

SoCalGas, June 15th, 2023

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.

In Response to Data Request, R15-01-008 2023 June Report

Appendix 6; Rev. 03/30/2023

Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

Response:

Customer Meter Total Leaks and Emissions (Informational Purposes Only):

Number of Meters	Meter Type	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)
5,857,284	R	0.148	866,878.03
248,460	Commercial	0.051	12,671.46
24,393	Industrial	0.051	1,244.04

Sum Total	880,794
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Return of Income of an Individual (Salaried Person)

Particulars	
Income Tax Paid	
Income Tax Refund	
Income Tax Credit	

Sl. No.	Particulars	Amount	Particulars	Amount
1	Salary		Income Tax Paid	
2	Dear Allowance		Income Tax Refund	
3	Gratuity		Income Tax Credit	
4	Pension			
5	Dividend			
6	Interest			
7	Capital Gains			
8	Other Income			
9	Total Income			
10	Less: Exempt Income			
11	Less: Deductions			
12	Less: Tax Paid			
13	Less: Tax Refund			
14	Less: Tax Credit			
15	Income Tax Payable			
16	Income Tax Refund			
17	Income Tax Credit			
18	Income Tax Paid			
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22	Income Tax Refund			
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Identified MSA Leaks Leaker Section

Removed	Moved from Appendix 4 Pipeline Leaks
	2218047
2224638	
2224999	
2221193	
2223569	
2224994	
2223548	
2225732	
2222116	
2225471	
2225235	
2222229	
2221874	
2223445	
2220394	
2221639	
2220932	
2223452	
2222968	
2221530	
2223572	
2220418	
2224002	
2222250	
2222501	
2221696	
2220312	
2225397	
2222492	
2225399	
2221056	
2223307	
2220330	
2224995	
2223432	
2218900	
2222658	
2225562	
2220717	
2218503	
2224954	
2220698	
2225233	
2218078	
2223553	

2224991
2218724
2220603
2223644
2225238
2221542
2223703
2217591

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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. In Response to Data Request, R15-01-008 2023 June Report Appendix 6; Rev. 03/30/2023

Notes:
 At utilities request, fill out with two, three, or four categories that correspond to the bubble-size classification and label the type of leak, whether AG-Haz, or AG-Non-Haz
 If highlighted cells are filled in, the other cells will auto-populate
 The term "Non-leaker EF" aligns with CARB's definition for "No Bubble EF" for the event of finding a leak even though not through bubble testing

Summary of Data by Meters Survey Interval and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Meter

Meter Classification (AG-Haz, AG-Non-Haz); Bubble Size Category	Total System Meters per survey Cycle	Meters on Annual Survey [M _{xA}]	Meters on Multi-Year Survey Cycles [M _{xI}] ¹	Survey Interval (yrs) [I]	Meters Surveyed Annually from Multi-Year Survey Cycles [M _{xI}]	Total # of Leaks Detected from Survey [N _{xL}]	Annual Leak Rate (Leaks / Meter) $R_x = \frac{N_{xL}}{M_{xA} + (I \times M_{xI})}$	# of Unknown Leaks $N_{xunk} = \bar{R}_x \times (M_{xI}^{unc} - M_{xI}) \times \frac{I}{2}$	Total # of Leaks Detected from O&M* [N _{xO}]
Total Meters - AG Haz	6,130,137	3,636,153	2,493,984	5	498,797	1,516	0.00025	1,234	816
Total Meters - AG Non-Haz and Minor	6,130,137	3,636,153	2,493,984	5	498,797	32,303	0.00527	26,284	15,834
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1. The first part of the document discusses the importance of maintaining accurate records of all transactions and activities. It emphasizes the need for transparency and accountability in financial reporting.

2. The second part of the document outlines the various methods and techniques used to collect and analyze data. It includes a detailed description of the experimental procedures and the tools used for data collection.

