

Methane Emissions from Gas Residential Meter Set

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Together, Building
a Better California



2018 Annual Leak Report

- Meter set leaks emissions account for 20% of PG&E's overall emissions.
- Population-based emission factors does not show leak abatement efforts.
- The recent CARB-GTI residential meter set study provides data to revisit the population based emission factors.

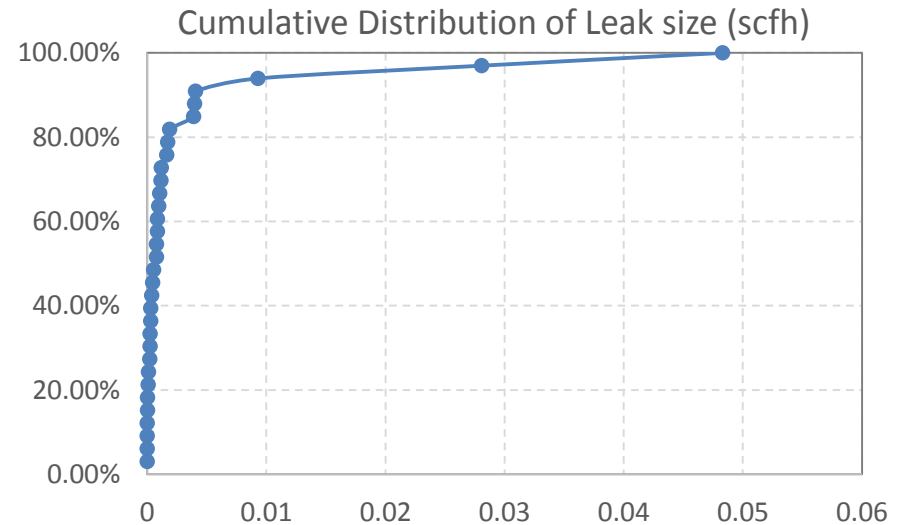
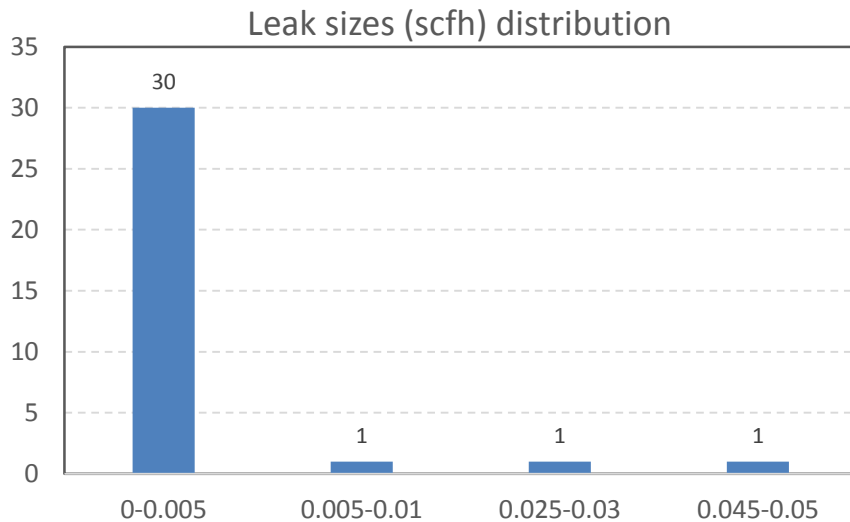
Meter Type	Number	Emission factor ¹ (scfh)	Annual Emissions (Mscf)
Residential	4,261,168	0.0169	630,653
Commercial/ Industrial	232,216	0.0058	11,843



CARB-GTI Residential Meter Set Study

CARB-sponsored study at PG&E

- In Feb. 2018, GTI surveyed 200 residential meter sets in 4 Bay Area coastal and non-coastal cities (Fairfield, Fremont, San Ramon, Pacifica).
- Hi-Flow Sampler and LGR MicroPortable sensor were used to quantify leak rate.
- A total of 58 leaks were detected. The emissions rate of 33 leaks were measured.



Average leak size / Leak-based EF	0.003 scfh
Population-based EF	0.001 scfh
Population-based EF (GRI 2016)	0.017 scfh

EF from new study is 17x less than current EF

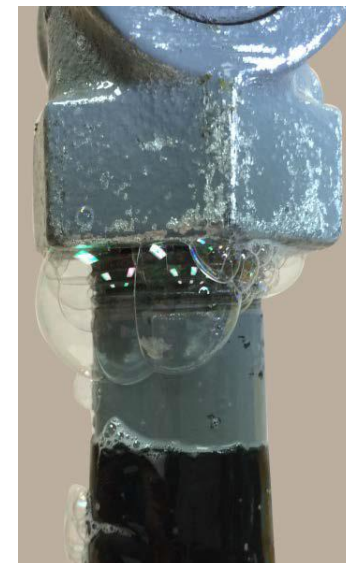
Meter set survey

- Compliance requirement is to survey meter sets every 5 years.
- Meter sets are visually inspected at a minimum once every three years for atmospheric corrosion.
- A vast majority of MSAs are surveyed with a methane detector every three years during compliance leak surveys.
- Grading criteria for aboveground leaks: Soap test

Grade	Soap test result
1	Soap solution is blown off, providing no opportunity for bubble to form and “hold”
2	Soap solution holds a cluster of bubbles
3	Soap solution forms small bubbles



Grade 3



Grade 2



- Preliminary results show that the size of the bubbles can help differentiate small leaks:
 - Foam and small bubbles are representatives of leaks smaller than 0.01 scfh
 - Large static bubbles are representative of leaks up to 0.1 scfh
 - Fast growing bubbles expanding beyond the leak area are representative of leaks in the 1 scfh range
- Additional test by GTI will characterize flows between 0.1 scfh and 5 scfh to complete the correlation.

