

SDG&E, July 1st, 2024

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 2024 June Report

Appendix 6; Rev. 03/29/2024

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:

Number of Meters	Meter Type	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)
883,014	Residential	0.148	130,686
30,252	Commercial	0.051	1,543
1,730	Industrial	0.051	88
Sum Total			132,317

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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 statistical analysis performed.

3. The third part of the document presents the results of the study. It includes a series of tables and graphs that illustrate the findings of the research. The data shows a clear trend of increasing activity over time.

4. The fourth part of the document discusses the implications of the findings. It suggests that the results have significant implications for the field of study and may lead to further research in this area.

5. The fifth part of the document concludes the study. It summarizes the key findings and provides a final statement on the importance of the research.

6. The sixth part of the document includes a list of references. It cites the various sources used in the study, including books, articles, and other relevant literature.

7. The seventh part of the document includes a list of appendices. It provides additional information and data that support the findings of the study.

8. The eighth part of the document includes a list of figures. It shows the various graphs and charts used in the study to illustrate the data.

9. The ninth part of the document includes a list of tables. It provides the numerical data used in the study, organized in a clear and concise format.

10. The tenth part of the document includes a list of footnotes. It provides additional information and clarifications for the various parts of the document.

11. The eleventh part of the document includes a list of acknowledgments. It thanks the various individuals and organizations that provided support and assistance during the study.

12. The twelfth part of the document includes a list of references. It cites the various sources used in the study, including books, articles, and other relevant literature.

13. The thirteenth part of the document includes a list of appendices. It provides additional information and data that support the findings of the study.

14. The fourteenth part of the document includes a list of figures. It shows the various graphs and charts used in the study to illustrate the data.

15. The fifteenth part of the document includes a list of tables. It provides the numerical data used in the study, organized in a clear and concise format.

16. The sixteenth part of the document includes a list of footnotes. It provides additional information and clarifications for the various parts of the document.

17. The seventeenth part of the document includes a list of acknowledgments. It thanks the various individuals and organizations that provided support and assistance during the study.

18. The eighteenth part of the document includes a list of references. It cites the various sources used in the study, including books, articles, and other relevant literature.

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SDG&E, July 1st, 2024

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 2024 June Report
Appendix 6; Rev. 03/29/2024

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

The number of miles surveyed (Column C) should be the number of unique miles surveyed, and should not include any repeated miles surveyed multiple times per year (Column D).

To clarify the definition of O&M Leaks (Column K), the following criteria for O&M Leaks should be met: (1) occur stochastically across the whole territory, (2) are leak reported by customers, (3) found quickly after occurring, (4) found independently of survey activities but would have been found later by surveyors, and (5) considered a small number of leaks.

To clarify the definition of Survey Leaks (Column G), the following criteria for Survey Leaks should be met: (1) found from company employees or contractors actively searching for leaks (2) including, but not limited to, compliance survey leaks and non-compliance survey leaks (e.g. Super Emitter Programs, Aerial Methane Mapping, Corrosion Surveying.)

Please provide the additional information requested on lines 58-60.

