
17 EFs, and will continue to work with Joint Staff and the other parties in this regard.

18 Southwest Gas offers one point of clarification with respect to the Joint Staff Annual  
19 Report’s discussion of third party damage to pipelines. Table 3 indicates that total emissions  
20 from pipeline damages increased by 15 percent from 2015 levels.<sup>7</sup> This overall increase  
21 represents a 101.4 percent increase in emissions from third party damage to transmission  
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23 \_\_\_\_\_  
24 <sup>4</sup> Joint Staff Annual Report, at p.5.

<sup>5</sup> Id.

<sup>6</sup> Id. at p.7.

25 <sup>7</sup> Id.

1 pipelines,<sup>8</sup> and a 15.1 percent decrease in emissions from third party damage to distribution  
2 pipelines.<sup>9</sup> Southwest Gas agrees with Joint Staff that a downward trend in overall damage-  
3 related emissions would confirm the effectiveness of damage mitigation efforts. However,  
4 without diminishing the need to reduce emissions from damage to transmission pipelines, the  
5 Company believes it is important to recognize the substantial reduction in emissions from  
6 damage to distribution facilities over the past year, as it reflects the positive impact of the utilities'  
7 damage prevention efforts.

8 Southwest Gas also has one concern with respect to the Joint Staff Annual Report,  
9 related to the discussion of a System-wide Leak Rate.<sup>10</sup> Based upon the definitions provided in  
10 Appendix B of the Joint Staff Annual Report – and specifically, the fact that the System-wide  
11 Leak Rate is calculated using, in part, the Pipeline and Hazardous Materials Safety  
12 Administration (PHMSA) Modified Equation for Lost and Unaccounted for (LAUF) Gas, the Joint  
13 Staff Annual Report implies that there is a relationship between System-wide Leak Rate and  
14 LAUF. However, the Lost and Unaccounted for Natural Gas Report issued by PHMSA May 16,  
15 2017 seems to reach the opposite conclusion. A copy of the report is attached hereto as

16 **Appendix A.** In its report, PHMSA notes:

17 LAUF gas is calculated as the difference between gas supply and gas  
18 consumption. LAUF gas is a combination of measurement inaccuracy and  
19 unknown leaks, but it is impossible to know the portion of LAUF gas  
attributable to each. LAUF gas is not a valid proxy for either unknown leak  
volume or methane emissions.<sup>11</sup>

20 In light of PHMSA's recent LAUF report, Southwest Gas suggests that Joint Staff  
21 reconsider the methodology used to calculate System-wide Leak Rate.

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24 <sup>8</sup> Id. at p.23.

<sup>9</sup> Id. at 26.

<sup>10</sup> Id. at p.14.

25 <sup>11</sup> PHMSA LAUF Report, at p. 3.

1 **2. Are there “Lessons Learned” from this reporting and analysis process that were not**  
2 **identified by staff?**

3 Southwest Gas has not identified any lessons learned that were not referenced in the  
4 Joint Staff Annual Report. The Company agrees with the overarching theme in the “Lessons  
5 Learned” section of the Joint Staff Annual Report, which emphasizes the importance of  
6 continued efforts to improve emissions reporting processes and methods, including the format  
7 of the reporting templates, to ensure that information is provided in a consistent and  
8 understandable manner. Southwest Gas appreciates Joint Staff’s willingness to conduct a  
9 workshop in early 2018 to address proposed changes to the reporting templates, and will  
10 continue to work with Joint Staff and the other parties in this regard.

11 Southwest Gas appreciates the opportunity to provide these comments, and looks forward  
12 to its continued participation in this Rulemaking.

13 DATED this 12<sup>th</sup> day of December, 2017.

14 Respectfully submitted,  
15 SOUTHWEST GAS CORPORATION

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17 Catherine M. Mazzeo  
18 Assistant General Counsel  
19 5241 Spring Mountain Road  
20 Las Vegas, NV 89150-0002  
21 Telephone: (702) 876-7250  
22 Facsimile: (702) 252-7283  
23 Email: [catherine.mazzeo@swgas.com](mailto:catherine.mazzeo@swgas.com)

24 *Attorney for Southwest Gas Corporation*  
25

# **APPENDIX A**



U.S. Department  
of Transportation  
**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Ave., S.E.  
Washington, DC 20590

May 16, 2017

The Honorable Bill Shuster  
Chairman  
Committee on Transportation and Infrastructure  
United States House of Representatives  
Washington, DC 20515


Dear Mr. Chairman:

I am pleased to submit the Report on lost and unaccounted for natural gas metrics, as required by Section 29 of the Protecting our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act of 2016, Public Law No: 114-183.

