













1726719	92026	DB	P	1/2" CTS	407	Less than or Equal to 60	Code 1	N/A	B	M	12/15/2017	N/A	12/15/2017	1	1	0.0089	0.0089	
1726735	92116	MB	PB			Less than or Equal to 60	Code 2	N/A	B	M	12/15/2017	N/A		17		0.0612	1.0404	
1726766	92173	DB	P	1/2" CTS	575	Less than or Equal to 60	Code 1	N/A	B	M	12/15/2017	N/A	12/15/2017	3/15/2019	1	1	0.0089	0.0089
1726776	92113	DB	P	1/2" CTS	299	Less than or Equal to 60	Code 1	N/A	B	M	12/15/2017	N/A	12/15/2017		1	1	0.0089	0.0089
1726780	92054	DB	PB	3/4"	707	Less than or Equal to 60	Code 1	N/A	B	M	12/16/2017	N/A	12/17/2017		2	2	0.0276	0.0552
1726782	92103	MB	PC	4"		Less than or Equal to 60	Code 2	N/A	B	M	12/16/2017	N/A		3/16/2019	16		0.0612	0.9792
1726793	91977	DB	PC	3/4"	695	Less than or Equal to 60	Code 1	N/A	B	M	12/16/2017	N/A	12/16/2017		1	1	0.0276	0.0276
1726801	92009	DB	PC	3/4"	575	Less than or Equal to 60	Code 1	N/A	B	M	12/16/2017	N/A	12/17/2017		2	2	0.0276	0.0552
1726804	92020	DB	PB	3/4"	923	Less than or Equal to 60	Code 1	N/A	B	M	12/17/2017	N/A	12/18/2017		2	2	0.0276	0.0552
1726857	92139	MB	PC	2"	828	Less than or Equal to 60	Code 1	N/A	B	M	12/18/2017	N/A	12/20/2017		3	3	0.0612	0.1836
1726935	92139	DB	PC	3/4"	828	Less than or Equal to 60	Code 1	N/A	B	M	12/18/2017	N/A	12/18/2017		1	1	0.0276	0.0276
1726964	92139	DB	PC	3/4"	828	Less than or Equal to 60	Code 1	N/A	B	M	12/18/2017	N/A	12/18/2017		1	1	0.0276	0.0276
1726971	92110	DB	PC	3/4"	756	Less than or Equal to 60	Code 1	N/A	B	M	12/19/2017	N/A	12/19/2017		1	1	0.0276	0.0276
1726975	92037	DB	PC	3/4"	684	Less than or Equal to 60	Code 1	N/A	B	M	12/19/2017	N/A	12/19/2017		1	1	0.0276	0.0276
1726976	92139	DB	PC	3/4"	828	Less than or Equal to 60	Code 1	N/A	B	M	12/18/2017	N/A	12/18/2017		1	1	0.0276	0.0276
1726981	92119	DB	PC	3/4"	612	Less than or Equal to 60	Code 1	N/A	B	M	12/19/2017	N/A	12/19/2017		1	1	0.0276	0.0276
1727064	92103	DB	PC	1 1/4"	493	Less than or Equal to 60	Code 1	N/A	B	M	11/5/2017	N/A	11/5/2017		1	1	0.0276	0.0276
1727091	92029	MB	P	2"	372	Less than or Equal to 60	Code 1	N/A	B	M	12/21/2017	N/A	12/21/2017		1	1	0.2988	0.2988
1727120	92014	DB	P	1/2" CTS	792	Less than or Equal to 60	Code 3	N/A	B	M	12/21/2017	N/A	12/28/2017		8	8	0.0089	0.0712
1727124	92117	DB	PC	3/4"	744	Less than or Equal to 60	Code 1	N/A	B	M	12/21/2017	N/A	12/22/2017		2	2	0.0276	0.0552
1727171	92037	MB	P	1 1/4"	492	Less than or Equal to 60	Code 1	N/A	B	M	12/24/2017	N/A	12/25/2017		2	2	0.2988	0.5976
1727175	92111	DB	PC	3/4"	924	Less than or Equal to 60	Code 1	N/A	B	M	12/24/2017	N/A	12/24/2017		1	1	0.0276	0.0276
1727231	92054	MB	PC	1 1/2"	780	Less than or Equal to 60	Code 1	N/A	B	M	12/26/2017	N/A	12/26/2017		1	1	0.0612	0.0612
1727238	92115	MB	PC	2"	936	Less than or Equal to 60	Code 1	N/A	B	M	12/26/2017	N/A	12/26/2017		1	1	0.0612	0.0612
1727274	91941	DB	PC	3/4"	660	Less than or Equal to 60	Code 1	N/A	B	M	12/26/2017	N/A	12/26/2017		1	1	0.0276	0.0276
1727305	92117	MB	PC	1 1/2"	744	Less than or Equal to 60	Code 1	N/A	B	M	12/26/2017	N/A	12/27/2017		2	2	0.0612	0.1224
1727306	91950	DB	PC	2"	528	Less than or Equal to 60	Code 1	N/A	B	M	12/26/2017	N/A	12/27/2017		2	2	0.0276	0.0552
1727386	92115	DB	PC	3/4"		Less than or Equal to 60	Code 1	N/A	B	M	12/27/2017	N/A	12/28/2017		2	2	0.0276	0.0552
1727441	92054	DB	PC	1 1/2"	576	Less than or Equal to 60	Code 1	N/A	B	M	12/27/2017	N/A	12/28/2017		2	2	0.0276	0.0552
1727467	92019	DB	PC	3/4"	708	Less than or Equal to 60	Code 1	N/A	B	M	12/28/2017	N/A	12/28/2017		1	1	0.0276	0.0276
1727521	91941	DB	PC	3/4"	840	Less than or Equal to 60	Code 1	N/A	B	M	12/29/2017	N/A	12/29/2017		1	1	0.0276	0.0276
1727542	92078	MB	PC	3"		Less than or Equal to 60	Code 1	N/A	B	M	12/30/2017	N/A	12/30/2017		1	1	0.0612	0.0612
1727553	92075	MB	PB	2"		Less than or Equal to 60	Code 1	N/A	B	M	12/30/2017	N/A	12/30/2017		1	1	0.0612	0.0612
1800989	92020	MB	P			Less than or Equal to 60	Code 1	N/A	B	M	12/30/2017	N/A	12/30/2017		1	1	0.2988	0.2988