Summary of Data by Meters Survey Interval and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Meter									Total # of Leaks Detected from O&M*
Meter Classification (AG-Haz, AG-Non-Haz); Bubble Size Category	Total System Meters per survey Cycle	Meters on Annual Survey [M _{KA}]	Meters on Multi-Year Survey Cycles [M _{KL}] ¹	Survey Interval (yrs) [I]	Meters Surveyed Annually from Multi-Year Survey Cycles [M _{KJ}]	Total # of Leaks Detected from Survey [N _{KL}]	Annual Leak Rate [Leaks / Meter] $R_K = \frac{N_{KL}}{M_{KA} + (I \times M_{KL})}$	# of Unknown Leaks $N_{K,unk} = R_K \times (M_K^{Tot} - M_{KL}) \times \frac{I}{2}$	[N _{K,O}]
Not Applicable				3			-	-	
				5			-	-	
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In Response to Data Request, R15-01-008 2024 June Report
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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 ventedn 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
722	C	0.005	3.61	All Meter Change Out Size 4 thru 28 - Use avg. gas vented of 5 scf for Size 5 to 10 Meter Change outs
138	C	0.005	0.69	Field Meter Test of Diaphragm & Rotary - Use avg. gas vented of 5 scf for Size 9 Meters
77	C	0.015	1.16	Filter Changeout + straight Filter Removal - Estimated avg. gas vented = 15 scf/ea.
1,619	C	0.006	9.71	Large Customer MSA Regulator Inspection @ 6 scf/insp - Sum of Regulator change out/2 + Internal Reg + IPR + straight reg removal.
945	C	0.002	1.89	Large Customer MSA Regulator Inspection - External Regulator Inspections @ 2 scf/insp. At SDGE External Reg inspection done at meter change out.
15,682	C/R	0.000625	9.80	Diaphragm - CSF Clock Test - Vent 0.625 scf/inspection during Clock Test and Registration Checks
19,531	C/R	0.000625	12.21	Diaphragm - CSF Registration Check - Vent 0.625 scf/inspection during Clock Test and Registration Checks
14,782	C/R	0.001	14.78	Diaphragm Size 1,2,3 Meter Change Out - Use avg. gas vented of 1 scf on Size 1 Meter Change Out
225	C/R	0.001	0.23	Customer MSA Size 1-2 Standard Pressure Removals. Assumed avg vent 1 scf
29	C/R	0.003	0.09	Customer MSA Size 3-4 Standard Pressure Removals. Assumed avg vent 3 scf
18	C	0.005	0.09	Customer MSA Size 5+ Standard Pressure Removals. Assumed avg vent 5 scf
42	C	0.005	0.21	Customer MSA M&R-Maintained Removals (Estimated gas vented 5 scf/ea.)
17	C	0.03	0.51	Transmission maintained - Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
4	C	0.02	0.08	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)
7	C	0.002	0.01	Transmission maintained gas chromatographs/analyzers - 2 scf/inspection
10	C	0.025	0.25	Transmission maintained meters - 25 scf/inspection
8	C	0.002	0.02	Transmission maintained Pneumatic Device Annual Inspection - Estimated avg. gas vented = 2 scf/insp. (Actuators & Controllers)
2	C	0.02	0.04	Producer Relief Valve Trasmision maintained Inspection at Customer MSAs - Estimated avg. gas vented = 20 scf/insp.
18	C	0.03	0.54	Producer Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
2	C	0.025	0.05	Producer Meters - 25 scf/inspection
7	C	0.002	0.01	Producer Gas chromatographs/analyzers - 2 scf/inspection
11	C	0.002	0.02	Producer Pneumatic Device Annual Inspection - Estimated avg. gas vented = 2 scf/insp. (Actuators & Controllers)
Sum Total			56	

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:

ID	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
Sum Total							0	

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 $[M_{x,2}]$	
Meters on Multi-Year Survey Cycles $[M_{x,Total}]$	
Survey Interval (yrs) $[I]$	
Meters Surveyed Annually from Multi-Year Survey Cycles $[M_{x,i}]$	
Total # of Leaks Detected from Survey $[N_{x,i}]$	

In Response to Data Request, Description and Definition of Required Contents (If not self-explanatory)	
Annual Leak Rate [Leaks / Meter]	$R_X = \frac{N_{XL}}{M_{XA} + (I \times M_{XI})}$
# of Unknown Leaks	$N_{X,unk} = R_X^- \times (M_X^{tot} - M_{XI}) \times \frac{I}{2}$ <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,L}]	
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)	<p>The emissions should be based on 365 days times the actual volume emitting if known, or the approved Emissions Factor.</p> <p>Note whether the emissions are based on actual volumetric measures in the next column.</p>
Explanatory Notes / Comments	