

San Diego Gas & Electric Company

Natural Gas Leakage Abatement Report

In partial fulfillment of

Senate Bill (SB) 1371 (Leno, 2014) and
Order Instituting Rulemaking (OIR) 15-01-008

By: San Diego Gas & Electric Company

Date: 5/15/15

Introduction

The following data in this report (SDG&E report) has been prepared to comply with Senate Bill 1371 (Leno, 2014), Section 2, Article 3,¹ Order Instituting Rulemaking (OIR) 15-01-008.

Pursuant to SB 1371, Leno - Natural gas: leakage abatement, the California Public Utilities Commission (CPUC or Commission) requested in the OIR that the following information be filed in the report by May 15, 2015:

1. A description and general location of each gas corporation's gas pipeline facilities, including its intrastate transmission and distribution lines.
2. A summary of its current leak management practices.
3. A list of new methane leaks in 2013 by grade, and in 2014 by grade.
4. A list of open leaks that are being monitored or are scheduled to be repaired. If the open leak is only being monitored, provide the reason why the leak has not been scheduled to be repaired.
5. The total number of leaks detected and repaired in 2013 and 2014, and the time it took to repair those leaks once they were discovered.
6. A best estimate of gas loss due to leaks (list estimated gas loss by month for 2013 and 2014), and an explanation of how the estimates were derived.²

¹ SB 1371 is codified in California Public Utilities Code §§ 975 – 978.

² OIR, at 9 and Ordering Paragraph (OP) 7. The OIR required a broader set of data than SB 1371. *See* OIR, at 3-4 (quoting CAL. PUB. UTIL. CODE § 975(c)):

- (a) A summary of utility leak management practices.
- (b) A list of new methane leaks in 2013 by grade.
- (c) A list of open leaks that are being monitored or are scheduled to be repaired.
- (d) A best estimate of gas loss due to leaks.

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Pursuant to the OIR, this first report by utilities is intended to gather information in Phase 1 of the proceeding before the Commission considers what rules and procedures should be adopted in Phase 2.³ Since many of the emissions sources were gathered for the first time by SDG&E to produce a best estimate of total lost methane, this first report is an approximation of information that may be necessary to report annually for future years under SB 1371. The report is based on available information and best engineering estimates by SDG&E and will continue to be refined through the Phase 1 information-gathering process. Because the definition of a “leak” used in the report and contents of the report are for information-gathering purposes only, the report should not be used to prejudge the Commission’s decisions on definitions and scope of future reporting requirements based on the legal and factual record.

Executive Summary

This SDG&E Report provides methane leak information for the period 2013 through 2014, as required by SB 1371 and the OIR. The Reportable Leaks Tab in Attachment 1 to the report provides an inventory of individual methane leaks discovered, repaired, and that remain open for monitoring or repair. As mentioned in SoCalGas’ & SDG&E’s reply comments in the OIR,⁴ this tab uses the definition of “leak” under the Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) (*i.e.*, “an unintentional

³ SoCalGas/SDG&E Reply Comments, dated Apr. 22, 2015, at 8, n.26 (quoting OIR at 8, 10)).

⁴ *Id.* at 9-10.

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escape of gas from the pipeline. A non-hazardous release that can be eliminated by lubrication, adjustment, or tightening, is not a leak.”⁵

In the Lost Methane Tab provided in Attachment 1 to the report, the PHMSA definition also applies to SDG&E’s best estimate of total gas lost due to leaks annually. An annual “system-wide methane emission rate” was conducted using an alternative approach than that suggested by the CPUC’s Safety and Enforcement Division (SED) in its Data Requests 01-09-15-01, 01A, and 01B (SED Data Request) that SDG&E believes is more appropriate to capture the actual emissions. However, for illustrative purposes SDG&E used both approaches for one year to help clarify why the suggested approach is not as appropriate as SDG&E’s alternative, as explained in Section 8 below. SDG&E looks forward to working with stakeholders and the Commission in determining how best to calculate and report a system-wide gas leak rate on a going-forward basis. This first report does show that, based on SDG&E’s best estimate, total methane emissions⁶ (including intentional releases)⁷ represent approximately 0.07% for 2013 and 0.09% for 2014 of total annual system throughput. This percentage is in similar to calculations of reported emissions under California’s Assembly Bill (AB) 32 Global Warming Solutions Act and the Environmental Protection Agency’s (EPA) Mandatory Reporting Program when updated emission factors

