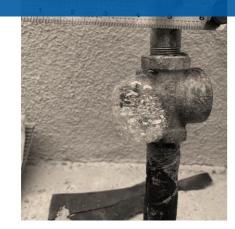
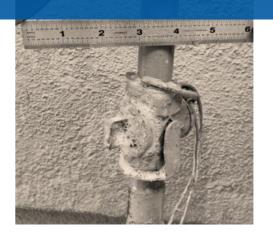


#### MSA BASELINE IMPACTS STUDY

Shift from Facility-Based EFs to Company-Specific Leaker-Based EFs 2021 Winter Workshop – January 22, 2021







#### Overview of Proposed Approach Adjusting 2015 Baseline

- » Background
- » Development of Emission Factors
- » Approach for Analyzing Reported Customer Meter Leak Data
- » Approach for Calculating Emissions from Customer Meter Leaks
- » Approach for Adjusting 2015 Baseline for Appendix 6





### **Background & Prior Work**



#### » Background:

- In 2012, PHMSA implemented the Distribution Integrity Management Program regulations requiring reporting of leaks as either "Hazardous" or "Non-Hazardous", including MSA leaks.
- Minor leaks were not required to be reported to PHMSA.
- SoCalGas/SDG&E conducted laboratory tests to validate AGA guidance regarding "seen, heard, or felt" criteria, and correlation with "blowing-off of leak detection soap".

#### » Results:

- Determined soap bubbles begin to be blown-off at ~4 SCFH
- Study validated rapid dissipation of natural gas above-ground and good safety factor for concern of above ground accumulation

#### » Implementation:

Customer Meter leak data provide in SB-1371 Annual reports

SB-1371	"Hazardous"		"Non-Haza	rdous"	Total	
Report	(Qty)	(%)	(Qty)	(%)	(Qty)	Notes
2015	2,503	7.3%	32,019	92.7%	34,522	Implemented policy changes
2016	3,025	4.4%	65,009	95.6%	68,034	
2017	2,791	4.1%	65,282	95.9%	68,073	
2018	2,913	4.2%	67,145	95.8%	70,058	