Section 29 of the PIPES Act of 2016 directs the Pipeline and Hazardous Materials Safety Administration (PHMSA) to submit a report to Congress on the metrics provided to PHMSA and other Federal and State agencies related to lost and unaccounted for (LAUF) natural gas from distribution pipeline systems.

I have sent a similar letter to the Ranking Member, and Chairmen and Ranking Members of the Committee on Energy and Commerce, and the Committee on Science, Space, and Technology of the House of Representatives and the Committee on Commerce, Science, and Transportation of the Senate.

Sincerely,

  
Howard W. McMillan  
Acting Deputy Administrator

Enclosure

# **Gas Distribution: Lost and Unaccounted for Natural Gas**

## **Pipeline and Hazardous Materials Safety Administration**

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#### **A. Executive Summary**

Congress directed Pipeline and Hazardous Materials Safety Administration (PHMSA) to submit a report on the metrics provided to PHMSA and other Federal and State agencies related to lost and unaccounted for (LAUF) natural gas from distribution pipeline systems.

At the Federal level, both PHMSA and the Energy Information Administration (EIA) collect data about LAUF gas. PHMSA and EIA instructions for determining the volume of LAUF gas are consistent. There are differences in the scope of the data collections and the method for calculating the percentage of LAUF gas.

LAUF gas is a combination of measurement inaccuracy and unknown leaks, but it is impossible to know the portion attributable to each. LAUF gas is not a valid proxy for either unknown leak volume or methane emissions.

PHMSA has not identified any potential safety issues surrounding LAUF gas; as such, neither alternate reporting nor measures would resolve any safety issue.

Since some State agencies use PHMSA LAUF gas data during ratemaking proceedings, while others use EIA data, both agencies should continue collecting LAUF gas data. Some agencies collect LAUF data directly from gas distribution pipeline operators as part of the ratemaking process.

PHMSA intends to propose changes to the instructions for PHMSA Form 7100.1-1, Gas Distribution System Annual Report, related to calculating the percent of LAUF gas and negative percent values. These changes would harmonize PHMSA and EIA methodologies for calculating the percentage of LAUF gas.

#### **B. Background**

Section 29 of the 2016 Protecting our Infrastructure of Pipelines and Enhancing Safety Act (PIPES Act) directed PHMSA, an agency of the U.S. Department of Transportation, to submit a report to Congress on the metrics provided to PHMSA and other Federal and State agencies related to LAUF natural gas from distribution pipeline systems.

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Section 29 specifies the following elements for the report:

- An examination of different reporting requirements or standards for LAUF natural gas to different agencies, the reasons for any such discrepancies, and recommendations for harmonizing and improving the accuracy of reporting;
- An analysis of whether separate or alternative reporting could better measure the amounts and identify the location of LAUF natural gas from natural gas distribution systems;
- A description of potential safety issues associated with natural gas that is LAUF from natural gas distribution systems; and,
- An assessment of whether alternate reporting and measures will resolve any safety issues, including an analysis of potential impact, including potential savings, on rate payers and end users of natural gas products of such reporting and measures.

The Administrator must determine whether alternate reporting structures or recommendations included in the report would significantly improve the measurement and reporting of LAUF gas, and therefore, the safety of natural gas distribution systems. No later than one year after making this determination, the Administrator shall issue regulations—as deemed appropriate—to implement the recommendations.

PHMSA reviewed several documents during the preparation of this report. The three most relevant documents are summarized in the following paragraphs. If the URL provided below no longer leads to the document, PHMSA can provide a pdf of the document.

