

Southwest Gas Corporation

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:

**Safety and Enforcement Division Data Request
Southwest Gas R15-01-008 2016 Annual Report**

By:

Southwest Gas Corporation

Reporting Year Period:

January 1, 2015 through December 31, 2015

Date:

June 17, 2016

**Southwest Gas Corporation
Response to
Safety and Enforcement Division Data Request
Southwest Gas R15-01-008 2016 Annual Report**

EXECUTIVE SUMMARY

Southwest Gas Corporation (Southwest Gas or Company) is a multi-jurisdictional natural gas local distribution company, engaged in the retail transmission, distribution, transportation, and sale of natural gas for domestic, commercial, agricultural, and industrial uses. The Company serves approximately 190,000 California customers.

Southwest Gas is a named respondent to Rulemaking 15-01-008 (Rulemaking), opened by the California Public Utilities Commission (Commission) January 22, 2015. The Rulemaking was opened pursuant to Senate Bill (SB) 1371¹, which requires, "...the adoption of rules and procedures to minimize natural gas leakage from Commission-regulated natural gas pipeline facilities consistent with Public Utilities Code Section 961(d), §192.703(c) of Subpart M of Title 49 of the Code of Federal Regulation, the Commission's General Order 112-E, and the state's goal of reducing greenhouse gas emissions."²

On May 15, 2015, Southwest Gas filed an Annual Report in accordance with SB 1371 for the period January 1, 2013 through March, 31, 2015.³ Additionally, Southwest Gas submitted a response to Safety and Enforcement Division's (SED) data request for the period January 1, 2008 through March 31, 2015.⁴ Pursuant to SED's data request, natural gas utilities are to provide a report annually by May 15. Subsequent to the first report, Southwest Gas has been actively participating in the Rulemaking by working with the SED, the California Air Resources Board (ARB) and other parties to further refine the reporting process. By ruling dated April 11, 2016, Administrative Law Judge Colette E. Kersten issued the SED data request and reporting requirements for the 2016 reporting year, and requiring responses by June 17, 2016.⁵ Southwest Gas submits its 2016 Annual Report utilizing the reporting templates, including emission factors and definitions issued in the April 11, 2016 Ruling.

Southwest Gas appreciates the opportunity to provide this report, and looks forward to its continued involvement in the Rulemaking.

¹ SB 1371 became effective January 1, 2015, and added Article 3, §§975, 977 and 978 to the Public Utilities Code. All code references herein pertain to the Public Utilities Code.

² Order Instituting Rulemaking (OIR), at p.1.

³ Southwest Gas Corporation, Natural Gas Leakage Abatement Report, in compliance with Rulemaking 15-01-008 for the Reporting Period January 1, 2013 through December 1, 2014.

⁴ Southwest Gas Corporation, Natural Gas Leakage Abatement Report, in response to Safety and Enforcement Division Data Request Southwest Gas 01-09-15-01 for the Reporting Period January 1, 2008 through March 31, 2015.

⁵ Administrative Law Judge's Ruling Issuing Staff Data Request Regarding 2016 Annual Reporting Requirements and Directing Responses by June 17, 2016, dated April 11, 2016.

**Southwest Gas Corporation
Response to
Safety and Enforcement Division Data Request
Southwest Gas R15-01-008 2016 Annual Report**

INTRODUCTION

The following data included in this Report has 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 Request Southwest Gas R15-01-008 2016 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, 2015 to December 31st, 2015. 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.

Southwest Gas Response: Southwest Gas did not make any substantive changes to its leak and emissions management practices from January 1, 2015 to December 31, 2015.

- (2) A list of new graded and ungraded 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 1st, 2015 through December 31st, 2015.

Southwest Gas Response: Please reference the attached Appendices 1-7.

- (3) A list of graded and ungraded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1st, 2015 through December 31st, 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.

Southwest Gas Response: Please reference the attached Appendices 1-7.

- (4) A list of ALL open graded and ungraded 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 1st, 2015 through December 31st, 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.

Southwest Gas Response: Please reference the attached Appendices 1-7.

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- (5) System-wide gas leak and emission rate data, along with any data and computer models used in making that calculation, for the 12 months ending December 31st, of the reporting year.

Southwest Gas Response: Please reference the attached Appendix 8.

- (6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas Corporation R15-01-008 2016 Annual Report for the 12 months ending December 31st, 2015.

Southwest Gas Response: Please reference the attached Appendix 8.

- (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.

Southwest Gas Response: Southwest Gas plans to continue its current leak mitigation activities including accelerated leak survey (pursuant to the Company's Distribution Integrity Management Program) and replacement of early vintage plastic pipe, and its 3-year DOT leak survey frequency. These activities work to identify and repair leaks on the Company's distribution system earlier and to replace aging infrastructure with higher leakage rates, thereby serving the secondary role of reducing methane emissions.

Natural Gas Leakage Abatement Report

**Safety and Enforcement Division Data Request
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**Appendices
1 through 9**

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

61772016
Appendix 1

Rev. 4/4/16

Present 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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report.

The following questions in the above mentioned data requests are answered using the spreadsheets in this Appendix (#1):

- (2) A List of new grades and ungraded 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 1st through December 31st of the previous calendar year.
- (3) List of grades and ungraded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1st through December 31st of the previous calendar year. 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, by month, from January 1st through December 31st of the previous calendar year.
- (4) List of ALL open grades and ungraded 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 1st through December 31st of the previous calendar year. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of methane leaked for each.

Response:

Transmission Pipeline Leaks:

ID	Geographic Location	Pipe Material	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YY)	Temporary Repair Date (MM/DD/YY)	Permanent Repair Date (MM/DD/YY)	Scheduled Repair Date (MM/DD/YY)	Reason for Not Scheduling a Repair	Number of Days Leaking	Number of Days Until Permanent Repair	Emission Factor (t/ci/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
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N/A

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 1

Rev. 4/4/16

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):
 Note - Deferrals in Data Request Southwest Gas R15-01-008 2016 May Report

The following questions in the above mentioned data requests are answered using the spreadsheets in this Appendix (#1):

- (2) A List of new graded and ungraded 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 1st through December 31st of the previous calendar year.
- (3) List of graded and ungraded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1st through December 31st of the previous calendar year. 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.
- (4) List of ALL open graded and ungraded 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 1st through December 31st of the previous calendar year. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of methane leaked for each.