SDG&E, June 15, 2018

Rulemaking (R.) 15-01-008 to Adopt Rules and Procedures Governing Commission Regulated Natural Gas Pipelines and Facilities to Reduce Natural Gas Leaks Consistent In Response to Data Request, R15-01-008 2018 June Report  
Appendix 4; Rev. 03/31/18

Notes:

Definitions in Data Request R15-01-008 2018 June Report

If highlighted cells are filled in, the other cells will auto-populate

Summary of Data by Pipeline Facility/Material and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Pipeline Facility/Material

Facility/Material	Total System Miles per material type	Miles on Annual Survey $[M_{x,A}]$	Miles on Multi-Year Survey Cycles $[M_x]$	Survey Interval (yrs) $[I]$	Miles Surveyed Annually from Multi-Year Survey Cycles $[M_{x,I}]$	Total # of Leaks Detected from Survey $[N_{x,t}]$	Multi-Year Interval Constant $[C_I]$	Annual Leak Rate [Leaks / Mile / Yr] $R_x = \frac{N_{x,t}}{M_{x,A} + (I \times M_{x,I})}$	# of Unknown Leaks † $N_{x,unk} = R_x \times C_I \times M_x$	Total # of Leaks Detected from O&M* $[N_{x,o}]$
Main/Plastic	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Main/Plastic	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Main/Plastic	4,525	1,171	3,354	5	703	9	2	0.0019	13	73
Main/Unprotected Steel	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Main/Unprotected Steel	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Main/Unprotected Steel	N/A	N/A	N/A	5	N/A	N/A	2	N/A	N/A	N/A
Main/Protected Steel	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Main/Protected Steel	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Main/Protected Steel	3,573	1,325	2,248	5	349	19	2	0.0062	28	115
Service/Plastic	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Service/Plastic	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Service/Plastic	4,239	1,306	2,933	5	494	37	2	0.0099	58	75
Service/Unprotected Steel	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Service/Unprotected Steel	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Service/Unprotected Steel	N/A	N/A	N/A	5	N/A	N/A	2	N/A	N/A	N/A
Service/Protected Steel	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Service/Protected Steel	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Service/Protected Steel	3,057	942	2,115	5	356	49	2	0.0179	76	260
Service/Copper	N/A	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A
Service/Copper	N/A	N/A	N/A	4	N/A	N/A	1.5	N/A	N/A	N/A
Service/Copper	N/A	N/A	N/A	5	N/A	N/A	2	N/A	N/A	N/A
<b>Total</b>	<b>15,394</b>	<b>4,744</b>	<b>10,650</b>	<b>N/A</b>	<b>1,902</b>	<b>114</b>	<b>N/A</b>	<b>N/A</b>	<b>174</b>	<b>523</b>



