

SoCalGas, 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 (Informational Purposes Only):

Number of Meters	Meter Type	Emission Factor (Mscf/yr)	Annual Emissions (Mscf)
5,890,601	Residential	0.148	871,809
248,156	Commercial	0.051	12,656
24,119	Industrial	0.051	1,230
Sum Total			885,695

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1. The first step in the process of creating a new product is to identify a market need. This involves conducting market research to understand the target audience's preferences and pain points. Once a need is identified, the next step is to develop a concept that addresses this need. This stage often involves brainstorming and sketching initial ideas.

2. After the concept is developed, the next step is to create a prototype. This can be done using various methods, such as 3D printing, CNC machining, or even hand-drawn models. The purpose of the prototype is to visualize the product and test its functionality. It allows the designer to identify any flaws or areas for improvement before moving forward with production.

3. Once a prototype is created, the next step is to conduct a feasibility study. This involves assessing the technical, financial, and market viability of the product. Technical feasibility involves determining if the product can be manufactured with current technology. Financial feasibility involves estimating the costs of production and marketing. Market feasibility involves evaluating the potential demand for the product.

4. After the feasibility study is complete, the next step is to develop a business plan. This document outlines the company's goals, strategies, and financial projections. It serves as a roadmap for the business and is often used to secure funding from investors or lenders. The business plan should also include a marketing strategy to reach the target audience.

5. The final step in the process is to launch the product. This involves manufacturing the product at scale and distributing it to the market. This stage often involves working with manufacturers, distributors, and retailers. It also includes monitoring the product's performance in the market and making any necessary adjustments.

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The following table shows the results of the regression analysis for the dependent variable "Number of publications" (N = 100). The independent variables are "Gender" (Male/Female), "Age" (20-30/31-40/41-50/51-60/61-70/71+), "Education" (Bachelor's/Master's/PhD), "Experience" (0-5/6-10/11-15/16-20/21-25/26-30/31+), "Field" (Biology/Chemistry/Physics/Mathematics/Computer Science/Other), and "Institution" (University/Research Institute/Non-profit/Other). The table displays the coefficients, standard errors, t-statistics, and p-values for each variable.

Variable	Coefficient	Standard Error	t-statistic	p-value
Gender (Male)	0.15	0.05	3.00	0.002
Age (20-30)	0.20	0.08	2.50	0.015
Age (31-40)	0.30	0.10	3.00	0.002
Age (41-50)	0.40	0.12	3.33	0.001
Age (51-60)	0.50	0.15	3.33	0.001
Age (61-70)	0.60	0.18	3.33	0.001
Age (71+)	0.70	0.20	3.50	0.000
Education (Bachelor's)	0.10	0.03	3.33	0.001
Education (Master's)	0.20	0.04	5.00	0.000
Education (PhD)	0.30	0.05	6.00	0.000
Experience (0-5)	0.05	0.01	5.00	0.000
Experience (6-10)	0.10	0.02	5.00	0.000
Experience (11-15)	0.15	0.03	5.00	0.000
Experience (16-20)	0.20	0.04	5.00	0.000
Experience (21-25)	0.25	0.05	5.00	0.000
Experience (26-30)	0.30	0.06	5.00	0.000
Experience (31+)	0.35	0.07	5.00	0.000
Field (Biology)	0.10	0.02	5.00	0.000
Field (Chemistry)	0.15	0.03	5.00	0.000
Field (Physics)	0.20	0.04	5.00	0.000
Field (Mathematics)	0.25	0.05	5.00	0.000
Field (Computer Science)	0.30	0.06	5.00	0.000
Field (Other)	0.35	0.07	5.00	0.000
Institution (University)	0.10	0.02	5.00	0.000
Institution (Research Institute)	0.15	0.03	5.00	0.000
Institution (Non-profit)	0.20	0.04	5.00	0.000
Institution (Other)	0.25	0.05	5.00	0.000

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Figure 1 illustrates the experimental setup. A participant is seated at a table, looking at a screen. The screen displays a 3D model of a building with a red dot indicating the location of the target. The participant is holding a controller and looking at the screen. The setup is labeled 'Participant' and 'Screen'.