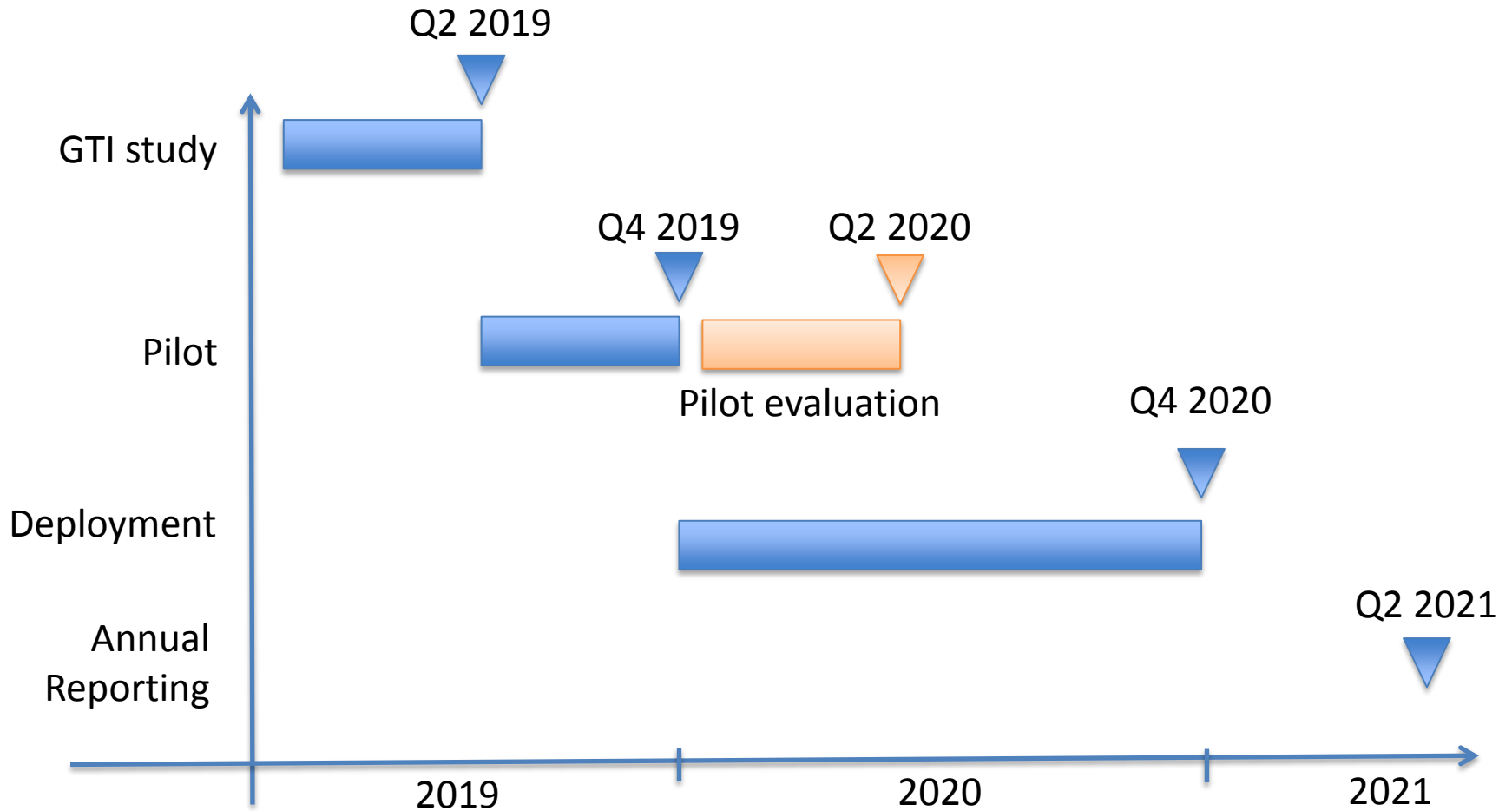


Calculating Emissions based on detected and quantified leaks

- Create a guide for field crews to quantify MSA leaks in bins (To be adjusted based on final results from GTI's study).
- Field crew will report MSA leaks with quantification (bins)
 - Verification may be performed using pictures or videos
- Emission for each leak will be calculated in function of mode and discovery dates and repair date (as pipeline leaks) and a flow rate corresponding to its quantification bin
- MSA emissions will represent actual leak population in each utility territory



Proposed timeline



Thank you!

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Meter set repair

- Most common type of repair is TLA (tightening, lubricating/re-dope, and adjustment).
- Depending on conditions, repair, component replacement, or full may be necessary.
- Leak test with soap solution after job is completed.



Meter set replacement

- Under its **Statistical Meter Performance Control Program**, PG&E reviews accuracy of meters using statistical sampling techniques and replaces any group of meters that does not meet prescribed standards. Almost 30,000 meters were replaced in 2017.
- The **Periodic Meter Change Program** addresses meters that cannot be managed using statistical techniques. These meters are replaced before they are in service for 10 years. 1,514 PMC meters were replaced in 2017.
- In addition, PG&E gas service representatives regularly replace meter sets with anomaly operating conditions (**Corrective Maintenance**) either due to customer call-ins or scheduled leak surveys.