† The formula for calculating the number of unknown leaks provided in Appendix 4 on the Unsurveyed Pipeline Leaks tab contains two factors in the denominator (Miles Surveyed Annually from Multi-Year Survey Cycle ( $M_{x,i}$ ) and Survey Interval (I)). This portion of the equation simply calculates the total miles on multi-year survey. When using a simple percentage of miles as the miles surveyed in the reported year this equation yields the correct total miles on the multi-year cycle; however, when using actual miles it is incorrect and is off by the difference from the straight percentage times the interval of the cycle. The correct approach is to use the actual miles in column D (which has been labeled  $M_x$ ). This set of factors is also used in the equation in Column I for calculating the annual leak rates ( $R_x$ ); however, in this case it is correct because when the portion being surveyed is not an exact proportion the mileage basis must be allowed to vary in order to properly derive the annual leak rates.

### Estimated Emissions by Pipeline Facility/Material for Each Leakage Category

Leakage Category	Emission Factor (Mscf/day/leak)	2017 Emissions from Leaks detected Prior to 2017 (Mscf)	2017 Emissions from Leaks Detected from 2017 Survey (Mscf)	2017 Emissions from O&M* Leaks Detected in 2017 (Mscf)	2017 Estimated Emissions from Unknown Leaks (Mscf)	Total Estimated 2017 Emissions from Distribution Pipelines (Mscf)
Facility/Material						
Main/Plastic	0.2988	N/A	N/A	N/A	N/A	N/A
Main/Plastic	0.2988	N/A	N/A	N/A	N/A	N/A
Main/Plastic	0.2988	22	693	75	1,405	2,195
Main/Unprotected Steel	0.1548	N/A	N/A	N/A	N/A	N/A
Main/Unprotected Steel	0.1548	N/A	N/A	N/A	N/A	N/A
Main/Unprotected Steel	0.1548	N/A	N/A	N/A	N/A	N/A
Main/Protected Steel	0.0612	N/A	N/A	N/A	N/A	N/A
Main/Protected Steel	0.0612	N/A	N/A	N/A	N/A	N/A
Main/Protected Steel	0.0612	11	264	55	622	952
Main/Unknown*	0.2988	0	0	1	0	1
Service/Plastic	0.0089	N/A	N/A	N/A	N/A	N/A
Service/Plastic	0.0089	N/A	N/A	N/A	N/A	N/A
Service/Plastic	0.0089	0	59	1	188	249
Service/Unprotected Steel	0.0600	N/A	N/A	N/A	N/A	N/A
Service/Unprotected Steel	0.0600	N/A	N/A	N/A	N/A	N/A
Service/Unprotected Steel	0.0600	N/A	N/A	N/A	N/A	N/A
Service/Protected Steel	0.0276	N/A	N/A	N/A	N/A	N/A
Service/Protected Steel	0.0276	N/A	N/A	N/A	N/A	N/A
Service/Protected Steel	0.0276	9	268	23	762	1,063
Service/Copper	0.0226	N/A	N/A	N/A	N/A	N/A
Service/Copper	0.0226	N/A	N/A	N/A	N/A	N/A
Service/Copper	0.0226	N/A	N/A	N/A	N/A	N/A
Service/Unknown*	0.0600	0	40	1	0	41
Unknown/Unknown*	0.2988	0	0	0	0	0

Total	N/A	42	1,325	157	2,978	4,501	Total
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O&M leaks include any other pipeline leaks that are discovered during the year from operations and maintenance activity, third party and gas odor reports, etc. that are not accounted for in other categories of this worksheet.

\* Leaks are occasionally repaired without excavation of the leak location resulting in Material and/or Facility to be unknown. In these cases the most conservative emission factor is applied. There are no "Unknown leaks" for these line items because all system mileage is accounted for in the other categories.