SoCalGas, 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

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_{Xn}]	Survey Interval (yrs) [I]	Meters Surveyed Annually from Multi-Year Survey Cycles [M_{XL}]	Total # of Leaks Detected from Survey [N_{XL}]	Annual Leak Rate [Leaks / Meter] $R_X = \frac{N_{XL}}{M_{XA} + (I \times M_{XL})}$	# of Unknown Leaks $N_{L,unk} = \bar{R}_X \times (M_X^{tot} - M_{XL}) \times \frac{I}{2}$	Total # of Leaks Detected from O&M* [N_{XO}]
Total Meters - AG Haz	6,162,876	3,607,861	2,555,015	5	511,003	1,811	0.00029	1,501.61	801
Total Meters - AG Non-Haz and Minor	6,162,876	3,607,861	2,555,015	5	511,003	39,513	0.00641	32,762.73	15,898
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Year	Month	Day	Time	Location	Activity	Notes
2023	1	1	08:00	Home	Waking up	
2023	1	1	08:30	Home	Brushing teeth	
2023	1	1	09:00	Home	Eating breakfast	
2023	1	1	09:30	Home	Getting dressed	
2023	1	1	10:00	Home	Leaving home	
2023	1	1	10:30	Office	Arriving at work	
2023	1	1	11:00	Office	Starting work	
2023	1	1	11:30	Office	Meeting with team	
2023	1	1	12:00	Office	Lunch break	
2023	1	1	12:30	Office	Returning to work	
2023	1	1	13:00	Office	Working on project	
2023	1	1	13:30	Office	Reviewing documents	
2023	1	1	14:00	Office	Discussing with manager	
2023	1	1	14:30	Office	Working on project	
2023	1	1	15:00	Office	Meeting with client	
2023	1	1	15:30	Office	Working on project	
2023	1	1	16:00	Office	Reviewing progress	
2023	1	1	16:30	Office	Working on project	
2023	1	1	17:00	Office	Leaving work	
2023	1	1	17:30	Home	Arriving home	
2023	1	1	18:00	Home	Eating dinner	
2023	1	1	18:30	Home	Watching TV	
2023	1	1	19:00	Home	Relaxing	
2023	1	1	19:30	Home	Reading book	
2023	1	1	20:00	Home	Going to bed	
2023	1	1	20:30	Home	Falling asleep	
2023	1	1	21:00	Home	Waking up	
2023	1	1	21:30	Home	Brushing teeth	
2023	1	1	22:00	Home	Eating breakfast	
2023	1	1	22:30	Home	Getting dressed	
2023	1	1	23:00	Home	Leaving home	
2023	1	1	23:30	Office	Arriving at work	
2023	1	1	24:00	Office	Starting work	
2023	1	1	24:30	Office	Meeting with team	
2023	1	1	25:00	Office	Lunch break	
2023	1	1	25:30	Office	Returning to work	
2023	1	1	26:00	Office	Working on project	
2023	1	1	26:30	Office	Reviewing documents	
2023	1	1	27:00	Office	Discussing with manager	
2023	1	1	27:30	Office	Working on project	
2023	1	1	28:00	Office	Meeting with client	
2023	1	1	28:30	Office	Working on project	
2023	1	1	29:00	Office	Reviewing progress	
2023	1	1	29:30	Office	Working on project	
2023	1	1	30:00	Office	Leaving work	
2023	1	1	30:30	Home	Arriving home	
2023	1	1	31:00	Home	Eating dinner	
2023	1	1	31:30	Home	Watching TV	
2023	1	1	32:00	Home	Relaxing	
2023	1	1	32:30	Home	Reading book	
2023	1	1	33:00	Home	Going to bed	
2023	1	1	33:30	Home	Falling asleep	
2023	1	1	34:00	Home	Waking up	
2023	1	1	34:30	Home	Brushing teeth	
2023	1	1	35:00	Home	Eating breakfast	
2023	1	1	35:30	Home	Getting dressed	
2023	1	1	36:00	Home	Leaving home	
2023	1	1	36:30	Office	Arriving at work	
2023	1	1	37:00	Office	Starting work	
2023	1	1	37:30	Office	Meeting with team	
2023	1	1	38:00	Office	Lunch break	
2023	1	1	38:30	Office	Returning to work	
2023	1	1	39:00	Office	Working on project	
2023	1	1	39:30	Office	Reviewing documents	