[America Pays for Gas Leaks](http://www.markey.senate.gov/documents/markey_lost_gas_report.pdf) was prepared for Senator Edward J. Markey in August 2013 and found at [http://www.markey.senate.gov/documents/markey\\_lost\\_gas\\_report.pdf](http://www.markey.senate.gov/documents/markey_lost_gas_report.pdf). The document focuses mainly on natural gas emissions and the hazards of gas leaks. The document encourages States and non-regulated utilities to adopt a standard definition and methodology for calculating LAUF gas.

[Lost and Unaccounted for Gas](http://www.mass.gov/eea/docs/dpu/gas/icf-lauf-report.pdf) by ICF International was prepared for the Massachusetts Department of Public Utilities on December 23, 2014 and found at <http://www.mass.gov/eea/docs/dpu/gas/icf-lauf-report.pdf>. Among other things, the document concludes that LAUF gas is not an appropriate surrogate for methane emissions.

[LAUF & Distribution Pipe Replacement – A National Perspective](https://www.epa.gov/sites/production/files/2016-04/documents/5lacey.pdf) was prepared by the American Gas Association on November 17, 2015 and found at <https://www.epa.gov/sites/production/files/2016-04/documents/5lacey.pdf>. The document emphasizes that there is no correlation between LAUF gas and emissions.

### **C. Overview of LAUF Gas**

LAUF gas is the difference between the volume of natural gas supply and the volume of natural gas consumption. Natural gas is bought and sold by volume, but since natural gas is highly compressible, the pressure and the temperature at which the volume is recorded has a strong effect on the measured volume. To ensure equitable payments for natural gas, the industry has

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adopted standard conditions for measurement of volume: 60 degrees Fahrenheit and 14.73 pounds per square inch absolute.

Natural gas supply to distribution systems is typically measured with specialized instruments to measure the volume, temperature, and pressure of the gas. This data is used to convert the volume to standard conditions. These measurement instruments are sophisticated, but not perfect. Slight inaccuracy in the measurement of volume, temperature, and pressure can cause inaccurate calculation of the standard condition volume of natural gas supply.

Natural gas consumption for a distribution system includes metered volumes and known losses.

When natural gas is delivered to a typical residential customer, the volume is measured with a meter. Some—but not all—volume meters automatically compensate for the difference between ambient temperature and standard temperature. Pressure is assumed to be constant based on the regulator installed prior to the volume meter. Volume meters have a tendency to drift away from accurate measurement over time. Also, the technology used in temperature-compensated residential meters is not precise. The regulator upstream of the volume meter may drift from its set point, passing natural gas to the volume meter at a slightly higher or lower pressure than expected. As with natural gas supply to distribution systems, the calculation of the standard condition volume of natural gas delivered to residential customers is inaccurate.

When natural gas is delivered to industrial and commercial customers, measurement device sophistication generally increases as the volume of gas being measured increases. However, measurement of the standard condition volume delivered to these customers will never be 100 percent accurate.

In addition to measurement inaccuracy, operational factors can also contribute to LAUF gas. Customer volume meter readings are not recorded at the same time. Some volume of natural gas will be unaccounted for when the “gas-in” and “gas-out” meter-reading cycles are not synchronized. In anticipation of high customer demand, the pressure within natural gas distribution systems can be increased to provide more energy available for delivery, a process often referred to as “line pack.” Essentially, more standard volume gas is pushed through the gas-in meters, but not reflected in the gas-out meter readings.

Known losses from the distribution system are typically not metered and must be estimated. During maintenance, construction, and emergency response, natural gas may intentionally be released. Gas may also leak from the distribution system at locations that may or may not be known to the operator of the distribution system. Generally, known leaks are small and release a very limited volume of gas. When leak locations are unknown, the volume of gas being released is also unknown. Operators of natural gas distribution systems estimate the volume of known lost gas and include this volume in gas consumption when calculating LAUF gas.

LAUF gas is calculated as the difference between gas supply and gas consumption. LAUF gas is a combination of measurement inaccuracy and unknown leaks, but it is impossible to know the portion of LAUF gas attributable to each. LAUF gas is not a valid proxy for either unknown leak volume or methane emissions.

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**D. Analysis of Agency Reporting and Data Collection**

At the Federal level, both PHMSA and the EIA collect data about LAUF gas. PHMSA and EIA instructions for determining the volume of LAUF gas are consistent. There are differences in the scope of the data collections and the method for calculating the percentage of LAUF gas.