SDG&E, June 15, 2018

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 2018 June Report

Appendix 4; Rev. 03/31/18

This summary purposefully should exclude damages, blowdowns, component emissions and component leaks.

	Count of Leaks Carried over from Prior Year	Count of Leaks Discovered in the Year of Interest	Count of Leaks Repaired in the Year of Interest	Average Days to Repair Leaks	Count of Estimated Unsurveyed Leaks in the Year of Interest	Count of Remaining Known Leaks at final day of the Year of Interest (12/31/17)	Emissions from Leaks Carried over from Prior Year.	Emissions from Leaks Discovered in the Year of Interest.	Emissions from Estimated Unsurveyed Leaks in the Year of Interest	Total Emissions in the Year of Interest [Mscf of Natural Gas]	Explanatory Notes / Comments
Grade 1	0	540	540	1	N/A*	0	0	879	N/A	N/A	Column E - The duration of Grade 1 leaks is estimated based on company policy.
Grade 2	15	83	96	50	N/A*	2	42	561	N/A	N/A	
Grade 3	0	14	14	32	N/A*	0	0	41	N/A	N/A	
<b>Graded Leak Total</b>	<b>15</b>	<b>637</b>	<b>650</b>	<b>N/A**</b>	<b>N/A*</b>	<b>2</b>	<b>42</b>	<b>1,481</b>	<b>N/A*</b>	<b>N/A</b>	
Above Ground Hazardous	0	0	0		N/A*	0	0	0	N/A*	N/A	
Above Ground Non-Hazardous	0	0	0		N/A*	0	0	0	N/A*	N/A	
Above Ground Non-Hazardous Minor	0	0	0		N/A*	0	0	0	N/A*	N/A	
AG Total	0	0	0	N/A**	N/A*	0	0	0	N/A*	N/A	
<b>Total of All Leaks</b>	<b>15</b>	<b>637</b>	<b>650</b>	<b>N/A**</b>	<b>N/A*</b>	<b>2</b>	<b>42</b>	<b>1,481</b>	<b>N/A*</b>	<b>N/A</b>	
Main/Plastic	1	81	82	7	13	0	22	768	1,405	2,195	
Main/Unprotected Steel	0	0	0	0	0	0	0	0	0	0	
Main/Protected Steel	5	133	136	14	28	2	11	320	622	952	
Main/Unknown	0	2	2	2	0	0	0	1	0	1	
Service/Plastic	1	111	112	7	58	0	0	60	188	249	
Service/Unprotected Steel	0	0	0	0	0	0	0	0	0	0	
Service/Protected Steel	8	305	313	9	76	0	9	291	762	1,063	
Service/Copper	0	0	0	0	0	0	0	0	0	0	
Service/Unknown	0	5	5	12	0	0	0	41	0	41	
Unknown/Unknown	0	0	0	0	0	0	0	0	0	0	
<b>Total</b>	<b>15</b>	<b>637</b>	<b>650</b>	<b>N/A**</b>	<b>174</b>	<b>2</b>	<b>42</b>	<b>1,481</b>	<b>2,978</b>	<b>4,501</b>	

\* Since the estimated number of Unknown Leaks occurs at various points in time during the leak survey cycle, estimation of the number of leaks by leak grade, and whether or not the leaks are Below Ground or Above Ground may be misleading using the suggested methodology. The wording in the column headers is also misleading since these numbers would be an estimation rather than a "Count". The estimated emissions in these categories can not be provided since they are dependent on an estimated number of leaks.

\*\* Totals are not applicable in these columns.