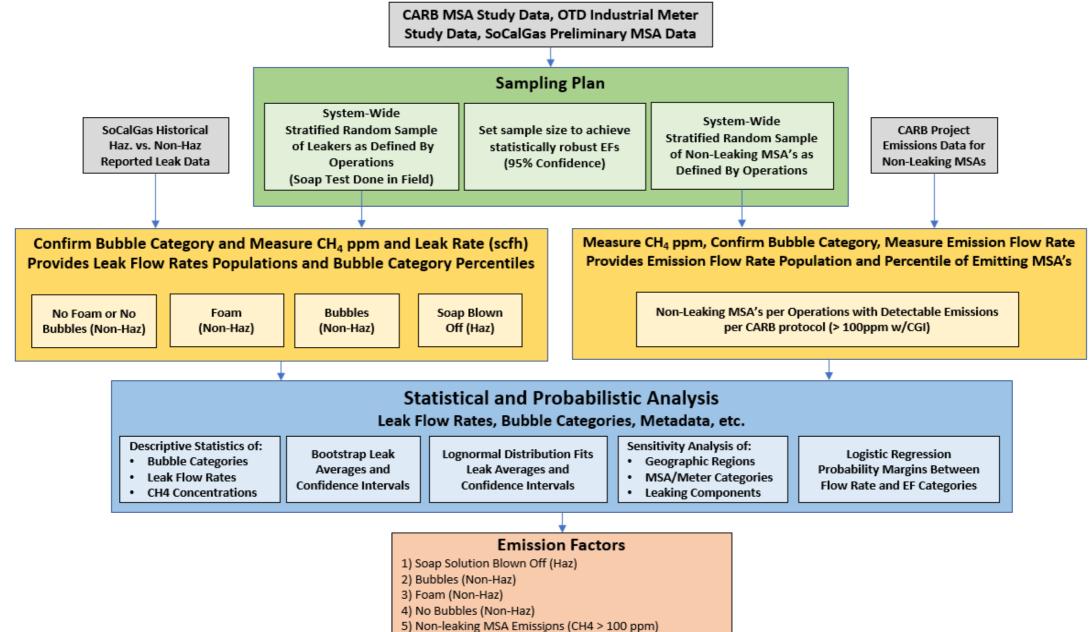








### **EF Development Methodology Summary Flowchart**



Note: for prior Non-Haz data combine EFs for 2, 3, and 4



# Approach for Analyzing Reported Customer Meter Leak Data

- » Statistically analyze 2015-2020 System Leak Data
  - Normalize Leak data to MSA asset inventories
  - Test for statistical differences in year-over-year leak populations
  - Trend analysis
- » Identify reason(s) for changes in number of leaks reported
  - Changes in operational policy
  - Changes in reporting practices or PHMSA reporting requirements
- » Estimate 2015 leak volume by EF category and associated emissions