Response:

Transmission Pipeline Damage (3rd party dig-ins, natural disasters, etc.):

ID	Geographic Location	Damage Type	Pipe Material	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YY)	Temporary Repairs (MM/DD/YY)	Permanent Repairs (MM/DD/YY)	Number of Days Leaking	Number of Days Until Permanent Repair	Emission Factor (Misc/Day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
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N/A

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report 6/17/2016 Appendix 1 Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#1):
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Pipeline Blowdowns:

ID	Geographic Location	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A	92395	2	327	

Southwest Gas Corporation

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.
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Appendix 1 Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#1):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Pipeline Component Emissions:

Total Number of Devices	Device Type	Bleed Rate	Manufacturer	Emission Factor (Mscf/day)	Annual Emission (Mscf)	Explanatory Notes / Comments
N/A						

Southwest Gas Corporation

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Appendix 1

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#1):
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Pipeline Odorizers:

ID	Geographic Location	Number of Units	Emission Factor (Mscf/yr)	Annual Emission (Mscf)	Explanatory Notes / Comments
N/A					

Southwest Gas Corporation

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Appendix 2

Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#2):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission M&R Station Leaks and Emissions

Notes:

1. You must record data in Station Leaks & Emissions tab, but the Component Leaks & Emissions tab is optional.
2. In future reports, the Station Leaks & Emissions tab, which relies on Emission Factors, will be phased out in favor of reporting actual leak measurements in the Component Leaks & Emissions tab.

Number of Stations	Station Classification	Emission Factor (Mscf/yr)	Annual Emission (Mscf)	Explanatory Notes / Comments
2	D	12.2	24.4	

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Appendix 2

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#2):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission M&R Station Blowdowns:

ID	Geographic Location	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A				

Southwest Gas Corporation

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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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#2):

- (6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission M&R Station Component Leaks and Emissions

Notes:

1. If you record data using this table and you only leak survey part of your system, you must extrapolate emissions from leaks up to account for emissions from your entire system for the year.

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Pressure (psi)	Discovery Date (For Leaks Only) (MM/DD/YY)	Repair Date (For Leaks Only) (MM/DD/YY)	Number of Days Emitting	Emission Factor (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A											

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 3 Rev. 4/4/16
 Pursuant to SB 1371, Leno - Natural Gas leakage statement, the California Public Utilities Commission (CPUC) requests that the following information be transmitted to the CPUC and the State Air Resources Board (ARB):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#3):
 (6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Compressor Emissions (Underground Gas Storage Providers - Record these data in Appendix 7 only):

ID	Geographic Location	Compressor Type	Prime Mover	Number of Cylinders in Compressor	Number of Seals	Seal Type	Operating Mode: Pressurized Operating (hours)	Operating Mode: Pressurized Idle (hours)	Operating Mode: Depressurized Idle (hours)	Emission Factor: Pressurized Operating (scfm)	Emission Factor: Pressurized Idle (scfm)	Emission Factor: Depressurized Idle (scfm)	Annual Emissions (Mscf)	Explanatory Notes / Comments

N/A

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 3 Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#3):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Compressor Station Blowdowns (Underground Gas Storage Providers - Record these data in Appendix 7 only):

ID	Geographic Location	Compressor Type	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A					

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 3 Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#3):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Compressor Station Component Leaks and Emissions (Underground Gas Storage Providers - Record these data in Appendix 7 only):

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Discovery Date (Leaks Only) (MM/DD/YY)	Repair Date (Leaks Only) (MM/DD/YY)	Number of Days Emitting	Emission Factor (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A										

Southwest Gas Corporation

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 6/17/2016

Appendix 3 Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#3):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Transmission Compressor Station Storage Tank Leaks and Emissions (Underground Gas Storage Providers - Record these data in Appendix 7 only):

Total Number	Discovery Date (Leaks Only) (MM/DD/YY)	Repair Date (Leaks Only) (MM/DD/YY)	Number of Days Emitting	Emission Factor (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A						

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

- The following questions in the above mentioned data requests are answered using the spreadsheets in this 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 1st through December 31st of the previous calendar year.
 (3) List of graded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1st through December 31st of the previous calendar year. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of methane leaked for each.
 (4) 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 1st through December 31st of the previous calendar year. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of methane leaked for each.

Response:

Distribution Main & Service Pipeline Leaks:

ID	Geographic Location	Pipe Classification	Pipe Material	Pipe Schedule	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YYYY)	Temporary Repair Date (MM/DD/YYYY)	Permanent Repair Date (MM/DD/YYYY)	Scheduled Repair Date (MM/DD/YYYY)	Reason for Not Scheduling a Repeat	Number of Days Leaking	Emission Factor (leak/day)	Annual Emissions (Mcf)	Explanatory Notes / Comments
3002262	96145	DB	P	N/A	2	223	43	2 B	Below Ground	07/27/2015		06/17/2015			0	0.0089	0	SDR11 on PE pipe does not match Schedule
3001202	96142	DB	P	N/A	0.5	246	43	1 B	Below Ground	06/12/2015		06/12/2015			13	3.8844	0	SDR11 on PE pipe does not match Schedule
3005194	96145	DB	P	N/A	0.5	246	43	1 B	Below Ground	06/23/2015		06/23/2015			0	0.0089	0	SDR11 on PE pipe does not match Schedule
3002233	96111	DB	P	N/A	4	201	60	2 B	Below Ground	09/02/2015		09/02/2015			7	2.0916	0	SDR11 on PE pipe does not match Schedule
3002907	96111	DB	P	N/A	0.5	235	60	3 B	Below Ground	07/31/2015		07/31/2015			1	4.1822	0	SDR11 on PE pipe does not match Schedule
3014548	96111	DB	P	N/A	0.5	235	60	3 B	Below Ground	07/06/2015		07/06/2015			0	0.0089	0	SDR11 on PE pipe does not match Schedule
2997390	96111	DB	P	N/A	1	413	60	1 B	Below Ground	05/14/2015		05/14/2015			31	9.2628	0	SDR11 on PE pipe does not match Schedule
2962720	96150	DB	P	N/A	0.5	230	60	1 B	Below Ground	02/10/2015		02/10/2015			0	0.0089	0	SDR11 on PE pipe does not match Schedule
3009584	96150	DB	P	N/A	0.5	177	35	1 B	Below Ground	09/01/2015		09/01/2015			0	0.0089	0	SDR11 on PE pipe does not match Schedule
2990800	96150	DB	P	N/A	2	287	60	3 B	Below Ground	11/24/2014		11/24/2014			51	15.2388	0	SDR11 on PE pipe does not match Schedule
2990800	96150	DB	P	N/A	2	287	60	3 B	Below Ground	08/02/2015		08/02/2015			37	11.0568	0	SDR11 on PE pipe does not match Schedule
2990800	96150	DB	P	N/A	2	287	60	3 B	Below Ground	08/02/2015		08/02/2015			37	11.0568	0	SDR11 on PE pipe does not match Schedule
2990800	96150	DB	P	N/A	2	287	60	3 B	Below Ground	08/02/2015		08/02/2015			37	11.0568	0	SDR11 on PE pipe does not match Schedule
2990800	96150	DB	P	N/A	2	287	60	3 B	Below Ground	08/02/2015		08/02/2015			37	11.0568	0	SDR11 on PE pipe does not match Schedule
2991767	92307	DB	PB	N/A	1	341	40	1 B	Below Ground	12/22/2014		12/22/2014			375	42.2365	0	SDR11 on PE pipe does not match Schedule Wall thickness is not mapped so unknown
2994179	92395	DB	P	N/A	1	508	40	1 B	Below Ground	01/23/2015		01/23/2015			1	0.0089	0	SDR11 on PE pipe does not match Schedule
2997877	92395	DB	P	N/A	2	219	40	2 B	Below Ground	02/27/2015		02/27/2015			1	0.0089	0	SDR11 on PE pipe does not match Schedule
2971320	92392	DB	P	N/A	1	409	40	2 B	Below Ground	03/20/2015		03/20/2015			1	0.2988	0	SDR11 on PE pipe does not match Schedule
2972825	92345	DB	P	N/A	1	409	40	2 B	Below Ground	03/19/2015		03/19/2015			1	0.2988	0	SDR11 on PE pipe does not match Schedule
2972825	92345	DB	P	N/A	1/2	381	40	1 B	AH	04/10/2015		04/10/2015			1	0.0089	0	SDR11 on PE pipe does not match Schedule
2972825	92345	DB	P	N/A	1	409	40	2 B	Below Ground	04/10/2015		04/10/2015			1	0.0089	0	SDR11 on PE pipe does not match Schedule
2969037	92395	DB	P	N/A	2	43	40	1 B	Below Ground	04/22/2015		04/22/2015			13	3.8844	0	SDR11 on PE pipe does not match Schedule
3002160	92356	DB	P	N/A	4	465	40	1 B	Below Ground	06/17/2015		06/17/2015			56	16.7328	0	SDR11 on PE pipe does not match Schedule
3007604	92345	DB	P	N/A	2	505	40	3 B	Below Ground	06/29/2015		06/29/2015			29	8.6652	0	SDR11 on PE pipe does not match Schedule
3019195	92314	DB	PC	N/A	4	177	60	3 B	Below Ground	07/07/2015		07/07/2015			79	4.8348	0	SDR11 on PE pipe does not match Schedule
3020119	92314	DB	P	N/A	1	313	60	NB	Below Ground	07/14/2015		07/14/2015			1	0.0089	0	SDR11 on PE pipe does not match Schedule
3025758	92314	DB	P	N/A	2	602	40	2 B	Below Ground	07/27/2015		07/27/2015			1	0.2988	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	11/7/2015		11/7/2015			102	0.0612	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395	DB	P	N/A	4	247	250	3 B	Below Ground	08/07/2015		08/07/2015			48	6.2424	0	SDR11 on PE pipe does not match Schedule
3035111	92395																	

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

6/17/2016

Appendix 4

Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following questions in the above mentioned data requests are answered using the spreadsheets in this Appendix (A4):
 (1) A list of all open 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 1st through December 31st of the previous calendar year.
 (2) A list of all open graded gas leaks repaired, 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 1st through December 31st of the previous calendar year.
 (3) List of graded gas leaks repaired, tracked by geographic location in a Geographic Information System (GIS) or best equivalent, by month, from January 1st through December 31st of the previous calendar year. 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.
 (4) 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 1st through December 31st of the previous calendar year. Include the grade, component or equipment, pipe size, schedule and material, pressure, age, date discovered, scheduled date of repair, and annual volume of methane leaked for each.

Response:

Distribution Main & Service Pipeline Damage (3rd party dig-ins, natural disasters, etc.):