ID	Geographic Location	Damage Type	Pipe Classification	Pipe Material	Pipe Size (nominal)	Pipe Age (months)	Pressure (psi)	Leak Grade	Above Ground or Below Ground	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Number of Days Leaking	Emission Factor or Engineering Estimate (Misc/Day)	Annual Emissions (Misc)	Explanatory Notes / Comments
1706863	92084	E	DB	P	1"		Less than or Equal to 60	Code 1	B	3/29/2017	3/29/2017	1		36.610	
1707626	92104	E	DB	P	1/2" CTS		Less than or Equal to 60	Code 1	B	4/7/2017	4/7/2017	1		18.609	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1712478	92027	E	DB	PC	3/4"		Less than or Equal to 60	Code 1	B	6/11/2017	6/11/2017	1		21.215	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1714659	92037	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 1	B	6/30/2017	6/30/2017	1		18.609	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1714654	92008	N	DB	P	1"		Less than or Equal to 60	Code 1	B	7/11/2017	7/11/2017	1		18.609	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1715194	92127	E	DB	PB	3/4"		Less than or Equal to 60	Code 1	B	7/17/2017	7/17/2017	1		21.215	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1723057	92007	E	DB	Unknown	3/4"		Less than or Equal to 60	Code 1	B	10/20/2017	10/20/2017	1		19.504	Emission estimated from population of similar events. Pipe Material of Unknown, will use worst case emission factor for respective Pipe Classification. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1724559	92057	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 1	B	11/10/2017	11/10/2017	1		18.609	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1724622	92021	E	DB	PC	3/4"		Less than or Equal to 60	Code 1	B	11/13/2017	11/13/2017	1		21.215	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1725205	92037	E	DB	P	1/2" IPS		Less than or Equal to 60	Code 1	B	11/20/2017	11/20/2017	1		18.609	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1726035	92075	E	DB	PC	3/4"		Less than or Equal to 60	Code 1	B	12/5/2017	12/5/2017	1		21.215	Emission estimated from population of similar events. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1726402	91950	E	DB	Unknown	3/4"		Less than or Equal to 60	Code 1	B	12/11/2017	12/11/2017	1		19.504	Emission estimated from population of similar events. Pipe Material of Unknown, will use worst case emission factor for respective Pipe Classification. See Explanatory Notes/Comments for Distribution Pipeline All Damages in Appendix 9.
1708690	92037	N	MB	P	2"	448	Less than or Equal to 60	Code 2	B	4/24/2017	7/18/2017	86	0.2988	25.697	
1706325	92009	E	DB	P	1/2" CTS	46	Less than or Equal to 60	Code 2	B	3/23/2017	4/10/2017	20	0.0089	0.178	
1700020	92008	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 2	B	1/2/2017	1/2/2017	1	0.0089	0.009	
1700809	92009	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 2	B	1/12/2017	1/12/2017	1	0.0089	0.009	
1703340	92067	N	DB	P	1"		Less than or Equal to 60	Code 2	B	2/14/2017	2/14/2017	1	0.0089	0.009	
1709604	92054	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 2	B	5/4/2017	5/4/2017	1	0.0089	0.009	
1715174	92008	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 2	B	7/18/2017	7/18/2017	1	0.0089	0.009	
1718103	92029	N	DB	P	1/2" CTS		Less than or Equal to 60	Code 2	B	8/23/2017	8/24/2017	2	0.0089	0.018	
1706508	92104	N	DB	PC	3/4"	747	Less than or Equal to 60	Code 3	B	3/24/2017	3/24/2017	1	0.0276	0.028	
Sum Total													9.142		



**SDG&E, June 15, 2018**

**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 2018 June Report**

**Appendix 4; Rev. 03/31/18**

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.

**Distribution Main & Service Pipeline Blowdowns:**

<b>ID</b>	<b>Geographic Location</b>	<b>Number of Blowdown Events</b>	<b>Pipe Size (nominal) (in)</b>	<b>Length of Pipe (ft)</b>	<b>Pressure (psi)</b>	<b>Annual Emissions (Mscf)</b>	<b>Explanatory Notes / Comments</b>
N/A	SDG&E Territory	N/A	3/4	35	320	0.003	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	2	27	320	0.014	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	4	58	320	0.123	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	6	3	320	0.014	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	8	24	320	0.203	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	10	36	320	0.476	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	16	4,089	320	138.410	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	1	23	320	0.003	Abandoned HP Pipe
N/A	SDG&E Territory	N/A	1/2	192	55	0.001	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	1	1,489	55	0.038	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	1 1/4	4,864	55	0.196	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	1 1/2	3,769	55	0.219	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	2	45,597	55	4.709	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	3	29,135	55	6.770	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	4	1,316	55	0.544	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	6	776	55	0.721	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	10	64	55	0.165	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	12	21	55	0.078	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	16	118	55	0.780	Abandoned MP Pipe
N/A	SDG&E Territory	N/A	1/2	53,919	55	0.348	Abandoned MP Service
N/A	SDG&E Territory	N/A	3/4	19,737	55	0.287	Abandoned MP Service
N/A	SDG&E Territory	N/A	1	3,773	55	0.097	Abandoned MP Service
N/A	SDG&E Territory	N/A	1 1/4	4,299	55	0.173	Abandoned MP Service
N/A	SDG&E Territory	N/A	1 1/2	1,579	55	0.092	Abandoned MP Service
N/A	SDG&E Territory	N/A	2	1,148	55	0.119	Abandoned MP Service
N/A	SDG&E Territory	N/A	3	141	55	0.033	Abandoned MP Service
N/A	SDG&E Territory	N/A	4	2	55	0.001	Abandoned MP Service
N/A	SDG&E Territory	250	N/A	N/A	N/A	0.672	Distribution Odor Intensity Tests
N/A	92108	1	N/A	N/A	N/A	97.600	Tie-in project
N/A	91910	1	N/A	N/A	N/A	13.600	Pipe segment replacement
N/A	91942	1	N/A	N/A	N/A	95.800	Tie-in project
N/A	91945	2	N/A	N/A	N/A	126.400	Tie-in project
N/A	92028	1	N/A	N/A	N/A	86.652	Blowdown to maintain odorant level