⁵ See 49 CFR § 191.11 and § 191.17 (incorporating by reference this definition in DOT Forms PHMSA F 7100.1-1 and 7100.2-1). Natural Gas Transmission and Distribution operators have reported data based on these definitions.

⁶ Methane typically accounts for about 95% of natural gas. For greater accuracy in determining methane emissions, estimates of methane losses should be adjusted accordingly.

⁷ In this report leaks are classified as being unintentional, intentional releases are classified as emissions.

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are used from the recently released Washington State University (WSU) study.⁸ SDG&E takes seriously its commitment to continue to reduce this estimate of total methane emissions pursuant to SB 1371's climate change goal, and is encouraged to see that its proactive approach in implementing best management practices to reduce methane emissions for the past two decades has resulted in one of the lowest emission rates in the country.⁹

While federal safety regulations do allow gas distribution companies to continue to monitor non-hazardous leaks without repairing them, SDG&E generally mitigates as soon as practical non-hazardous leaks to reduce even more methane emissions.

As stated in SoCalGas' and SDG&E's reply comments in the OIR,¹⁰ SDG&E's best estimate of calculable losses from intentional, controlled releases used the SED's definition (*i.e.*, "any

⁸ Brian K. Lamb et al., "Direct Measurement Show Decreasing Methane Emissions from Natural Gas Local Distribution Systems in the United States," ENVTL. SCI. & TECH, Mar. 31, 2015. This recent, nationwide study by WSU involved direct measurement of methane emissions from local natural gas distribution systems and found that methane emissions were actually 36 to 70% lower than current U.S. Environmental Protection Agency (EPA) estimates. SoCalGas was one of 13 utilities participating in the study, which was conducted in collaboration with the Environmental Defense Fund (EDF) and American Gas Association (AGA). The study also found that methane emissions from local distribution systems ranged between 0.1 to 0.2% of the total natural gas delivered nationwide in 2011. The SDG&E distribution system's emissions rates are below the lower end of the range.

⁹Over the past two decades, some of the most effective steps SDG&E has taken include:

- modernizing equipment in its Metering and Regulating (M&R) facilities to utilize zero- or lower-emitting devices than previously available;
- eliminating cast iron pipe from its system; and
- implementing operational procedures to minimize gas vented to atmosphere during routine maintenance and other operational activities

¹⁰ SoCalGas/SDG&E Reply Comments, dated Apr. 22, 2015, at 9-10.

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release of methane from the gas system into the atmosphere, whether intentional or unintentional, whether hazardous or non-hazardous”). Although SB 1371 does not mention intentional, non-hazardous releases from operation and maintenance (O&M) and system design activities and the Commission has yet to determine the final scope of the OIR, SDG&E included its best estimate of calculable losses from such activities for informational purposes. As discussed in Section 9 below, these releases represent approximately 17% of SDG&E’s total emissions. If intentional releases are included in the scope of the OIR, it should be for the purpose of reducing GHG emissions from a continuous system improvement perspective. Treating such intentional releases similar to unintentional “leaks” for repair, even though they are required as part of the safe operation of the natural gas system, would distract from SB 1371’s climate change goal and cost considerations. This OIR can explore best management practices that may help utilities reduce such releases, but mitigation of hazardous leaks from a safety perspective should remain the top priority. Other methane emissions to the atmosphere that are not a safety concern, whether unintentional leaks or intentional releases, need to be categorized in terms of volumes and costs, and then the Commission can assess utilities’ remediation strategies (or new methods of operation) based on volumes reduced and costs incurred.