ID	Geographic Location	Damage Type	Pipe Classification	Pipe Material	Pipe Schedule	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YYYY)	Temporary Repair Date (MM/DD/YYYY)	Permanent Repair Date (MM/DD/YYYY)	Number Days (of Permanent Repair)	Repair Date (MM/DD/YYYY)	Number of Days Leaking	Emission Factor or Emission Estimate (Mscf/Day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
30023986	96145 D	DB	P	N/A	N/A	1	225	43	B	09/22/2015	09/22/2015	09/22/2015	0	08/22/2015	0	0.0383	0.0383	SDR11 on PE pipe does not match Schedule	
30023987	96145 D	DB	P	N/A	N/A	1	225	43	B	09/22/2015	09/22/2015	09/22/2015	0	08/22/2015	0	0.0383	0.0383	SDR11 on PE pipe does not match Schedule	
30023988	96140 D	DB	P	N/A	N/A	1	322	43	B	10/08/2015	10/08/2015	10/08/2015	0	10/08/2015	0	0.1216	0.1216	SDR11 on PE pipe does not match Schedule	
29588770	96140 D	DB	P	N/A	N/A	0.5	234	43	B	06/08/2015	06/08/2015	06/08/2015	0	06/08/2015	0	0.7046	0.7046	SDR11 on PE pipe does not match Schedule	
30026260	96141 D	DB	P	N/A	N/A	0.5	260	43	B	07/29/2015	07/29/2015	07/29/2015	0	07/29/2015	0	51.7525	51.7525	SDR11 on PE pipe does not match Schedule	
30026263	96141 D	DB	P	N/A	N/A	0.5	260	43	B	08/04/2015	08/04/2015	08/04/2015	0	08/04/2015	0	1.3143	1.3143	SDR11 on PE pipe does not match Schedule	
30023203	96143 D	DB	PC	N/A	N/A	0.5	584	4	B	08/29/2015	08/29/2015	08/29/2015	0	08/29/2015	0	2.842	2.842	Service WT not mapped so it is unknown	
30023204	96143 D	DB	PC	N/A	N/A	0.5	584	4	B	08/29/2015	08/29/2015	08/29/2015	0	08/29/2015	0	1.887	1.887	Service WT not mapped so it is unknown	
30023285	96143 D	DB	PC	N/A	N/A	0.625	559	43	B	07/30/2015	07/30/2015	07/30/2015	0	07/30/2015	0	1.2536	1.2536	Service WT not mapped so it is unknown	
30240485	96143 D	DB	P	N/A	N/A	1	199	43	B	07/24/2015	07/24/2015	07/24/2015	0	07/24/2015	0	0.4844	0.4844	SDR11 on PE pipe does not match Schedule	
3025744	96143 D	DB	P	N/A	N/A	0.5	175	43	B	07/22/2015	07/22/2015	07/22/2015	0	07/22/2015	0	75.4233	75.4233	SDR11 on PE pipe does not match Schedule	
2961813	96143 D	DB	P	N/A	N/A	1	37	43	B	01/28/2015	01/28/2015	01/28/2015	0	01/28/2015	0	9.3757	9.3757	SDR11 on PE pipe does not match Schedule	
30026885	96148 D	DB	P	N/A	N/A	0.5	179	43	B	10/10/2015	10/10/2015	10/10/2015	0	10/10/2015	0	3.1827	3.1827	SDR11 on PE pipe does not match Schedule	
2988254	96145 D	DB	P	N/A	N/A	0.5	509	43	B	05/19/2015	05/19/2015	05/19/2015	0	05/19/2015	0	0.2549	0.2549	SDR11 on PE pipe does not match Schedule	
2997420	96111 D	DB	P	N/A	N/A	0.5	162	60	B	06/04/2015	06/04/2015	06/04/2015	0	06/04/2015	0	0.0043	0.0043	SDR11 on PE pipe does not match Schedule	
30023969	96111 D	DB	P	N/A	N/A	0.5	200	60	B	08/03/2015	08/03/2015	08/03/2015	0	08/03/2015	0	0.0577	0.0577	SDR11 on PE pipe does not match Schedule	
30023557	96111 D	DB	P	N/A	N/A	0.5	237	60	B	09/01/2015	09/01/2015	09/01/2015	0	09/01/2015	0	4.7854	4.7854	SDR11 on PE pipe does not match Schedule	
30023558	96111 D	DB	P	N/A	N/A	0.5	237	60	B	09/01/2015	09/01/2015	09/01/2015	0	09/01/2015	0	4.7854	4.7854	SDR11 on PE pipe does not match Schedule	
30036619	96111 D	DB	P	N/A	N/A	0.5	212	60	B	08/11/2015	08/11/2015	08/11/2015	0	08/11/2015	0	0.1133	0.1133	SDR11 on PE pipe does not match Schedule	
30023139	96111 D	DB	P	N/A	N/A	0.5	105	60	B	09/02/2015	09/02/2015	09/02/2015	0	09/02/2015	0	11.4071	11.4071	SDR11 on PE pipe does not match Schedule	
2973830	96111 D	DB	P	N/A	N/A	0.5	100	60	B	04/16/2015	04/16/2015	04/16/2015	0	04/16/2015	0	2.8612	2.8612	SDR11 on PE pipe does not match Schedule	
30052541	96111 D	DB	P	N/A	N/A	1	189	60	B	09/10/2015	09/10/2015	09/10/2015	0	09/10/2015	0	3.8917	3.8917	SDR11 on PE pipe does not match Schedule	
30052542	96111 D	DB	P	N/A	N/A	1	189	60	B	09/10/2015	09/10/2015	09/10/2015	0	09/10/2015	0	3.8917	3.8917	SDR11 on PE pipe does not match Schedule	
30052751	96111 D	DB	P	N/A	N/A	0.5	237	60	B	09/18/2015	09/18/2015	09/18/2015	0	09/18/2015	0	3.119	3.119	SDR11 on PE pipe does not match Schedule	
30023870	96111 D	DB	P	N/A	N/A	0.5	235	60	B	07/25/2015	07/25/2015	07/25/2015	0	07/25/2015	0	10.2817	10.2817	SDR11 on PE pipe does not match Schedule	