ID	Geographic Location	Number of Blowdown Events	Pipe Size (nominal) (in)	Length of Pipe (ft)	Pressure (psi)	Annual Emissions (Mscf)	Explanatory Notes / Comments
N/A	92555	1	N/A	N/A	N/A	77.000	Valve replacement
Sum Total						652	

**SDG&E, June 15, 2018**

**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 2018 June Report**

**Appendix 4; Rev. 03/31/18**

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.

The emissions captured on this tab represent the emissions associated with the operational design and function of the component. Any intentional release of natural gas for safety or maintenance purposes should be included on the Blowdowns worksheet.

**Distribution Main & Service Pipeline Component Vented Emissions (see note above):**

Total Number of Devices	Device Type	Bleed Rate	Manufacturer	Engineering or Manufacturer's based Estimate of Emissions	Annual Emissions (Mscf)	Explanatory Notes / Comments
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*Note: No devices*

Sum Total

0

SDG&E, June 15, 2018

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 2018 June Report  
Appendix 4; Rev. 03/31/18

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.  
The emissions captured on this tab represent the emissions associated unintentional leaks that if repaired would not leaking. If the component is releasing gas or "bleeding" as a result of its design or function then it is not to be captured in this

**Distribution Main & Service Pipeline Component Fugitive Leaks (see note above):**

Total Number of Devices	Device Type	Bleed Rate	Manufacturer	Discovery Date (MM/DD/YY)	Repair Date (MM/DD/YY)	Number of Days Leaking	Emission Factor (Mscf/day)	Annual Emission (Mscf)	Explanatory Notes / Comments
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Note: No Component Leaks

Sum Total **0**

Appendix 4 - Rev. 03/31/18

Header column "Comment" boxes displayed below for reference.	
Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
Pipeline Leaks	
<b>ID</b>	
<b>Geographic Location</b>	GIS, zip code, or equivalent
<b>Pipe Classification</b>	MA = distribution main, above ground MB = distribution main, below ground DA = distribution service, above ground DB = distribution service, below ground
<b>Pipe Material</b>	C = copper CI = cast iron P = plastics (Acetyl, ABS, PE, PVC, etc.) PB = cathodically protected steel, bare PC = cathodically protected steel, coated UB = unprotected steel, bare UC = unprotected steel, coated
<b>Pipe Size (nominal)</b>	
<b>Pipe Age (months)</b>	
<b>Pressure (psi)</b>	MOP = maximum operating pressure over the past year

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<p style="text-align: center;"><b>Leak Grade</b></p>	<p>If the utility uses grades for above ground leaks, it is unnecessary to use the AH,AN, or AM designations.</p> <p>1 = grade 1  2 = grade 2  2+ = grade 2+  3 = grade 3  AH = Above Ground Hazardous synonymous with Grade 1.  AN = Above Ground Non-Hazardous, synonymous with Grade 2 and 2+.  AM = Above Ground Non-Hazardous Minor (akin to grade 3 below ground leak).  N = non-graded or ungraded</p>
<p style="text-align: center;"><b>Upgraded Leak Grade or Downgraded Leak Grade</b></p>	<p>U: Upgraded Leak such as a grade 2 or 3 leak that was surveyed again and changed designation to grade 1 or 2.</p> <p>D: downgraded leak, such as a grade 1 or 2 leak that was surveyed again and changed designation to grade 2 or 3.</p>
<p style="text-align: center;"><b>Above Ground or Below Ground</b></p>	<p>A = Above Ground  B = below ground</p>
<p style="text-align: center;"><b>Leak Discovery Method</b></p>	<p>S = Routine Leak Survey (This discovery method should be parsed and the emissions summarized into leaks carried over from before 2016, and those detected in 2016. The totals for these subcategories should be carried over to column C43 through D63 on the Unsurveyed Pipeline Leaks tab.)  M = O&amp;M (E.G. O&amp;M Activities, Third party reports, customer odor reports etc.)  O = Other (This will be grouped with M in the summary categorization of leaks.)</p>
<p style="text-align: center;"><b>Discovery Date (MM/DD/YY)</b></p>	