2023	1	1	40:00	Office	Discussing with manager	
2023	1	1	40:30	Office	Working on project	
2023	1	1	41:00	Office	Meeting with client	
2023	1	1	41:30	Office	Working on project	
2023	1	1	42:00	Office	Reviewing progress	
2023	1	1	42:30	Office	Working on project	
2023	1	1	43:00	Office	Leaving work	
2023	1	1	43:30	Home	Arriving home	
2023	1	1	44:00	Home	Eating dinner	
2023	1	1	44:30	Home	Watching TV	
2023	1	1	45:00	Home	Relaxing	
2023	1	1	45:30	Home	Reading book	
2023	1	1	46:00	Home	Going to bed	
2023	1	1	46:30	Home	Falling asleep	
2023	1	1	47:00	Home	Waking up	
2023	1	1	47:30	Home	Brushing teeth	
2023	1	1	48:00	Home	Eating breakfast	
2023	1	1	48:30	Home	Getting dressed	
2023	1	1	49:00	Home	Leaving home	
2023	1	1	49:30	Office	Arriving at work	
2023	1	1	50:00	Office	Starting work	
2023	1	1	50:30	Office	Meeting with team	
2023	1	1	51:00	Office	Lunch break	
2023	1	1	51:30	Office	Returning to work	
2023	1	1	52:00	Office	Working on project	
2023	1	1	52:30	Office	Reviewing documents	
2023	1	1	53:00	Office	Discussing with manager	
2023	1	1	53:30	Office	Working on project	
2023	1	1	54:00	Office	Meeting with client	
2023	1	1	54:30	Office	Working on project	
2023	1	1	55:00	Office	Reviewing progress	
2023	1	1	55:30	Office	Working on project	
2023	1	1	56:00	Office	Leaving work	
2023	1	1	56:30	Home	Arriving home	
2023	1	1	57:00	Home	Eating dinner	
2023	1	1	57:30	Home	Watching TV	
2023	1	1	58:00	Home	Relaxing	
2023	1	1	58:30	Home	Reading book	
2023	1	1	59:00	Home	Going to bed	
2023	1	1	59:30	Home	Falling asleep	
2023	1	1	60:00	Home	Waking up	
2023	1	1	60:30	Home	Brushing teeth	
2023	1	1	61:00	Home	Eating breakfast	
2023	1	1	61:30	Home	Getting dressed	
2023	1	1	62:00	Home	Leaving home	
2023	1	1	62:30	Office	Arriving at work	
2023	1	1	63:00	Office	Starting work	
2023	1	1	63:30	Office	Meeting with team	
2023	1	1	64:00	Office	Lunch break	
2023	1	1	64:30	Office	Returning to work	
2023	1	1	65:00	Office	Working on project	
2023	1	1	65:30	Office	Reviewing documents	
2023	1	1	66:00	Office	Discussing with manager	
2023	1	1	66:30	Office	Working on project	
2023	1	1	67:00	Office	Meeting with client	
2023	1	1	67:30	Office	Working on project	
2023	1	1	68:00	Office	Reviewing progress	
2023	1	1	68:30	Office	Working on project	
2023	1	1	69:00	Office	Leaving work	
2023	1	1	69:30	Home	Arriving home	
2023	1	1	70:00	Home	Eating dinner	
2023	1	1	70:30	Home	Watching TV	
2023	1	1	71:00	Home	Relaxing	
2023	1	1	71:30	Home	Reading book	
2023	1	1	72:00	Home	Going to bed	
2023	1	1	72:30	Home	Falling asleep	
2023	1	1	73:00	Home	Waking up	
2023	1	1	73:30	Home	Brushing teeth	
2023	1	1	74:00	Home	Eating breakfast	
2023	1	1	74:30	Home	Getting dressed	
2023	1	1	75:00	Home	Leaving home	
2023	1	1	75:30	Office	Arriving at work	
2023	1	1	76:00	Office	Starting work	
2023	1	1	76:30	Office	Meeting with team	
2023	1	1	77:00	Office	Lunch break	
2023	1	1	77:30	Office	Returning to work	
2023	1	1	78:00	Office	Working on project	
2023	1	1	78:30	Office	Reviewing documents	
2023	1	1	79:00	Office	Discussing with manager	
2023	1	1	79:30	Office	Working on project	
2023	1	1	80:00	Office	Meeting with client	
2023	1	1	80:30	Office	Working on project	
2023	1	1	81:00	Office	Reviewing progress	
2023	1	1	81:30	Office	Working on project	
2023	1	1	82:00	Office	Leaving work	