3040337	96111 D	DB	P	N/A	N/A	0.5	238	60	B	08/17/2015	08/17/2015	08/17/2015	0	08/17/2015	0	18.6127	18.6127	SDR11 on PE pipe does not match Schedule	
3006789	96150 D	DB	P	N/A	N/A	0.5	381	60	B	09/16/2015	09/16/2015	09/16/2015	0	09/16/2015	0	0.4089	0.4089	SDR11 on PE pipe does not match Schedule	
3007395	96150 D	DB	P	N/A	N/A	0.5	286	60	B	10/15/2015	10/15/2015	10/15/2015	0	10/15/2015	0	4.089	4.089	SDR11 on PE pipe does not match Schedule	
3008926	96150 D	DB	P	N/A	N/A	0.5	335	60	B	06/25/2015	06/25/2015	06/25/2015	0	06/25/2015	0	1.0601	1.0601	SDR11 on PE pipe does not match Schedule	
3008926	96150 D	DB	P	N/A	N/A	0.5	402	35	B	08/01/2015	08/01/2015	08/01/2015	0	08/01/2015	0	2.995	2.995	SDR11 on PE pipe does not match Schedule	
3004659	96150 D	DB	P	N/A	N/A	0.5	404	35	B	07/16/2015	07/16/2015	07/16/2015	0	07/16/2015	0	2.995	2.995	SDR11 on PE pipe does not match Schedule	
3021203	96150 D	DB	P	N/A	N/A	0.5	258	60	B	06/30/2015	06/30/2015	06/30/2015	0	06/30/2015	0	1.3336	1.3336	SDR11 on PE pipe does not match Schedule	
30016912	96150 D	DB	P	N/A	N/A	0.5	258	60	B	08/05/2015	08/05/2015	08/05/2015	0	08/05/2015	0	0.510	0.510	SDR11 on PE pipe does not match Schedule	
3004664	96150 D	DB	P	N/A	N/A	0.25	284	60	B	08/05/2015	08/05/2015	08/05/2015	0	08/05/2015	0	3.2485	3.2485	SDR11 on PE pipe does not match Schedule	
3004664	96150 D	DB	P	N/A	N/A	0.5	68	60	B	08/05/2015	08/05/2015	08/05/2015	0	08/05/2015	0	3.2485	3.2485	SDR11 on PE pipe does not match Schedule	
3007092	96150 D	DB	P	N/A	N/A	0.5	248	60	B	08/12/2015	08/12/2015	08/12/2015	0	08/12/2015	0	4.296	4.296	SDR11 on PE pipe does not match Schedule	
3005382	96150 D	DB	PC	N/A	N/A	2	Unknown	35	B	08/31/2015	08/31/2015	08/31/2015	0	08/31/2015	0	2.0069	2.0069	Service WT not mapped so it is unknown	
30039747	96150 D	DB	P	N/A	N/A	0.5	176	60	B	08/12/2015	08/12/2015	08/12/2015	0	08/12/2015	0	2.741	2.741	SDR11 on PE pipe does not match Schedule	
3005644	96150 D	DB	P	N/A	N/A	0.5	174	60	B	08/26/2015	08/26/2015	08/26/2015	0	08/26/2015	0	13.0521	13.0521	SDR11 on PE pipe does not match Schedule	
3007567	96150 D	DB	P	N/A	N/A	0.5	174	35	B	06/26/2015	06/26/2015	06/26/2015	0	06/26/2015	0	13.0521	13.0521	SDR11 on PE pipe does not match Schedule	
2968517	96150 D	DB	P	N/A	N/A	0.5	279	60	B	03/28/2015	03/28/2015	03/28/2015	0	03/28/2015	0	2.4747	2.4747	SDR11 on PE pipe does not match Schedule	
3036254	96150 D	DB	P	N/A	N/A	0.5	238	35	B	08/04/2015	08/04/2015	08/04/2015	0	08/04/2015	0	2.20	2.20	SDR11 on PE pipe does not match Schedule	
3111871	92301 O	DA	PC	N/A	N/A	3/4"	266	40	AH	12/31/2015	12/31/2015	12/31/2015	0	12/31/2015	0	2.20	2.20	SDR11 on PE pipe does not match Schedule	
3002395	92305 E	DB	P	N/A	N/A	1/2"	415	40	B	11/18/2015	11/18/2015	11/18/2015	0	11/18/2015	0	0.43	0.43	SDR11 on PE pipe does not match Schedule	
3101369	92305 E	DB	P	N/A	N/A	1/2"	415	40	B	12/14/2015	12/14/2015	12/14/2015	0	12/14/2015	0	1.44	1.44	SDR11 on PE pipe does not match Schedule	
92305 E	92305 E	DB	P	N/A	N/A	1/2"	402	40	B	12/14/2015	12/14/2015	12/14/2015	0	12/14/2015	0	1.44	1.44	SDR11 on PE pipe does not match Schedule	
3097521	92315 E	DB	P	N/A	N/A	1"	278	40	B	12/09/2015	12/09/2015	12/09/2015	0	12/09/2015	0	0.12	0.12	SDR11 on PE pipe does not match Schedule	
3097503	92308 E	DB	P	N/A	N/A	1/2"	406	40	B	12/09/2015	12/09/2015	12/09/2015	0	12/09/2015	0	0.87	0.87	SDR11 on PE pipe does not match Schedule	
92308 E	92308 E	DB	P	N/A	N/A	1/2"	555	37	B	12/02/2015	12/02/2015	12/02/2015	0	12/02/2015	0	429.22	429.22	SDR11 on PE pipe does not match Schedule	
3006913	92308 E	DB	P	N/A	N/A	1/2"	397	40	B	11/30/2015	11/30/2015	11/30/2015	0	11/30/2015	0	4.85	4.85	SDR11 on PE pipe does not match Schedule	
311807	92308 E	DB	DA	PC	N/A	3/4"	390	40	AH	11/30/2015	11/30/2015	11/30/2015	0	11/30/2015	0	2.27	2.27	SDR11 on PE pipe does not match Schedule	
3086640	92345 E	DB	P	N/A	N/A	1/2"	377	40	B	11/30/2015	11/30/2015	11/30/2015	0	11/30/2015	0	4.85	4.85	SDR11 on PE pipe does not match Schedule	
3064988	92308 E	DB	P	N/A	N/A	1/2"	369	40	B	11/23/2015	11/23/2015	11/23/2015	0	11/23/2015	0	1.43	1.43	SDR11 on PE pipe does not match Schedule	
92308 E	92308 E	DB	P	N/A	N/A	1/2"	210	40											