New Column

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<b>Re-Grade Date (MM/DD/YY)</b>	
<b>Repair Date (MM/DD/YY)</b>	Date that the pipeline repair stopped the leak. Any associated blowdowns resulting from the repair should be included in the blowdowns tab.
<b>Scheduled Repair Date (MM/DD/YY)</b>	<p>If leak is open, specify the scheduled date of repair;</p> <p>Otherwise type "M," signifying that the leak is being monitored with no scheduled date of repair;</p> <p>Then, provide the reason for not scheduling a repair in Column P.</p>
<b>Reason for Not Scheduling a Repair</b>	If Repair Date is blank, and Scheduled Repair Date (Column O) = "M", then provide the reason for not scheduling a repair.
<b>Number of Days Leaking</b>	<p>If the leak was discovered by survey in the year of interest, then assume leaking from January 1st of subject year <u>thru</u> repair date or December 31st of subject year, which ever is earlier. (E.G. Days Leaking = Repair - Jan 1st + 1 day.)</p> <p>(For days leaking for leaks carried over use January 1st as start date for emissions calculations.)</p> <p>For O&amp;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.</p>

New Column

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<b>Number of Days to Repair</b>	Use only Repair-Discovery +1. Do not use January 1st for time to repair. For regraded leaks, use Repair Date - Regrade Date +1.
<b>Emission Factor (Mscf/Day)</b>	
<b>Annual Emissions (Mscf)</b>	
<b>Explanatory Notes / Comments</b>	

<b>Unsurveyed Pipeline Leaks</b>	
<b>2017 Emissions from O&amp;M* Leaks Detected in 2016 (Mscf)</b>	O&M Sources Include: O&M Activities Customer Odor Reports Third Party Reports and other
<b>2017 Estimated Emissions from Unknown Leaks (Mscf)</b>	Calculation based on the input from column J above.

<b>Pipeline Leaks Summary</b>	
<b>Count of Leaks Carried over from Prior Year</b>	Based on a leak start date prior to the first day of the year of interest.
<b>Count of Leaks Discovered in the Year of Interest</b>	The total number of leaks by grade or category discovered in the year of interest. If a leak is downgraded to not leaking, do not count it.
<b>Count of Leaks Repaired in the Year of Interest</b>	



Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<p><b>Average Days to Repair Leaks</b></p>	<p>The average days to repair leaks should be baase on the formula: (Repair Date/Time minus Discovery Date/Time) plus (one day, unless using a discrete time stamp for leak repairs), then take the sum and divide by number of leaks repaired by grade to get the average days to repair.</p>
<p><b>Count of Estimated Unsurveyed Leaks in the Year of Interest</b></p>	<p>For leaks identified in Unsurveyed areas extrapolate the proportion of leak counts by grade that were found in the respective areas based on the year or periods used to estimate the unsurveyed leak count.</p> <p>If the unsurveyed leak count was based on the current year leak count by grade detected then use the current proportion of graded leak count applied to the unsurveyed leaks.</p>
<p><b>Count of Remaining Leaks at final day of the Year of Interest (12/31/xx)</b></p>	<p>This count is only of the actual leaks detected in the operator's system that have not been repaired as of 12/31 of the year of interest.</p>
<p><b>Emissions from Leaks Carried over from Prior Year.</b></p>	<p>Based on a leak start date prior to the first day of the year of interest.</p> <p>This includes leaks discovered through O&amp;M and survey activities.</p>
<p><b>Emissions from Leaks Discovered in the Year of Interest.</b></p>	<p>The total number of leaks by grade or category discovered in the year of interest.</p> <p>This includes leaks discovered through O&amp;M and survey activities.</p>