3. The third part of the document presents the results of the study, including a comparison of the different methods and techniques used. It discusses the strengths and weaknesses of each method and provides a summary of the findings.

4. The fourth part of the document discusses the implications of the study and provides recommendations for future research. It highlights the need for further investigation into the effectiveness of the different methods and techniques used.

5. The fifth part of the document provides a conclusion and a summary of the key findings. It reiterates the importance of maintaining accurate records and the need for transparency and accountability in financial reporting.

6. The sixth part of the document provides a list of references and a bibliography. It includes a list of all the sources used in the study and provides a detailed description of each source.

7. The seventh part of the document provides a list of appendices and a bibliography. It includes a list of all the appendices used in the study and provides a detailed description of each appendix.

8. The eighth part of the document provides a list of figures and a bibliography. It includes a list of all the figures used in the study and provides a detailed description of each figure.

9. The ninth part of the document provides a list of tables and a bibliography. It includes a list of all the tables used in the study and provides a detailed description of each table.

10. The tenth part of the document provides a list of references and a bibliography. It includes a list of all the sources used in the study and provides a detailed description of each source.

11. The eleventh part of the document provides a list of appendices and a bibliography. It includes a list of all the appendices used in the study and provides a detailed description of each appendix.

12. The twelfth part of the document provides a list of figures and a bibliography. It includes a list of all the figures used in the study and provides a detailed description of each figure.

13. The thirteenth part of the document provides a list of tables and a bibliography. It includes a list of all the tables used in the study and provides a detailed description of each table.

14. The fourteenth part of the document provides a list of references and a bibliography. It includes a list of all the sources used in the study and provides a detailed description of each source.

15. The fifteenth part of the document provides a list of appendices and a bibliography. It includes a list of all the appendices used in the study and provides a detailed description of each appendix.

16. The sixteenth part of the document provides a list of figures and a bibliography. It includes a list of all the figures used in the study and provides a detailed description of each figure.

17. The seventeenth part of the document provides a list of tables and a bibliography. It includes a list of all the tables used in the study and provides a detailed description of each table.

18. The eighteenth part of the document provides a list of references and a bibliography. It includes a list of all the sources used in the study and provides a detailed description of each source.

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Notes:

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.
 At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

Include items like the following in this tab (Note whether emissions are included in the MSA EF used to estimate emissions for the MSA population and show only the event count.):

- Gas vented during all Regulator Change outs due to other than vent leakage.
- Large Customer MSA Regulator Inspection - External Regulator Inspections. List avg. amount vented.
- Large Customer MSA Regulator Inspection - Regulator change out & Internal Reg Inspection. List avg. amount vented.
- Diaphragm - CSF Read & Verify - List amount vented thru meter during read & verify order for decreased usage.
- Diaphragm - CSF Clock Test - List amount vented during Clock Test
- Diaphragm - CSF Registration Check - List amount vented during Registration Checks
- Diaphragm Size 1,2,3 Meter Change Out - List avg. gas vented on Size 1 Meter Change Out
- All Meter Change Out Size 4 thru 28 - List avg. gas vented for Size 5 to 10 Meter Change outs
- Field Meter Test of Diaphragm & Rotary - List avg. gas vented for Size 9 Meters
- Customer Orifice Meter Plate Insp. - Orifice Plate Inspected Monthly. List avg. amount vented

Response:

Customer Meter Blowdowns:

Number of Blowdowns	Meter Type	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)	Explanatory Notes / Comments
1	CI	NA	557.84	Blowdown for maintenance at industrial customer site
1	CI	NA	9.39	Blowdown for MSA upgrade at industrial customer site
1	CI	NA	7.98	Blowdown for MSA upgrade at industrial customer site
7,236	CI	0.005	36.18	All Meter Change Out Size 4 thru 28 - Use avg. gas vented of 5 scf for Size 5 to 10 Meter Change outs
4	CI	0.002	0.01	Customer Pneumatic Device Annual Inspection in SAP maintained by Distribution - Estimated avg. gas vented = 2 scf/insp.
26,715	CI/R	0.001	26.72	Customer Service Regulator - Gas vented during all Regulator Change-outs. Estimated avg. gas vented = 1 scf/change-out.
244,734	CI/R	0.001	152.96	Diaphragm - CSF Registration Check - Vent 0.625 scf/inspection during Clock Test, Drop Test or Low flow Test
22,427	CI/R	0.020	448.54	Diaphragm - Read & Verify Order Conducted at 50% of Field Mtr Tests - Estimated avg. gas vented = 20 scf/ea.
888	CI/R	0.001	0.56	Diaphragm - Registration Check - Estimated avg. gas vented = 0.625 scf/ea.
40,083	CI/R	0.001	40.08	Diaphragm Size 1,2,3 Meter Change Out - Use avg. gas vented of 1 scf on Size 1 Meter Change Out
168	CI	0.005	0.84	Field Meter Test of Diaphragm & Rotary - Use avg. gas vented of 5 scf for Size 9 Meters
59	CI	0.030	1.77	Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
15,378	CI	0.002	30.76	Large Customer MSA Regulator Inspection - External Regulator Inspections @ 2 scf/insp.
5,280	CI	0.006	31.68	Large Customer MSA Regulator Inspection - Regulator change out & Internal Reg Inspection @ 6 scf/insp.
190	CI	0.018	3.42	Monthly Plate Inspections at Customer Orifice Meters - Estimated avg. gas vented = 18 scf/insp (Avg. Size = 20" @ 300 psig with top chamber volume 0.839 cf)
287	CI	0.020	5.74	Relief Valve Inspection at Customer MSAs - Estimated avg. gas vented = 20 scf/insp. (annual test with Nitrogen, gas vented is volume of gas in valve)
455	CI	0.005	2.28	Customer MSA M&R-Maintained Removals (Estimated gas vented 5 scf/ea.)
4,662	CI/R	0.001	4.66	Customer MSA Size 1-2 Standard Pressure Removals. Estimated avg vent 1 scf/ea.
518	CI/R	0.003	1.55	Customer MSA Size 3-4 Standard Pressure Removals. Estimated avg vent 3 scf/ea
163	CI	0.030	4.89	Producer Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
10	CI	0.833	8.33	Producer Pipeline Drip Accumulation - Estimated avg. gas vented = 10,000 cfh for 5min/device
90	CI	0.020	1.80	Producer Relief Valve Inspection at Customer MSAs - Estimated avg. gas vented = 20 scf/insp.
155	CI	0.002	0.31	Producer Pneumatic Device Annual Inspection - Estimated avg. gas vented = 2 scf/insp. (Actuators & Controllers)
55	CI	0.025	1.38	Producer - Meters - 25 scf/inspection
66	CI	0.002	0.13	Producer - Gas chromatographs/analyzers - 2 scf/inspection
24	CI	0.833	20.00	Pipeline Drip Accumulation - Estimated avg. gas vented = 10,000 cfh for 5min/device
365	CI	0.030	10.95	Transmission maintained - Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
126	CI	0.020	2.52	Transmission maintained - Relief Valve Inspection at Customer MSAs - Estimated avg. gas vented = 20 scf/insp. (annual test with Nitrogen, gas vented is volume of gas in valve)
110	CI	0.002	0.22	Transmission maintained - Pneumatic Device Annual Inspection - Estimated avg. gas vented = 2 scf/insp. (Actuators & Controllers)
67	CI	0.002	0.13	Transmission maintained gas chromatographs/analyzers - 2 scf/inspection
252	CI	0.025	6.30	Transmission maintained meters - 25 scf/inspection
Sum Total			1,420	

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Appendix 6; Rev. 03/30/2023

Notes:

This worksheet is intended to capture the actual number of equipment and components in this asset category that vent emissions as a part of their design and normal function. By listing the number and types of components (not captured elsewhere in other templates) that vent emissions we hope to obtain information that may provide insight into how to evolve to a method of reporting emissions based on the actual number of units and types emitting rather than a crude population based estimate.