EIA collects data for a single State and a single calendar year in EIA Form 176. Companies report standard condition volumes for six components of gas supply and nine components of gas disposition for all natural gas pipeline system types they operate in a State. If a company operates gas gathering, gas distribution, gas transmission, and liquefied natural gas systems, the 15 EIA volumes include all 4 system types. EIA data does not provide LAUF gas for just gas distribution systems. The sum of gas supply volumes can exceed the sum of gas consumption volumes, resulting in negative LAUF gas. In the Natural Gas Annual, the EIA provides State summaries of LAUF gas in Table A1. When calculating the percentage of LAUF gas, EIA divides the LAUF gas volume by the gas consumption volume.

PHMSA collects the percentage of LAUF gas on PHMSA Form 7100.1-1 for a single State over a 12-month period ending June 30. PHMSA selected June 30 as the calculation date for LAUF to avoid the predominantly cold-weather month of December. Additionally, residential customer demand is lower in June than December, minimizing the impact of diverse meter-reading cycles. Selecting June for the calculation date also helps to avoid inaccuracy due to line pack, as discussed in the previous section. PHMSA does not collect LAUF gas data for any system type other than gas distribution. PHMSA collects only the percentage of LAUF gas and does not collect any component volumes. If a company calculates a negative value for LAUF gas, it has likely either overcompensated for measurement conditions or overestimated known losses. Therefore, PHMSA instructs companies that calculate a negative value for percent of LAUF gas to report zero. PHMSA instructs companies to calculate percent of LAUF gas by dividing the LAUF volume by the gas supply volume. PHMSA has regulatory responsibility for both natural gas distribution systems and systems that transport propane vapor. PHMSA collects percent LAUF gas from all distribution operators, regardless of commodity.

Many of PHMSA's State pipeline safety partners are in State agencies with gas distribution ratemaking authority. Feedback provided by these State pipeline safety partners shows that there is wide variation among State agencies in the use of LAUF gas. Some State agencies do not consider LAUF gas in ratemaking cases, while others use EIA or PHMSA data. Some agencies collect LAUF data directly from gas distribution pipeline operators as part of the ratemaking process.

The Environmental Protection Agency (EPA) collects greenhouse gas emission data from gas distribution pipeline operators. During the development of EPA emission data collections, LAUF gas was considered and rejected as a measure of emissions.

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**E. Potential Safety Issues Surrounding LAUF Gas.**

Natural gas leaks certainly have potential safety issues as described in the report titled America Pays for Gas Leaks (see section B). However, LAUF gas is a combination of measurement inaccuracy and unknown leaks and it is impossible to know the portion attributable to each. Two gas distribution operators with the same volume of LAUF gas could have drastically different volumes of unknown leaks.

LAUF gas is not a valid proxy for either unknown leak volume or methane emissions. PHMSA has not identified any potential safety issues surrounding LAUF gas.

**F. Alternate Reporting and Measures**

PHMSA has not identified any potential safety issues surrounding LAUF gas; as such, neither alternate reporting nor measures would resolve any safety issue.

**G. Conclusion**

PHMSA and EIA instructions for calculating the volume of LAUF gas are consistent. However, there are differences in the data collection scopes and the method for calculating the percentage of LAUF gas.

PHMSA's collection of the percentage of LAUF gas based on 12 months ending June 30 is timed to minimize inaccuracy due to operational factors.

EIA's collection of 15 component volumes used to calculate LAUF gas provides additional insight into the company's natural gas operations within a calendar year.

Since some State agencies use PHMSA LAUF gas data during ratemaking proceedings, while others use EIA data, both agencies should continue collecting LAUF gas data.

PHMSA intends to propose changes to the instructions for PHMSA Form 7100.1-1, Gas Distribution System Annual Report, related to calculating the percent of LAUF gas and negative percent values. PHMSA intends to propose calculating percent LAUF gas by dividing the LAUF volume by the gas disposition volume. PHMSA also intends to propose allowing a negative value to be reported for percent LAUF gas. These changes would harmonize the PHMSA and EIA methodologies for calculating percent LAUF gas.