Distribution Main & Service Pipeline Damage (3rd party dig-ins, natural disasters, etc.):

ID	Geographic Location	Damage Type	Pipe Classification	Pipe Material	Pipe Schedule	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YYYY)	Temporary Repair Date (MM/DD/YYYY)	Permanent Repair Date (MM/DD/YYYY)	Number of Days of Encumbered Road	Repair Date (MM/DD/YYYY)	Number of Days Leaking	Emission Factor or Engineering (lbs/d/BW)	Annual Emissions (Mscf)	Explanatory Notes / Comments
3056726	92395 E	DB	MB	P	NA	2"	207	60	1B	0	09/15/2015	N/A	09/15/2015	0	09/15/2015	0	12.47	12.47	
3056727	92395 E	DB	DB	P	NA	12"	279	40	1B	0	09/11/2015	N/A	09/11/2015	0	09/11/2015	0	2.99	2.99	
3056728	92395 E	DB	DB	P	NA	12"	438	40	1B	0	09/11/2015	N/A	09/11/2015	0	09/11/2015	0	0.07	0.07	
3042628	92315 E	DB	DB	P	NA	12"	373	40	1B	0	08/24/2015	N/A	08/24/2015	0	08/24/2015	0	3.76	3.76	
3041032	92345 E	DB	DB	P	NA	12"	179	40	1B	0	08/19/2015	N/A	08/19/2015	0	08/19/2015	0	0.45	0.45	
3039476	92307 E	DB	DB	P	NA	12"	462	40	1B	0	08/17/2015	N/A	08/17/2015	0	08/17/2015	0	0.67	0.67	
3030458	92308 E	DB	DB	P	NA	12"	434	40	1B	0	08/17/2015	N/A	08/17/2015	0	08/17/2015	0	0.27	0.27	
3034482	92301 E	DB	DB	P	NA	12"	355	40	1B	0	08/06/2015	N/A	08/06/2015	0	08/06/2015	0	6.82	6.82	
3033799	92301 E	DB	DB	P	NA	12"	379	40	1B	0	08/04/2015	N/A	08/04/2015	0	08/04/2015	0	0.08	0.08	
3033469	92302 N	DB	DB	PC	NA	34"	321	60	1B	0	08/04/2015	N/A	08/04/2015	0	08/04/2015	0	0.08	0.08	
3024185	92315 E	MB	P	NA	NA	2"	614	40	1B	0	07/31/2015	N/A	07/31/2015	0	07/31/2015	0	3.04	3.04	Schedule Z
3022791	92315 E	DB	DB	P	NA	12"	320	40	1B	0	07/25/2015	N/A	07/25/2015	0	07/25/2015	0	0.09	0.09	
3022791	92315 E	DB	DB	P	NA	2"	523	40	1B	0	07/21/2015	N/A	07/21/2015	0	07/21/2015	0	2.04	2.04	
3017445	92345 E	DB	DB	P	NA	12"	491	40	1B	0	07/09/2015	N/A	07/09/2015	0	07/09/2015	0	4.09	4.09	
3016208	92345 E	DB	DB	P	NA	12"	548	40	1B	0	07/09/2015	N/A	07/09/2015	0	07/09/2015	0	0.01	0.01	
3016886	92344 E	DB	DB	P	NA	12"	120	60	1B	0	07/08/2015	N/A	07/08/2015	0	07/08/2015	0	1.08	1.08	
31237	92311 O	DA	DA	PC	NA	NA	80	40	1AH	0	07/04/2015	N/A	07/04/2015	0	07/04/2015	0	12.90	12.90	
3006258	92345 E	DB	DB	P	NA	12"	391	40	1B	0	06/24/2015	N/A	06/24/2015	0	06/24/2015	0	0.88	0.88	
3006258	92345 E	DB	DB	P	NA	12"	391	40	1B	0	06/24/2015	N/A	06/24/2015	0	06/24/2015	0	0.88	0.88	
3003366	92305 E	DB	DB	P	NA	12"	438	40	1B	0	06/22/2015	N/A	06/22/2015	0	06/22/2015	0	0.96	0.96	
3003277	92307 E	DB	DB	P	NA	12"	381	40	1B	0	06/20/2015	N/A	06/20/2015	0	06/20/2015	0	0.37	0.37	
3000521	92395 E	DB	DB	P	NA	12"	437	40	1B	0	06/12/2015	N/A	06/12/2015	0	06/12/2015	0	0.31	0.31	
3000228	92314 E	DB	DB	P	NA	34"	598	40	1B	0	06/09/2015	N/A	06/09/2015	0	06/09/2015	0	21.65	21.65	
2998133	92305 E	DB	DB	P	NA	12"	282	40	1B	0	05/29/2015	N/A	05/29/2015	0	05/29/2015	0	0.00	0.00	
2988739	92314 E	DB	DB	P	NA	12"	600	40	1B	0	05/19/2015	N/A	05/19/2015	0	05/19/2015	0	0.52	0.52	Schedule Z
2988765	92345 E	DB	DB	P	NA	12"	127	40	1B	0	05/16/2015	N/A	05/16/2015	0	05/16/2015	0	1.20	1.20	
2890001	92307 E	MB	P	NA	NA	4"	171	40	1B	0	05/15/2015	N/A	05/15/2015	0	05/15/2015	0	37.82	37.82	
2865954	92395 E	DB	DB	P	NA	12"	279	40	1B	0	05/12/2015	N/A	05/12/2015	0	05/12/2015	0	0.02	0.02	
2865954	92395 E	DB	DB	P	NA	12"	279	40	1B	0	05/12/2015	N/A	05/12/2015	0	05/12/2015	0	0.02	0.02	
2865932	92304 E	DB	DB	P	NA	12"	290	40	1B	0	05/12/2015	N/A	05/12/2015	0	05/12/2015	0	0.54	0.54	
2862880	92345 E	DB	DB	P	NA	12"	385	40	1B	0	05/03/2015	N/A	05/03/2015	0	05/03/2015	0	0.58	0.58	
2863552	92311 E	DB	DB	P	NA	12"	134	40	1B	0	05/01/2015	N/A	05/01/2015	0	05/01/2015	0	0.68	0.68	
31232	92345 O	DA	DA	PC	NA	NA	155	40	1AH	0	04/12/2015	N/A	04/12/2015	0	04/12/2015	0	0.93	0.93	
2970327	92307 E	DB	DB	P	NA	12"	412	40	1B	0	04/02/2015	N/A	04/02/2015	0	04/02/2015	0	5.73	5.73	
2967813	92345 E	DB	DB	P	NA	12"	448	40	1B	0	03/24/2015	N/A	03/24/2015	0	03/24/2015	0	1.46	1.46	
2967688	92307 E	DB	DB	P	NA	12"	115	40	1B	0	03/23/2015	N/A	03/23/2015	0	03/23/2015	0	0.71	0.71	
2967461	92345 E	MB	P	NA	NA	2"	149	60	1B	0	03/21/2015	N/A	03/21/2015	0	03/21/2015	0	14.21	14.21	
2967051	92301 E	DB	DB	P	NA	12"	748	40	1B	0	03/16/2015	N/A	03/16/2015	0	03/16/2015	0	1.73	1.73	
2963516	92305 E	DB	DB	P	NA	12"	305	40	1B	0	02/28/2015	N/A	02/28/2015	0	02/28/2015	0	0.92	0.92	
2963516	92345 E	DB	DB	P	NA	12"	305	40	1B	0	02/28/2015	N/A	02/28/2015	0	02/28/2015	0	0.92	0.92	
2963280	92301 O	MA	PC	NA	NA	2"	12	40	1AH	0	02/16/2015	N/A	02/16/2015	0	02/16/2015	0	928.59	928.59	
2963432	92311 E	DB	DB	P	NA	12"	141	40	1B	0	02/05/2015	N/A	02/05/2015	0	02/05/2015	0	0.95	0.95	
31222	92395 O	DA	DA	PC	NA	NA	271	40	1AH	0	02/02/2015	N/A	02/02/2015	0	02/02/2015	0	17.21	17.21	
2961124	92309 E	DB	DB	P	NA	12"	346	40	1B	0	01/29/2015	N/A	01/29/2015	0	01/29/2015	0	0.89	0.89	
2962362	92309 E	DB	DB	PC	NA	NA	346	40	1AH	0	01/29/2015	N/A	01/29/2015	0	01/29/2015	0	0.89	0.89	
2962362	92302 O	DA	DA	PC	NA	34"	114	60	1AH	0	01/22/2015	N/A	01/22/2015	0	01/22/2015	0	3.74	3.74	
2961719	92345 E	MB	P	NA	NA	2"	319	40	1B	0	01/20/2015	N/A	01/20/2015	0	01/20/2015	0	6.96	6.96	
2860631	92394 E	MB	P	NA	NA	2"	103	40	1B	0	01/16/2015	N/A	01/16/2015	0	01/16/2015	0	7.66	7.66	
2960469	92311 E	DB	DB	P	NA	12"	204	40	1B	0	01/15/2015	N/A	01/15/2015	0	01/15/2015	0	0.15	0.15	