Although not required by the OIR for the report, SED requested that additional information be transmitted to the SED and the California Air Resources Board (ARB) in SED’s Data Request. The information in this report overlaps with the information provided in response to SED’s Data Request, but excludes some information not required by the OIR.¹¹

Leak Management Practices

¹¹ Parties in Rulemaking (R.) 15-01-008 may separately receive this data through a data request.

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- (1) A description and general location of each gas corporation's gas pipeline facilities, including its intrastate transmission and distribution lines.

Response:

Due to having an integrated transmission system the following description addresses both SoCalGas and SDG&E. SoCalGas is the largest natural gas distribution company in the nation, delivering natural gas to over five million residential and business customers. SDG&E provides natural gas distribution service to San Diego County and delivers natural gas to over 845,000 residential and business customers. SoCalGas and SDG&E have been providing safe and reliable gas delivery service for over 100 years and are committed to continuing to do so. Both have diverse customer bases and diverse customer needs. The SoCalGas and SDG&E transmission systems are integrated and designed to provide reliable service from California production, connections to intrastate, interstate and international natural gas systems, and SoCalGas' storage fields to their customers. The integrated system includes 13 compressor stations and over 3,700 miles of high pressure transmission pipeline. SoCalGas also has four underground natural gas storage facilities. The combined territory extends from the Colorado River on the eastern end to the Pacific Coast on the western end and from Tulare County in the north to the United States/Mexico border in the south.

SoCalGas' and SDG&E's distribution systems are comprised of about 100,000 miles and 14,600 miles of mains and services respectively, which generally operate at pressures equal to or less than 60 pounds per square inch.

- (2) Summary of all current utility leak management practices, as of December 31, 2014.

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Response:

The following response is a high level summary of the current utility leak management practices for this report.

SDG&E's Leak Management Program includes preventative and responsive measures and programs. Preventative measures include design and construction standards, damage prevention programs, corrosion control programs, and pipe and facility inspections. Response measures include responding to customer and other calls of natural gas leakage, addition of odorant for the detection of leakage, response to reports of excavation damage and Company leak survey practices. Leak survey includes periodic instrumented survey of distribution facilities.

When methane emissions are detected, a "four-point" inspection, evaluating the site in relation to its proximity to people and property, the concentration of gas present in the area at the time of inspection, the potential for gas to accumulate in the surrounding area and the presence of an ignition source is completed.

Leak indications are then classified as hazardous or non-hazardous. The leak classification establishes the maximum time limit from date of detection to the date action is required. Work management and leak record data is stored in maintenance and inspection systems.

SDG&E follows the LEAKS protocol for determining the effectiveness of the leak management program.

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- L. Locate the leaks in the system – the quality of leak locating is dependent upon field personnel training, inspection policies and procedures and equipment.
- E. Evaluate the actual or potential hazard associated with the leak – the evaluation of the leak and classification is dependent upon policies and procedures, field personnel, training, and equipment.
- A. Act appropriately to mitigate the hazard – refers to the assignment of appropriate action based on the leak classification. The decision and timing for leak repair is dictated by SDG&E policies and procedures and implemented at the division level.
- K. Keep Records – record keeping is initiated at the division level and managed in the various leak management systems.
- S. Self-Assess to determine if additional actions are necessary to keep people and property safe – the overall requirement to review policies, procedures, personnel, training, equipment, implementation, and data to determine the overall effectiveness of the leak management program (Company Safety Plan).

(3) Summary of changes to utility leak management practices, from January 1, 2013 to December 31, 2014.

Response:

In 2013 and 2014 the leakage classification and mitigation schedules were updated to provide clarification guidance for assessing leaks and assigning leak codes/grades where the leak is found on an above-ground facility. The time to complete repairs for

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both belowground and aboveground leaks were also clarified and updated.

Inventory of Reportable Leaks

- (4) List of new methane leaks discovered by grade, date discovered, and annual volume of methane leaked for each, by month, from January 1, 2013 through December 31, 2014.