Currently, the component related leaks are accounted for in the population based estimate for MSAs and any estimate of emissions associated with this list of equipment and components will not be added to that total. This tab is not intended to replace or supplant the Vented and Blowdown Emissions tab which are activity based emissions.

No emissions estimates from this worksheet should be included in Appendix 8, as this is being collected for informational purposes at this time.

Use a formula-derived value with the formula used in the Annual Emissions column. Do not use a copy and paste-as-value.

At the end of Annual Emissions Column, add a summation total in a cell for a column total, and then highlight orange.

Response:

Customer Meter Component/Equipment Vented Emissions (Informational Purposes Only):

ID (Number of Devices)	Geographic Location	Device Type	Bleed Rate	Manufacturer	Number of Days Emitting	Engineering or Manufacturer's based Estimate of Emissions	Annual Emissions (Mscf)	Explanatory Notes / Comments
23		P			365	0.0576	483.552	Controllers Transmission
61		P			365	0.0576	1282.464	Actuator Transmission
Sum Total							1,766	

In Response to Data Request, Description and Definition of Required Contents (If not self-explanatory)	
Meter Leaks, Population Based	
Number of Meters	
Meter Type	CI = commercial or industrial meter R = residential meter
Emission Factor (Mscf/yr)	
Annual Emissions (Mscf)	
Identified MSA Leaks, Leaker	
ID	
Geographic Location	GIS, zip code, or equivalent
Meter Classification (Commercial/Industrial or Residential)	If available, indicate whether the meter is commercial or industrial "CI", or a residential "R" meter. If that information is not available then note as "N/A". CI = Commercial or Industrial R = Residential N/A = not available
Leak Classification (Grade)	AH = Above Ground Hazardous AN = Above Ground Non-hazardous AM = Above Ground Non-hazardous Minor If Above Ground, and operator uses the Bubble grading methodology with an alphanumeric grade, then provide an explanation for the meaning each grade in the notes above the table. For example: A = grade A - Large Leak or equates to with AH above with an approximate EF of 10,2035 scfh. B = grade B - Equates to AN above with an approximate EF of 0.5138 scfh. Etc. If the MSA leak is Below ground and not included in DM&S , then use the following grades: 1 = grade 1 2 = grade 2 3 = grade 3 N = Non-Graded
Leak Discovery Method	S = Routine Leak Survey M = O&M (e.g. O&M activities, third party reports, customer odor reports, etc.)
Discovery Date (DD/MM/YY)	
Leak Repair Date (MM/DD/YY)	Use the date the leak ceases emitting NG. The final repair may be completed after the leak has been stopped.
If not repaired by 12/31/xx List the Scheduled Date of Repair (DD/MM/YY)	If leak is open, specify the scheduled date of repair Otherwise type "M," signifying that the leak is being monitored with no scheduled date of repair Then, provide the reason for not scheduling a repair in Comments column.
Reason for Not Scheduling a Repair	If repair hasn't been scheduled, then provide the reason for not scheduling a repair in this column. If using a reason code, then provide a table with codes and corresponding explanations.
Number of Days Leaking	Leak Duration (in days) = End Date + 1 day - Start date End Date: The repair date or December 31st of subject year, whichever is earlier. Start Date: If discovered by survey use January 1st or prior survey date whichever is more recent, or if an O&M or customer called in leak, then use discovery date for start of the leak. (Leaks carried over should use January 1st as start date for emissions calculations.) For O&M discovered leaks, assume that the leak begins with the discovery date <u>thru</u> repair date or December 31st of subject year, whichever is earlier.
Number of Days to Repair.	Leak Discovery date minus repair date or 12/31 of the subject year plus 1 = number of days to repair for the subject year. Addition of 1 day to include the date repaired.
Comments or Additional Information	
Meter Leaks, Leak Count, Leaker	
Meter Classification (AG-Haz, AG-Non-Haz); Bubble Size Category	Utilities should add rows according to their bubble size categories and nomenclature, and should include a no-bubble category. For example, include a row for each: Foam/ Indeterminate; Bubbles; Soap Blown Off; and No Bubbles.
Total System Meters per survey Cycle	
Meters on Annual Survey [M _{yr}]	
Meters on Multi-Year Survey Cycles [M _{yr}] ^{tot}	
Survey Interval (yrs) [I]	
Meters Surveyed Annually from Multi-Year Survey Cycles [M _{yr}]	
Total # of Leaks Detected from Survey [N _{yr}]	