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

6/17/2016

Appendix 4

Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#4):

- (6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Distribution Main & Service Pipeline, including MSA Blowdowns:

ID	Geographic Location	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
2"	96143	12	2.528	PVC Replacement (30681')
2"	96143	7	0.372	STL Replacement (4516')
2"	96150	24	4.601	AA Replacement (55853')
4"	96150	3	0.795	AA Replacement (2411')
0.5"	96143	9	0.003	PE Svc replacement (687')
0.625"	96143	11	0.082	STL Svc replacement (10207')
0.5"	96150	24	0.055	AA Svc replacement (10604')
0.5"	96150	24	0.006	PE Svc replacement (1185')
0.625"	96150	1	0.004	STL Svc replacement (492')
0.75"	96143	253	0.009	Meter Changeouts (assumed 3'/MSA)
0.75"	96111	298	0.014	Meter Changeouts
0.75"	96150	405	0.014	Meter Changeouts
N/A	92395	91	17.33	Main blow downs
N/A	92395	2893	0.64	Service blow downs
N/A	92395	16	5.38	New pipe purges

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

6/17/2016

Appendix 4

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#4):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Distribution Main & Service Pipeline Component Emissions:

Total Number of Devices	Device Type	Bleed Rate	Manufacturer	Emission Factor (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A						

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report
6/17/2016

Appendix 4

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#4):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Distribution Main & Service Pipeline Odorizers:

ID	Geographic Location	Number of Units	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A					

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

6/17/2016

Appendix 5

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#5):
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Distribution M&R Station Leaks and Emissions

Notes:

1. You must record data in the Station Leaks & Emissions tab, but the Component Leaks & Emissions tab is optional.
2. In future reports, the Station Leaks & Emissions tab, which relies on Emission Factors, will be phased out in favor of reporting actual leak measurements in the Component Leaks & Emissions tab.

Number of Stations	Station Classification	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
4	A2	896.5	3586	Four leaks found on regulator stations

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report 6/17/2016

Appendix 5 Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#5):

- (6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Distribution M&R Station Blowdowns:

ID	Geographic Location	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
19DS10030820	92363	2	0.05148	
19DS10029821	92363	1	0.02574	
19DS10029841	92363	1	0.02574	
19DS10027320	92363	1	0.02574	
19DS10028960	92363	1	0.02574	
N/A	96143	14	0.0070	Reg station maintenance (assumed 6' of 2" pipe)
N/A	96111	14	0.0090	Reg station maintenance
N/A	96150	25	0.0120	Reg station maintenance
N/A	92395	373	34.7400	

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 5 Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#5):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Distribution M&R Station Component Leaks & Emissions

Notes:

1. If you record data using this table and you only leak survey part of your system, you must extrapolate emissions from leaks up to account for emissions from your entire system for the year.

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Pressure (psi)	Discovery Date (Leaks Only) (MM/DD/YY)	Repair Date (Leaks Only) (MM/DD/YY)	Number of Days Emitting	Emission Factor (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
Midway DRS 1080 Julie Ln	96150 PR 96150 Pr	L L		Grove Fisher	35 35	N/A N/A	N/A N/A	0	0.0000048	0	Full relief valve set at 40#. No OP during 2015 so no emissions 0.001762 Token relief valve with Class VI leak through

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report
6/17/2016

Appendix 6

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#6):
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Customer Meter Set Assembly (MSA) Leaks:

Number of Meters	Meter Type	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
498	R	0.148	73.704	
67	CI	0.051	3.417	

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report
6/17/2016

Rev. 4/4/16

Appendix 6

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#6):
(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Customer Meter Vented Emissions:

Number of Events	Meter Type	Engineering Estimate (Mscf)	Annual Emissions (Mscf)	Explanatory Notes / Comments
11647	R	0.00020294	2.36364218	
539	CI	0.00020294	0.10938466	

Southwest Gas Corporation

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 [Company Name] R15-01-008 2016 May Report

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Appendix 7

Rev. 4/4/16

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):
 Note - Definitions in Data Request [Company Name] R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (R7):

- (6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request [Company Name] R15-01-008 2016 May Report.

Response:

Underground Storage Facility Leaks and Emissions:

ID	Geographic Location	Source	Number of Sources	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
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N/A

Southwest Gas Corporation

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 [Company Name] R15-01-008 2016 May Report

6/17/2016

Appendix 7 Rev. 4/4/16

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):
 Note - Definitions in Data Request [Company Name] R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (F7):

(F) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request [Company Name] R15-01-008 2016 May Report.

Response:

Underground Storage Facility Compressor Leaks and Emissions:

ID	Geographic Location	Compressor Type	Prime Mover	Number of Cylinders in Compressor	Number of Seals	Sail Type	Operating Mode: Pressurized Operating (hours)	Operating Mode: Depressurized (hours)	Operating Mode: Depressurized Idle (hours)	Emission Factor: Pressurized Operating (scf/hr)	Emission Factor: Pressurized Idle (scf/hr)	Emission Factor: Depressurized Idle (scf/hr)	Discovery Date (Leak Only) (MM/DD/YY)	Repair Date (Leak Only) (MM/DD/YY)	Number of Days Leaking or Emitting	Annual Emissions (Mecf)	Explanatory Notes / Comments
N/A																	

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 7 Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#7):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Underground Storage Blowdowns:

ID	Geographic Location	Source	Compressor Type	Number of Blowdown Events	Annual Emissions (Mscf)	Explanatory Notes / Comments
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N/A

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

6/17/2016

Appendix 7 Rev. 4/4/16

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#7):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Underground Storage Component Leaks & Emissions:

ID	Geographic Location	Device Type	Bleed Rate	Manufacturer	Pressure (psi)	Discovery Date (Leaks Only) (MM/DD/YY)	Repair Date (Leaks Only) (MM/DD/YY)	Number of Days Emitting	Emission Factor or Engineering Estimate (Mscf/day)	Annual Emissions (Mscf)	Explanatory Notes / Comments
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N/A

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 7

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#7):

(6) Calculable or estimated emissions and non-graded gas leaks, as defined in Data Request Southwest Gas R15-01-008 2016 May Report.