Response:

See Attachment 1, Reportable Leaks Tab

Total leaks discovered by grade in 2014 were:

- 986 Code 1 hazardous leaks
- 762 Code 2 non-hazardous leaks
- 7 Code 3 non-hazardous leaks
- 0 Above-Ground (AG) Hazardous leaks
- 6 Above-Ground (AG) Non-Hazardous leaks

The dataset in the report also reveals that Excavation Damages, also known as “Dig-Ins,” account for 8.2% of all leaks in 2014. Understanding the cause of leaks will help stakeholders develop appropriate remediation strategies in this proceeding.

Therefore, SDG&E has included an additional column in the inventory of leaks to identify Excavation Damages as the cause, where known.

- (5) List of methane leaks repaired, by month, from January 1, 2013 through December 31, 2014. Include the grade, date discovered, date of repair, annual volume of methane

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leaked for each, and the number of days from the time the leak was discovered until the date of repair.

Response:

See Attachment 1, Reportable Leaks Tab

Total leaks repaired by grade in 2014 were:

- 978 Code 1 hazardous leaks
- 747 Code 2 non-hazardous leaks
- 3 Code 3 non-hazardous leaks
- 0 Above-Ground (AG) Hazardous leaks
- 0 Above-Ground (AG) Non-Hazardous leaks

(6) List of open leaks that are being monitored or are scheduled to be repaired, by month, for Calendar Years 2013 through 2014. Include the grade, date discovered, scheduled date of repair, and annual volume of methane leaked for each.

Response:

See Attachment 1, Reportable Leaks Tab

Total open leaks by grade as of December 31, 2014 were:

- 10 Code 1 hazardous leaks (all Code 1 leaks are immediately worked and made safe, and scheduled for permanent repair by no later than 15 months from the date discovered for Distribution pipelines and 6 months from the date discovered for Transmission pipelines)

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- 30 Code 2 non-hazardous leaks (all Code 2 leaks are scheduled for repair by no later than 15 months from the date discovered for Distribution pipelines and 6 months from the date discovered for Transmission pipelines)
- 5 Code 3 non-hazardous leaks
- 0 Above-Ground (AG) Hazardous leaks (all AG Hazardous leaks are immediately worked and made safe, and scheduled for repair by no later than 15 months from the date discovered)
- 6 Above-Ground (AG) Non-Hazardous leaks (all AG Non-hazardous leaks are scheduled for repair no more than 15 months from the date discovered with other time intervals specified for specific operating conditions)

Total Methane Emissions

(7) Best estimate of total gas lost due to leaks annually from January 1, 2013 through December 31, 2014.¹²

Response:

See Attachment 1, Lost Methane Tab

See Attachment 2, Top 10 SDG&E Emission Sources in 2014

See table in Section 8 below for emission calculation approach

(8) The annual system-wide gas leak rate, along with any data and computer models used in making that calculation, from January 1, 2013 through December 31, 2014.

Response:¹³

¹² SoCalGas and SDG&E in Opening Comments on the SED Staff Report on Leakage Abatement recommended that reporting periods be consistent with current GHG reporting requirements that are year to year.

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See Attachment 1, Lost Methane Tab

The SED Data Request included a formula to calculate an annual system-wide leak rate. This formula is similar to performing a mass balance of the gas entering and exiting the system. There are significant challenges with this approach, including measurement error and synchronization of measurements.

The annual system-wide gas methane emission or leak rate equation presented in item "K" under Definitions and Instructions in the SED Data Request is stated as:
[(Purchased gas + produced gas + transported gas entering the gas system) minus (customer use + company use + appropriate adjustments + gas injected into storage + transported gas leaving the gas system)] divided by (purchased gas + produced gas + transported gas entering the gas system) = System Wide Gas Leak Rate. Note:
Transported gas refers to gas intended to enter and leave the system without being burned in California

Other than "Transported Gas" the terms are left undefined, but it appears to be a mass balance equation of gas entering and leaving the system. SDG&E has concerns that the resultant methane emission rate would not solely equate to intentional and unintentional releases of gas to the atmosphere due primarily to challenges associated with measurement errors and synchronization of measurements at a single

¹³ SoCalGas and SDG&E in Opening Comments on the SED Staff Report on Leakage Abatement recommended that reporting periods be consistent with current GHG reporting requirements that are year to year.