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<b>Emissions from Estimated Unsurveyed Leaks in the Year of Interest</b>	<p>The emissions by grade would be on the same basis that used to extrapolate the count of leaks in the unsurveyed areas.</p> <p>For example: For leaks identified in Unsurveyed areas extrapolate the proportion of leak emissions by grade that were found in the respective areas based on the year or periods used to estimate the unsurveyed leak count.</p> <p>If the unsurveyed leak count was based on the current year leaks detected then use the current proportion of graded leaks applied to the unsurveyed leak emissions.</p>
<b>Total Emissions in the Year of Interest [Mscf of Natural Gas]</b>	

All Damages	
<b>ID</b>	
<b>Geographic Location</b>	GIS, zip code, or equivalent
<b>Damage Type</b>	E = excavation damage N = natural force damage O = other outside force damage
<b>Pipe Classification</b>	MA = distriibution main, above ground MB = distriibution main, below ground DA = distribution service, above ground DB = distribution service, below ground
<b>Pipe Material</b>	C = copper CI = cast iron P = plastics (Acetal, ABS, PE, PVC, etc.) PB = cathodically protected steel, bare PC = cathodically protected steel, coated UB = unprotected steel, bare UC = unptotected steel, coated

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<b>Pipe Size (nominal)</b>	
<b>Pipe Age (months)</b>	
<b>Pressure (psi)</b>	MOP = maximum operating pressure over the past year
<b>Leak Grade</b>	1 = grade 1 2 = grade 2 2+ = grade 2+ 3 = grade 3 N = Non-Graded
<b>Above Ground or Below Ground</b>	AH = above ground, hazardous AN = above ground, non-hazardous B = below ground
<b>Discovery Date (MM/DD/YY)</b>	
<b>Repair Date (MM/DD/YY)</b>	
<b>Number of Days Leaking</b>	<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>

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
Emission Factor or Engineering Estimate (Mscf/Day)	
Annual Emissions (Mscf)	
Explanatory Notes / Comments	

Blowdowns	
ID	
Geographic Location	GIS, zip code, or equivalent
Number of Blowdown Events	If counting a series of small blowdowns associated with services such as MSA replacement, or Service pipe of small diameter or section length then enter total and the formula in the explanation column.
Pipe Size (nominal)	
Length of Pipe	
Pressure (psi)	MOP = maximum operating pressure over the past year
Annual Emissions (Mscf)	
Explanatory Notes / Comments	

Component Vented Emissions	
Total Number of Devices	
Device Type	P = pneumatic device H = hydraulic valve operator T = turbine valve operator PR = pressure relief valve O = other devices

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<b>Bleed Rate</b>	L = low bleed I = intermittent bleed H = high bleed NA = not applicable
<b>Manufacturer</b>	
<b>Engineering or Manufacturer's based Estimate of Emissions</b>	
<b>Annual Emissions (Mscf)</b>	
<b>Explanatory Notes / Comments</b>	

<b>Component Leaks</b>	
<b>Total Number of Devices</b>	
<b>Device Type</b>	P = pneumatic device H = hydraulic valve operator T = turbine valve operator PR = pressure relief valve O = other devices
<b>Bleed Rate</b>	L = low bleed I = intermittent bleed H = high bleed NA = not applicable
<b>Manufacturer</b>	
<b>Discovery Date (MM/DD/YY)</b>	List the actual discovery date.  If the leak was discovered in the year of interest, then we will assume the component was leaking from the beginning of the year for emissions reporting purposes.
<b>Repair Date (MM/DD/YY)</b>	Date that the component repair stopped the leak. Any associated blowdowns as a result of the repair should be included in the blowdowns tab.

Column Heading	Description and Definition of Required Contents (IF not self-explanatory)
<p style="text-align: center;"><b>Number of Days Leaking</b></p>	<p>Assume Leaking from January 1 of subject year or prior survey date, whichever is later, thru the repair date (if repaired in year of interest) or December 31 of subject year, whichever is earlier.</p> <p>For O&amp;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.</p>
<p style="text-align: center;"><b>Emission Factor (Mscf/day)</b></p>	
<p style="text-align: center;"><b>Annual Emission (Mscf)</b></p>	
<p><b>Explanatory Notes / Comments</b></p>	