Response:

Underground Storage Dehydrator Vent Emissions:

ID	Geographic Location	Number of Sources	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A					

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

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Appendix 8

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):
 Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#8):
 (5) The system-wide gas leak rate data, as defined in Data Request Southwest Gas R15-01-008 2016 May Report along with any data and computer models used in making that calculation, for the 12 months ending December 31st, of the reporting year.

Response:

Summary Tables:

System Categories	Emission Source Categories	Emissions Type	Total Annual Volume of Leaks & Emissions (Mscf) <small>Note: If leak data is based on a leak survey of only part of the system, extrapolate the results up to 100% of the system.</small>	Explanatory Notes / Comments
Transmission Pipelines	Pipeline Leaks	Graded / Non-Graded Leaks	N/A	
	All Damages	Graded / Non-Graded Leaks	N/A	
	Blowdowns	Emissions	327	
	Component Emissions	Emissions	N/A	
	Odorizers	Emissions	N/A	
Transmission M&R Stations	Station Leaks & Emissions	Non-Graded Leaks / Emissions	24.4	
	Blowdowns	Emissions	N/A	
	Component Leaks & Emissions	Non-Graded Leaks / Emissions	N/A	
Transmission Compressor Stations	Compressor Emissions	Emissions	N/A	
	Blowdowns	Emissions	N/A	
	Component Leaks & Emissions	Non-Graded Leaks / Emissions	N/A	
	Storage Tank Leaks & Emissions	Non-Graded Leaks / Emissions	N/A	
	Pipeline Leaks	Graded / Non-Graded Leaks	505,4215	
Distribution Main & Service Pipelines	All Damages	Graded / Non-Graded Leaks	1905,1396	
	Blowdowns	Emissions	31,833	
	Component Emissions	Emissions	N/A	
	Odorizers	Emissions	N/A	
	Station Leaks & Emissions	Non-Graded Leaks / Emissions	3586	
Distribution M&R Stations	Blowdowns	Emissions	34,9224	
	Component Leaks & Emissions	Non-Graded Leaks / Emissions	0,001752	
	Meter Leaks	Non-Graded Leaks	77,121	
Customer Meters	Vented Emissions	Emissions	2,473	
	Storage Leaks & Emissions	Non-Graded Leaks / Emissions	N/A	
Underground Storage	Compressor Emissions	Emissions	N/A	
	Blowdowns	Emissions	N/A	
	Component Leaks & Emissions	Non-Graded Leaks / Emissions	N/A	
Unusual Large Leaks	Dehydrator Vent Emissions	Emissions	N/A	
	(Description)	Case-By-Case	N/A	

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report

6/17/2016
Appendix 8

Rev. 4/4/16

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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#8):

(5) System-wide gas leak rate data, Southwest Gas R15-01-008 2016 May Report along with any data and computer models used in making that calculation, for the 12 months ending December 31st, of the reporting year.

Response:

System Wide Leak Rate Data

1/1/2015 - 12/31/2015

Gas Storage Facilities:

Total Annual Volume of Graded Leaks (Mscf)	Total Annual Volume of Non-Graded Leaks (Mscf)	Total Annual Volume of Emissions (Mmscf)	Average Close of the Month Gas Storage Inventory (Mscf)	Average Close of the Month Working Gas Storage Inventory (Mscf)	Total Annual Volume of Injections into Storage (Mscf)	Total Annual Volume of Withdrawals from Storage (Mscf)	Explanatory Notes / Comments
N/A	N/A	N/A	N/A	N/A	N/A	N/A	

Transmission System:

Total Annual Volume of Graded Leaks (Mscf)	Total Annual Volume of Non-Graded Leaks (Mscf)	Total Annual Volume of Emissions (Mscf)	Total Annual Volume of Gas Used by the Gas Department (Mscf)	Total Annual Volume of Gas Transported to or for Customers* in State (Mscf)	Total Annual Volume of Gas Transported to or for Customers* out of State (Mscf)	Total Annual Volume of Gas Transported to utility-owned or third-party storage fields for injection into storage (Mscf)	Explanatory Notes / Comments
N/A	N/A	351.4	N/A	N/A	N/A	N/A	

Distribution System:

Total Annual Volume of Graded Leaks (Mscf)	Total Annual Volume of Non-Graded Leaks (Mscf)	Total Annual Volume of Emissions (Mscf)	Total Annual Volume of Gas Used by the Gas Department (Mscf)	Total Annual Volume of Gas Transported to or for Customers* in State (Mscf)	Total Annual Volume of Gas Transported to or for Customers* out of State (Mscf)	Explanatory Notes / Comments
2410.5611	3663.1228	37.3954	0	0	0	

*The term customers includes anyone that the utility is transporting gas for, including customers who purchase gas from the utility. Customers can be anyone including residential, businesses, other utilities, gas transportation companies, etc.

Southwest Gas Corporation

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 Southwest Gas R15-01-008 2016 May Report 6/17/2016

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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):
Note - Definitions in Data Request Southwest Gas R15-01-008 2016 May Report

The following question in the above mentioned data request is answered using the spreadsheets in this Appendix (#8):

(5) The system-wide gas leak rate data, as defined in Data Request Southwest Gas R15-01-008 2016 May Report along with any data and computer models used in making that calculation, for the 12 months ending December 31st, of the reporting year.

Response:

Summary Tables:

Natural Gas Properties	Average Mole Percent	Explanatory Notes / Comments
Methane		
Ethane		
C3+		
C6+		
Oxygen		Please note that Southwest Gas' natural gas for its California Service Territories is supplied by its 7 upstream suppliers, e.g., Southern California Gas Company, Transwestern Pipeline, Kern River Pipeline, Pajute Pipeline Company, Tuscarora Pipeline, Northwest Pipeline, and El Paso Pipeline.
Hydrogen		
Sulfur		
Water		
Carbon Monoxide		
Particulate Matter		
Inert Gas		
Odorant		