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point in time. As an example, applying the SoCalGas 2013 LUAF equation components into this formula we obtain:

$$[(1,067,674) - (1,059,220 + 4,756 + 7,503 + 85,832 + 1,059,220)] / (1,067,674) = -.0011$$

MMCF.

This is compared to the SoCalGas estimated emissions result from the data gathered for SB1371 for 2013, which is 1133.87 MMCF. This clearly demonstrates that the proposed formula does not properly take into account the many variables involved.

SDG&E believes another approach utilizing the detailed list of emission sources and estimated emissions that can be tied to activities, events, system components, among other things, as required by SED's Data Request will provide a more defensible system methane emission rate.

SDG&E proposes to have a working group with the other natural gas utilities and the SED to further discuss this equation and develop a consistent methodology in providing a more defensible and accurate accounting of system methane emissions.

The annual system-wide gas methane emission or leak rate equation presented in item "K" under Definitions and Instructions in the SED Data Request appears to be an attempt to complete a mass balance equation of gas entering and leaving the system. SDG&E has concerns that the resultant methane emission rate would not solely equate to intentional and unintentional releases of gas to the atmosphere due primarily to challenges associated with measurement errors and synchronization of measurements at a single point in time. SDG&E believes another approach utilizing the detailed list of emission sources and estimated emissions that can be tied to activities, events, system components, among other things, as required by SED's Data

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Request will provide a more defensible system methane emission rate. SDG&E proposes to have a working group with the other natural gas utilities and the SED to further discuss this equation and develop a consistent methodology in providing a more defensible and accurate accounting of system methane emissions.

The table below summarizes the emission sources and emission calculation approach for both intentional and unintentional releases:

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Possible Emission Sources	on of	nance	Rpr,		"Minor"		Emission Calculation Approach
	Compon ents (Design	Inspecti on & Test	& New Installat	System Leakage	Release (Fugitiv e)	System Upset	
	Intentional (Controlled) Release			Unintentional Releases			
1 Pneumatic Instrument Usage (Compressor stations/Storage)	X	X	-	o	o	-	Estimated by multiplying activity factor times EF for assumed operating time
2 Pneumatic Instrument Usage (Pipeline)	X	X	-	o	o	-	Two pneumatic device categories (Emergency devices - line break valves, and normal operation devices). Inventory of each category multiplied by emissions factor based on average usage and bleed rates.
3 Pneumatic Instrument Usage Customer MSA	X	X	-	o	o	-	Mfg. Bleed Rates for Continuous and Intermittent Bleed devices and assumed 24 times/yr operation on Intermittent devices and 2 inspection per year on all devices.
4 Gas Sampling and Analysis Equipment	X	-	-	o	o	-	Estimated by multiplying activity factor times engineering estimate of emissions
5 Regulator vent emissions (Reg Stations, Tap Facilities - non customer related)	-	X	X	o	X	-	Obtained # and type of annual regulator inspections from Company Systems: SAP (DRS @ 60#) and Maximo (PLM @ 200#). Assumed regulator station pipe: 3" x 14 ft.
6 Relief Valves - maintenance activities and over-pressure events	-	X	-	o	o	-	Relief Valves Inspected annually with Nitrogen. Obtained # of Relief Valves from Maximo. Assumed 1" RV tested @ 500#.
7 PE Pipe Permeation	X	-	-	-	-	-	Derive from established rate of methane permeation through medium density polyethylene and the permeation equation. System data used in the equation are miles of pipe by pipe size and system operating pressures.
8 Odorometers & Odor Check	X	X	-	o	o	-	Multiply activity factor times engineering estimate of emissions
9 Damages (Excavation, Natural Force & Other Outside Force Causes)	-	-	-	X	-	-	Damage events (Excavation, Natural Force, Other Outside Force) times emission factor derived from excavation damage events where the lost gas was calculated based on actual conditions
10 System Leaks	-	-	X	X	X	-	Time from detection of leak to time emission was eliminated times leak emission factors from WSU study plus a leakage factor to account for unknown leaks that exist on the system based on average system leak rates.
10b System Leaks (Borrego Springs LNG - CFR 191)	X	X	o	-	-	-	
12 Facility & Pipeline Blow Down & Purge	-	-	X	-	-	-	Data per maintenance or testing event, volume based on pipe length removed/added/tested.
15 Drip Operations	-	X	-	o	o	-	Est based on # of events
17 Emergency Shut Down	-	X	-	-	-	X	Data per event or annual test, based on compressor and facility piping volumes
18 Compressor Engine Starts	X	-	-	-	-	-	Multiply number of starts times engineering estimate of emissions
19 Compressor & Equipment Blowdowns	-	X	-	-	-	-	Multiply number of blow downs times engineering estimate of emissions
20 Compressor Seal Losses & Fugitive Emissions	X	-	-	-	X	-	AB32 measurements and extrapolating data to compressors not measured
21 Pigging Operations (Launch/Receive/Tethered)	-	X	-	-	-	-	Calculated using known Launcher/Receiver Volumes and Pressures for each blowdown and purge
23 Planned/Routine Meter Change (PMC/RMC)	-	X	-	o	o	-	Calculated volume of gas in MSA @ 40# inlet for Size 1-3 Customer Meters and 60# inlet for Size 4+ Customer meter change-outs. Gas vent on meter removal and purge of meter after install.
24 Field Meter Test (FMT- Size 4+, Clock test, RegCheck, Read/Ver)	-	X	-	o	o	-	Assumed CSF vents 20 cf gas @ 50% of read/verify orders and 0.625 cf at each Clock Test and Registration Check order. Assumed average size FMT by M&R is 5M @ 60#.
25 Orifice Plate Inspection	-	X	-	o	o	-	Assumed plate inspected monthly & meter @ 200# at Customer & 560# @ Company sites. Used Mfg. top chamber volumes for each size meter. Obtained meter size and location from Company MCS system.
26 Stopcock (Service Valve) Change out	-	-	X	o	o	-	The vented volume associated with a service valve replacement is assumed to the same as that associated with the replacement of a meter or a regulator. (see #27)
27 Customer MSA Regulators (large customers)	-	X	X	o	o	-	Obtained # and type of annual customer msa regulator inspections from SAP Systems. Assumed 60# inlet, 1-1/2" regulator, 14 ft. of 1-1/2" pipe, vent gas once on external regulator inspection and 3 times regulator change out/repair or internal inspection.
27a Customer MSA Regulators	-	-	X	o	o	-	Obtained # of annual Regulator Change Out orders from CSF. Assumed same amount of gas vented as for Size 1 meter change out.
30 NGV Station Sources	X	X	-	X	-	-	Used # of compressors & RV's at NGV Stations to calculate weekly venting of 5 filters (0.115 cf @ 3600#) at each compressor, monthly testing of 3/4" RV @ 2461# with methane and HP Gas cylinder weekly vent of 1057 scf to calibrate dispensers.
31 Training	-	X	-	-	-	-	Number of students trained times estimated volume released; based on type of training.

X = Emission estimate provided
 o= Included in another line item

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The table in Attachment 2 summarizes the Top 10 emission sources.

- (9) Calculable losses from intentional, controlled releases, including construction, purging, line breaks, operations and maintenance, etc., annually, from January 1, 2013 through December 31, 2014.¹⁴

Response:

See Attachment 1, Lost Methane Tab

See Attachment 2, Top 10 SDG&E Emission Sources in 2014

See table in Section 8 above for emission calculation approach

¹⁴ SoCalGas and SDG&E in Opening Comments on the SED Staff Report on Leakage Abatement recommended that reporting periods be consistent with current GHG reporting requirements that are year to year.