In Response to Data Request, Description and Definition of Required Contents (If not self-explanatory)	
Annual Leak Rate [Leaks / Meter]	$R_x = \frac{N_{XL}}{M_{x,A} + (I \times M_{x,I})}$
# of Unknown Leaks	$N_{x,unk} = R_x^- \times (M_x^{tot} - M_{x,I}) \times \frac{I}{2}$ <p>If the operator changed the leak survey cycle during the report year that requires more detailed calculations based on the approved calculation methodology to determine the number of unknown leaks an additional worksheet may be added to show the calculations.</p>
Total # of Leaks Detected from O&M* [N _{x,D}]	
All Damages	
ID	
Geographic Location	GIS, zip code, or equivalent
Damage Type	E = Excavation Damage N = natural force damage O = other outside force damage
Meter Type	CI = commercial or industrial meter R = residential meter
Leak Classification (Grade)	AH = Above Ground Hazardous AN = Above Ground Non-hazardous AM = Above Ground Non-hazardous Minor
Discovery Date (DD/MM/YY)	
Leak Repair Date (MM/DD/YY)	Use the date the leak ceases emitting NG. The final repair may be completed after the leak has been stopped.
If not repaired by 12/31/xx List the Scheduled Date of Repair (DD/MM/YY)	If leak is open, specify the scheduled date of repair. Otherwise type "M," signifying that the leak is being monitored with no scheduled date of repair. Then, provide the reason for not scheduling a repair in the Column provided.
Reason for Not Scheduling a Repair	Provide the reason for not scheduling a repair.
Number of Days Leaking	<p>If date and time stamp are reliable and used consistently by respondent, then emissions may be calculated based on actual time leaking. E.G. Repair time - damage event time = duration of event.</p> <p>If respondent has average or historical leak duration based on the nature and circumstances of damages, then these may be applied to like damage events. The emissions factors should be adequately supported and explained in the filing.</p> <p>If actual time stamps and historical averages are not available, then whole days should be used in the engineering calculation. The leak begins with the damage event date thru repair date or December 31st of subject year, whichever is later. E.G. Days Leaking = Repair date - date of damage + 1 day.</p>
Engineering Estimate (Mscf/Day)	
Annual Emissions (Mscf)	
Explanatory Notes / Comments	
Vented and Blowdown Emissions	
Number of Blowdowns	For metering set assembly (MSA)
Meter Type	CI = commercial or industrial meter R = residential meter
Emission Factor (Mscf/event)	
Annual Emissions (Mscf)	
Explanatory Notes / Comments	
Component Vented Emissions	
ID	
Geographic Location	GIS, zip code, or equivalent
Device Type	C = connector OE = open-ended line M = meter P = pneumatic device PR = pressure relief valve V = valve O = other devices
Bleed Rate	L = low bleed I = intermittent bleed H = high bleed NA = not applicable
Manufacturer	
Number of Days Emitting	Because the emissions are a factor of design or function, these emissions counted for the entire year.
Engineering or Manufacturer's based Estimate of Emissions	
Annual Emissions (Mscf)	The emissions should be based on 365 days times the actual volume emitting if known, or the approved Emissions Factor. Note whether the emissions are based on actual volumetric measures in the next column.
Explanatory Notes / Comments	