# **Approach for Calculating Emissions from Customer Meter Leaks**

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 Meters Survey Interval and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Meter    Total System Meters on Annual Meters on Meters on Mother Survey Cycles [M <sub>XA</sub> ]   Survey Interval Multi-Year Survey Cycles [M <sub>X</sub> <sup>Tot</sup> ]   [I]   Meters Survey Cycles [M <sub>X</sub> ]   Meters Survey (M <sub>X</sub> )   Meters Survey (M <sub>X</sub>				[Company	Name], [Da	te Submitted]				
Appendix 4; Rev. XXXXXX    Paciliary Facility Material   Pacility Material   Pacilit	Rulemaking (R.) 15-01-008 to Adopt Rules	and Procedures	Governing Comm	ission Regula	ted Natural Ga	s Pipelines and Fa	cilities to Redu	ce Natural Gas Leaks Co	nsistent with Senate Bill 1371, L	eno.
Package   Cast   Meters   Cast										
Definitions in Data Request Rist-10/08 2018 June Report  If highighted cells are filled in, the other cells will auto-populate  Summary of Data by Meters Survey Interval and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Meter  Facility/Material  Total System Meters per survey Cycle Cycle  Cust Meters  Total				•	-		•			
Summary of Data by Meters Survey Interval and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Meter  Facility/Material  Meters per survey Orde  Meters per survey Orde  Meters on Multi-Year Survey Ordes  [M/K_A]  Survey [M/K_A]  Survey Orde  Meters on Multi-Year Survey Ordes [M/K_A]  Survey [M/K_A]  Survey [M/K_A]  Survey Interval Meters Survey [M/K_A]  Meters on Multi-Year Survey (ordes) [M/K_A]  Survey [M/K_A]  Meters on Multi-Year Survey (ordes) [M/K_A]  Survey [M/K_A]  Meters on Multi-Year Survey [M/K_A]  Meters on Multi-Year Survey (ordes) [M/K_A]  Survey [M/K_A]  Meters on Multi-Year Survey [M/K_A]  Survey [M/K_A]  Meters on Multi-Year Survey [M/K_A]  N_K_METERS (M/Meters)  N_K_METERS (M/Met	Notes:									
Summary of Data by Meters Survey Interval and Results for Annual System Leak Rate and Resulting Number of Unknown Leaks for Each Meter Total System Meters on Annual System Meters on Annual Meters on Survey (Mx_A)	Definitions in Data Request R15-01-008 2018 June Report									
Total System Meters per survey $\{M_{X,L}\}$ Meters on Annual Survey $\{M_{X,L}\}$ Meters on Survey $\{M_{X,L}\}$ Meters on Survey $\{M_{X,L}\}$ Meters on Survey $\{M_{X,L}\}$ Survey $\{M_{X,L}\}$ Survey $\{M_{X,L}\}$ Survey $\{M_{X,L}\}$ Multi-Year Survey $\{M_$	If highlighted cells are filled in, the other cells will auto-populate									
Total System Meters per survey $\{M_{X,L}\}$ Meters on Annual Survey $\{M_{X,L}\}$ Meters on Survey $\{M_{X,L}\}$ Meters on Survey $\{M_{X,L}\}$ Meters on Survey $\{M_{X,L}\}$ Survey $\{M_{X,L}\}$ Survey $\{M_{X,L}\}$ Survey $\{M_{X,L}\}$ Multi-Year Survey $\{M_$										
Facility/Material Meters per survey $Cycle \ [M_{XA}]$ $Multi-Year Survey Cycle \ [M_{X}]$ $Multi-Yea$	Summary of Data by Meters Survey Interval and Results for	Annual System	Leak Rate and Re	sulting Numb	er of Unknow	n Leaks for Each N	∕leter			
Max		Meters per survey	Survey	Multi-Year	(yrs)	Annually from Multi-	Detected from	[Leaks / Meter]		Total # of Leaks Detected from O&M*
Cust Meters	Facility/Material	Cycle	[107 X,A]					$R_X = \frac{N_{X,L}}{M_{X,A} + (I \times M_{X,I})}$	$N_{X,unk} = R_X \times (M_X^{Tot} - M_{X,I}) \times \frac{I}{2}$	[N <sub>x,o</sub> ]
Cust Meters	Cust Meters				5	0		-	-	
Total   O   O   O   N/A   O   O   N/A   O   O   N/A   O   O   O   N/A   O   O   O   O   O   O   O   O   O	Cust Meters				3	0		-	-	
Estimated Emissions by Leak Code  Emission Factor (Mscf/day/leak) Leakage Category  Emissions from Survey (Mscf)  Leakage Category  Facility/Material  AG-Haz AG-Non Haz Miniscule  Emissions from Unknown Leaks Detected from Survey (Mscf)  O O O O O O O O O O O O O O O O O O O	Cust Meters				1	0		-	-	
Emissions from (Mscf/day/leak) Leaks Detected from (Mscf/day/leak) Leaks Detected from (Mscf) and the composition of the compos	Tota	I 0	0	0	N/A	0	0	N/A	0	0
Emissions from (Mscf/day/leak) Leaks Detected from (Mscf/day/leak) Leaks Detected from (Mscf) and the composition of the compos										
Emissions from (Mscf/day/leak) Leaks Detected from (Mscf/day/leak) Leaks Detected from (Mscf) and the composition of the compos	Estimated Emissions by Leak Code									
Leakage Category  Survey (Mscf)  (Mscf)  Leakage Category  Facility/Material  AG-Haz  AG-Non Haz  Miniscule  Detected (Mscf)  (Mscf)  Unknown Leaks (Mscf)  (Mscf)  Unknown Leaks (Mscf)  Signification Pipelines (Mscf)  (Mscf)  Oscillation Pipelines (Mscf)  Oscillation Pipeline		Emission Factor	Emissions from	Emissions from	Estimated	Total Estimated				
Leakage Category  (Mscf) (Mscf) (Mscf) (Mscf)  Facility/Material  AG-Haz  AG-Non Haz  Miniscule  (Mscf) (Mscf) (Mscf) (Mscf)  (Mscf) (Mscf) (Mscf) (Mscf)  (Mscf) (Mscf) (Mscf) (Mscf) (Mscf)  (Mscf)		(Mscf/day/leak)	Leaks Detected from	O&M* Leaks	<b>Emissions from</b>	Emissions from				
Facility/Material       0       0       0       0         AG-Haz       0       0       0       0         AG-Non Haz       0       0       0       0         Miniscule       0       0       0       0				Detected	Unknown Leaks	•				
Facility/Material  AG-Haz  AG-Non Haz  Miniscule  AG-Waterial  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			(Mscf)	(Mscf)	(Mscf)	(Mscf)				
AG-Haz 0 0 0 0 0 0 AG-Non Haz 0 0 0 0 0 Miniscule 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Leakage Category									
AG-Haz 0 0 0 0 0 0 AG-Non Haz 0 0 0 0 0 Miniscule 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										
AG-Haz 0 0 0 0 0 0 AG-Non Haz 0 0 0 0 0 Miniscule 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0										
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Miniscule 0 0 0							-			
					U	U				
		l N/A				•				





#### Approach for Adjusting 2015 Baseline for Appendix 6

- » CPUC/CARB Publish Revised Templates
- » SoCalGas/SDG&E Summarize Approach and Justification
  - Provide summary of identified changes that effected reported Customer Meter Leaks
  - Provide methodology and calculations to determine number of leaks by EF category in 2015
- » Prepare Revised 2015 Appendix 6 and Appendix 8





## **Questions?**

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