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Attachment 1

Date Leak Discovered (DD/MM/YY)	Leak Grade (1, 2, 3, AG-Haz, AG-Non Haz)	2013 Annual Volume of Methane Leaked in Thousands of Cubic Feet (McF)	2014 Annual Volume of Methane Leaked in Thousands of Cubic Feet (McF)	Date Leak Repaired (DD/MM/YY) (blank) = Pending Repair	Number of Days from Discovery to Repair (Column K minus Column A)	If not yet repaired indicate Scheduled Date of Repair (DD/MM/YY)	If open leak with no Scheduled Date of Repair enter M signifying that you are Monitoring the leak.	If open leak is being monitored (M in Column N) provide the reason why the leak has not been scheduled to be repaired.	Excavation Damage (Y/N)
1/2/2014	Code 1			1/2/2014	0				N
6/24/2013	Code 2	33.02	0.27	1/3/2014	193				N
1/7/2014	Code 1			1/7/2014	0				N
12/26/2013	Code 1	3.55	0.08	1/8/2014	13				N
1/8/2014	Code 1			1/8/2014	0				N
1/8/2014	Code 1		0.22	1/9/2014	1				N
1/9/2014	Code 1		20.01	1/9/2014	0				Y
1/9/2014	Code 1		20.01	1/9/2014	0				Y
1/9/2014	Code 1		20.01	1/9/2014	0				Y
1/15/2014	Code 1		20.01	1/15/2014	0				N
1/17/2014	Code 1			1/17/2014	0				N
7/23/2013	Code 2	20.01	20.01	1/21/2014	182				N
1/23/2014	Code 1		20.01	1/23/2014	0				Y
1/24/2014	Code 1		0.23	1/24/2014	0				N
1/27/2014	Code 1		20.01	1/27/2014	0				N
1/28/2014	Code 1		0.27	1/28/2014	0				N
1/29/2014	Code 1		20.01	1/30/2014	1				Y
2/1/2014	Code 1		0.31	2/1/2014	0				N
2/2/2014	Code 1		0.33	2/3/2014	1				N
1/28/2014	Code 1		3.26	2/5/2014	8				N
2/10/2014	Code 1		20.01	2/10/2014	0				Y
2/10/2014	Code 1			2/10/2014	0				N
2/10/2014	Code 1		20.01	2/10/2014	0				Y
2/10/2014	Code 1			2/10/2014	0				N
2/18/2014	Code 1		0.48	2/18/2014	0				N
2/20/2014	Code 1		20.01	2/20/2014	0				Y
2/25/2014	Code 1			2/25/2014	0				N
2/26/2014	Code 1			2/26/2014	0				N
3/3/2014	Code 1		1.53	3/3/2014	0				N
3/3/2014	Code 1		20.01	3/3/2014	0				Y
3/8/2014	Code 1		0.65	3/8/2014	0				N
3/10/2014	Code 1		20.01	3/10/2014	0				Y
3/11/2014	Code 2		0.68	3/11/2014	0				N
3/13/2014	Code 1		1.78	3/13/2014	0				N
3/15/2014	Code 1			3/15/2014	0				N
3/18/2014	Code 1		0.75	3/18/2014	0				N
3/19/2014	Code 1			3/19/2014	0				N
3/20/2014	Code 1		20.01	3/20/2014	0				Y
3/25/2014	Code 1		0.82	3/25/2014	0				N
3/28/2014	Code 2			3/28/2014	0				N
3/29/2014	Code 1		0.86	3/29/2014	0				N
4/1/2014	Code 2		2.25	4/1/2014	0				N
4/9/2014	Code 1		20.01	4/9/2014	0				Y
4/9/2014	Code 1			4/9/2014	0				N
4/10/2014	Code 1		2.49	4/11/2014	1				N
4/11/2014	Code 1		20.01	4/11/2014	0				Y
4/14/2014	Code 1		20.01	4/14/2014	0				Y