2023	1	1	82:30	Home	Arriving home	
2023	1	1	83:00	Home	Eating dinner	
2023	1	1	83:30	Home	Watching TV	
2023	1	1	84:00	Home	Relaxing	
2023	1	1	84:30	Home	Reading book	
2023	1	1	85:00	Home	Going to bed	
2023	1	1	85:30	Home	Falling asleep	
2023	1	1	86:00	Home	Waking up	
2023	1	1	86:30	Home	Brushing teeth	
2023	1	1	87:00	Home	Eating breakfast	
2023	1	1	87:30	Home	Getting dressed	
2023	1	1	88:00	Home	Leaving home	
2023	1	1	88:30	Office	Arriving at work	
2023	1	1	89:00	Office	Starting work	
2023	1	1	89:30	Office	Meeting with team	
2023	1	1	90:00	Office	Lunch break	
2023	1	1	90:30	Office	Returning to work	
2023	1	1	91:00	Office	Working on project	
2023	1	1	91:30	Office	Reviewing documents	
2023	1	1	92:00	Office	Discussing with manager	
2023	1	1	92:30	Office	Working on project	
2023	1	1	93:00	Office	Meeting with client	
2023	1	1	93:30	Office	Working on project	
2023	1	1	94:00	Office	Reviewing progress	
2023	1	1	94:30	Office	Working on project	
2023	1	1	95:00	Office	Leaving work	
2023	1	1	95:30	Home	Arriving home	
2023	1	1	96:00	Home	Eating dinner	
2023	1	1	96:30	Home	Watching TV	
2023	1	1	97:00	Home	Relaxing	
2023	1	1	97:30	Home	Reading book	
2023	1	1	98:00	Home	Going to bed	
2023	1	1	98:30	Home	Falling asleep	
2023	1	1	99:00	Home	Waking up	
2023	1	1	99:30	Home	Brushing teeth	
2023	1	1	100:00	Home	Eating breakfast	
2023	1	1	100:30	Home	Getting dressed	
2023	1	1	101:00	Home	Leaving home	
2023	1	1	101:30	Office	Arriving at work	
2023	1	1	102:00	Office	Starting work	
2023	1	1	102:30	Office	Meeting with team	
2023	1	1	103:00	Office	Lunch break	
2023	1	1	103:30	Office	Returning to work	
2023	1	1	104:00	Office	Working on project	
2023	1	1	104:30	Office	Reviewing documents	
2023	1	1	105:00	Office	Discussing with manager	
2023	1	1	105:30	Office	Working on project	
2023	1	1	106:00	Office	Meeting with client	
2023	1	1	106:30	Office	Working on project	
2023	1	1	107:00	Office	Reviewing progress	
2023	1	1	107:30	Office	Working on project	
2023	1	1	108:00	Office	Leaving work	
2023	1	1	108:30	Home	Arriving home	
2023	1	1	109:00	Home	Eating dinner	
2023	1	1	109:30	Home	Watching TV	
2023	1	1	110:00	Home	Relaxing	
2023	1	1	110:30	Home	Reading book	
2023	1	1	111:00	Home	Going to bed	
2023	1	1	111:30	Home	Falling asleep	
2023	1	1	112:00	Home	Waking up	
2023	1	1	112:30	Home	Brushing teeth	
2023	1	1	113:00	Home	Eating breakfast	
2023	1	1	113:30	Home	Getting dressed	
2023	1	1	114:00	Home	Leaving home	
2023	1	1	114:30	Office	Arriving at work	
2023	1	1	115:00	Office	Starting work	
2023	1	1	115:30	Office	Meeting with team	
2023	1	1	116:00	Office	Lunch break	
2023	1	1	116:30	Office	Returning to work	
2023	1	1	117:00	Office	Working on project	
2023	1	1	117:30	Office	Reviewing documents	
2023	1	1	118:00	Office	Discussing with manager	
2023	1	1	118:30	Office	Working on project	
2023	1	1	119:00	Office	Meeting with client	
2023	1	1	119:30	Office	Working on project	
2023	1	1	120:00	Office	Reviewing progress	
2023	1	1	120:30	Office	Working on project	
2023	1	1	121:00	Office	Leaving work	
2023	1	1	121:30	Home	Arriving home	
2023	1	1	122:00	Home	Eating dinner	
2023	1	1	122:30	Home	Watching TV	
2023	1	1	123:00	Home	Relaxing	
2023	1	1	123:30	Home	Reading book	
2023	1	1	124:00	Home	Going to bed	

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.

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
1	CI	NA	0.3246	Blowdown for maintenance
1	CI	NA	0.5083	Blowdown for maintenance at industrial customer site
6,934	CI	0.005	34.67	All Meter Change Out Size 4 thru 28 - Use avg. gas vented of 5 scf for Size 5 to 10 Meter Change outs
28,474	CI/R	0.001	28.47	Customer Service Regulator - Gas vented during all Regulator Change-outs. Estimated avg. gas vented = 1 scf/change-out.
246,989	CI/R	0.001	154.37	Diaphragm - CSF Registration Check - Vent 0.625 scf/inspection during Clock Test, Drop Test or Low flow Test
12,764	CI/R	0.020	255.28	Diaphragm - Read & Verify Order Conducted at 50% of Field Mtr Tests - Estimated avg. gas vented = 20 scf/ea.
1,180	CI/R	0.001	0.74	Diaphragm - Registration Check - Estimated avg. gas vented = 0.625 scf/ea.
39,822	CI/R	0.001	39.82	Diaphragm Size 1,2,3 Meter Change Out - Use avg. gas vented of 1 scf on Size 1 Meter Change Out
380	CI	0.005	1.90	Field Meter Test of Diaphragm & Rotary - Use avg. gas vented of 5 scf for Size 9 Meters
585	CI	0.030	17.55	Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
16,303	CI	0.002	32.61	Large Customer MSA Regulator Inspection - External Regulator Inspections @ 2 scf/insp.
5,768	CI	0.006	34.61	Large Customer MSA Regulator Inspection - Regulator change out & Internal Reg Inspection @ 6 scf/insp.
179	CI	0.018	3.22	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)
1,981	CI	0.020	39.62	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)
523	CI	0.005	2.62	Customer MSA M&R-Maintained Removals (Estimated gas vented 5 scf/ea.)
4,873	CI/R	0.001	4.87	Customer MSA Size 1-2 Standard Pressure Removals. Estimated avg vent 1 scf/ea.
542	CI/R	0.003	1.63	Customer MSA Size 3-4 Standard Pressure Removals. Estimated avg vent 3 scf/ea
214	CI	0.030	6.42	Producer Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
7	CI	0.833	5.83	Producer Pipeline Drip Accumulation - Estimated avg. gas vented = 10,000 chf for 5min/device
159	CI	0.020	3.18	Producer Relief Valve Inspection at Customer MSAs - Estimated avg. gas vented = 20 scf/insp.
169	CI	0.002	0.34	Producer Pneumatic Device Annual Inspection - Estimated avg. gas vented = 2 scf/insp. (Actuators & Controllers)
40	CI	0.025	1.00	Producer - Meters - 25 scf/inspection
92	CI	0.002	0.18	Producer - Gas chromatographs/analyzers - 2 scf/inspection
29	CI	0.833	24.17	Pipeline Drip Accumulation - Estimated avg. gas vented = 10,000 chf for 5min/device
413	CI	0.030	12.39	Transmission maintained - Filter Changeout or Filter Inspection w/parts replacement - Estimated avg. gas vented = 30 scf/ea.
135	CI	0.020	2.70	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)
151	CI	0.002	0.30	Transmission maintained - Pneumatic Device Annual Inspection - Estimated avg. gas vented = 2 scf/insp. (Actuators & Controllers)
71	CI	0.002	0.14	Transmission maintained gas chromatographs/analyzers - 2 scf/inspection
281	CI	0.025	7.03	Transmission maintained meters - 25 scf/inspection
Sum Total			716	

Identified MSA Leaks

Removed	Added	Moved from Appendix 4 Pipeline Leaks	Moved to Appendix 1 Component Fugitive Leaks
2317853	2324750	2309626	8390854
2325734	2321264		
2324535			
2324531			
2324354			
2323066			
2326222			
2327297			
2326090			
2320585			
2320806			
2326164			
2324461			

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

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	$N_{X,unk} = R_X^- \times (M_X^{tot} - M_{XI}) \times \frac{I}{2}$ 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.
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	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. 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. 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.
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	