6/16/2014	Code 2			6/16/2014	0		
6/18/2014	Code 2			6/18/2014	0		
6/20/2014	Code 1			6/20/2014	0		
6/23/2014	Code 1		15.74	6/23/2014	0		
6/24/2014	Code 1		20.01	6/24/2014	0		
6/25/2014	Code 1		1.71	6/25/2014	0		
6/26/2014	Code 1		20.01	6/26/2014	0		
6/26/2014	Code 1		20.01	6/30/2014	4		
7/2/2014	Code 2			7/2/2014	0		
7/3/2014	Code 2			7/3/2014	0		
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6/4/2013	Code 1	0.00		6/4/2013	0					N
6/11/2013	Code 1	20.01		6/11/2013	0					Y
6/12/2013	Code 1	20.01		6/12/2013	0					Y
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6/18/2013	Code 1	20.01		6/18/2013	0					Y
6/19/2013	Code 1	20.01		6/19/2013	0					Y
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6/28/2013	Code 1	10.31		6/28/2013	0					N
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11/2/2013	Code 1	7.60		11/4/2013	2					N
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San Diego Gas & Electric Company

Natural Gas Leakage Abatement Report

In Partial Response to Senate Bill 1371 (Leno, 2014) and Order Instituting Rulemaking (OIR) 15-01-008

05/15/15

Attachment 1

Pursuant to SB 1371, Leno - Natural gas: leakage abatement, the California Public Utilities Commission (CPUC), SDG&E provides the following for information purposes:

Note - Definitions stated in SDG&E Report apply

- (6) Best estimate of total gas lost due to leaks annually from January 1, 2013 through December 31, 2014 for unintentional and intentional releases.
- (7) The annual system-wide methane emission rate, along with any data and computer models used in making that calculation, from January 1, 2013 through December 31, 2014.
- (8) Calculable losses from intentional, controlled releases, including construction, purging, line breaks, operations and maintenance, etc., annually, from January 1, 2013 through December 31, 2014.

Response:

Methane Losses

Dates

	1/1/13-12/31/13	1/1/14-12/31/14
Best Estimate of Total Lost Gas (per Request #6) in MMcf	99.73	100.77
Annual System-Wide Methane Emission Rate (per Request #7) in %	See Response	See Response
Calculable Gas Losses (per Request #8) in MMcf	17.09	21.31

San Diego Gas & Electric Company
Natural Gas Leakage Abatement Report

In Partial Response to Senate Bill 1371 (Leno, 2014) and Order Instituting Rulemaking (OIR) 15-01-008

May 15, 2015

Attachment 2

Top 10 SDG&E Emission Sources in 2014 and Options for Improvements

Summary of Top 10 Natural Gas Emissions at SDG&E in 2014

Rank	SDGE System	Release Type	Intentional/ Unintentional	Line Item	Emission Source	2014 Estimate (MCF)	% of Total
1	T & D	Minor Release	Unintentional	10	Distribution and Transmission PHMSA "Minor" Release	62,546.44	62.07%
2	T & D	System Leakage	Unintentional	9	Damages	8,305.00	8.24%
3	T & D	System Leakage	Unintentional	10	Distribution and Transmission Leaks	5,506.00	5.46%
4	T & D	System Repair	Intentional	12	Facility & Pipeline Blow Down & Purge (Distribution & Transmission)	5,185.80	5.15%
5	T & D	Minor Release	Unintentional	5	Regulator Venting	4,914.95	4.88%
6	T & D	Facility & Component Design (Operations)	Intentional	20	Compressor Seal Losses (Transmission)	3,958.00	3.93%
7	T & D	Maintenance & Inspection & Test	Intentional	19	Compressor & Equipment Blowdowns	2,686.00	2.67%
8	T & D	Minor Release	Unintentional	20	Compressor Seal Losses & Fugitive Emissions	1,692.00	1.68%
9	T & D	Facility & Component Design (Operations)	Intentional	18	Compressor Engine Starts (Transmission)	1,611.00	1.60%
10	T & D	Maintenance & Inspection & Test	Intentional	21	Pigging Operations	1,047.24	1.04%