

APPENDIX 2- TRANSMISSION M&R STATIONS PROPOSED CHANGES

2021 Winter Workshop (R.15-00-08)- January 21, 2021

Transmission M&R Stations Proposed Changes

Station Leaks & Emissions

Objectives:

SoCalGas proposes to:

- » **Transferring leaker-based emissions of Distribution Tap Facilities from Appendix 2 (Transmission M&R Stations) to Appendix 5 (Distribution M&R Stations)**
- **Transition from emission estimates based on counts of Distribution Tap facilities to:**
 - Emission estimates based on counts of leaking components and leaking component emission factors in the same manner as Distribution M&R Stations
- **Move Direct Sales emissions from Appendix 2 (Transmission M&R Stations) to Appendix 6 (MSA Systems)**
 - Direct Sales emissions are accounted for in Appendix 6 (MSA Systems)

Topics

- » Tap Facility Definition
 - Tap Facility Components
- » Current Emission Estimation Methodology
- » Proposed New Emission Estimation Methodology
- » Direct Sales
- » Future Work For Transmission M&R Stations

Supporting Documents

1996 GRI/EPA Study - Final Report “Methane Emissions from the Natural Gas Industry, Volume 10: Metering and Pressure Regulating Stations in Natural Gas Transmission and Distribution”, GRI-94/0257.27, EPA-600/R-96-080, June 1996

- Note that the 1996 GRI/EPA study used the same emissions measurement data set to develop the EFs for Distribution M&R stations and for Transmission M&R stations

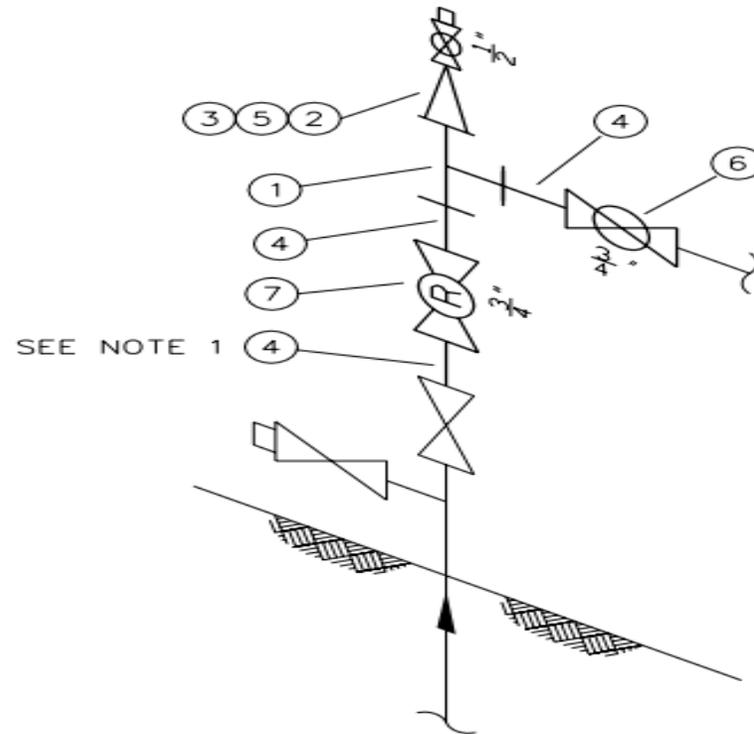
2009 OTD Report - GTI-OTD Final Report “Field Measurement Program to Improve Uncertainties for Key Greenhouse Gas Emission Factors for Distribution Sources”, GTI Project Number 20497, OTD Project Number 7.7.b, November 10, 2009

2015 WSU/EST Study – “Direct Measurements Show Decreasing Methane Emissions from Natural Gas Local Distribution Systems in the United States”, Lamb et al, Environmental Science & Technology, 2015, 49, 5161-5169

Tap Facilities

- » **SoCalGas and SDG&E defines Tap Facilities or First Stage Regulations (FSR) as following:**
 - Pressure regulating, relieving or limiting devices and associated valves, fittings, control lines and piping utilized to control the flow of high-pressure gas to a customer MSA.
 - A Tap Facility is on a high-pressure line to serve a single customer where gas at medium pressure is not available
 - Emissions from Tap Facilities are reported as component leaks. No vented emissions are associated with Farm Taps (pneumatics devices)

Tap Facilities Components



Standard Tap Facility Design

Item #	Description
1	Tee Fitting
2	Connector
3	Plug
4	Nipple
5	Valve Ball
6	Valve Ball
7	Regulator

Tap Facilities

Leaks and Emissions

2019 Emissions Estimate

- » Current (2019) Emissions estimated using
- » Population EF calculation: Emissions = Count of each Transmission M&R Stations Category * EF (Mscf/yr/station)
 - Station counts by category:
 - Transmission-to-Transmission Interconnect Stations (T), **EF = 1554.8 Mscf/yr/station**
 - Direct Sales Stations (D), **EF = 12.2 Mscf/yr/station***
 - Farm Taps (F), **EF = 12.2 Mscf/yr/station***
 - * Recalculating the EF using all 14 samples from “T-2 Transmission Source Sheet” in Volume 10 of the 1996 GRI/EPA Study indicates that the current EF for Farm Taps and Direct Sales of 12.2 Mcf NG/stn-yr is based on a calculation error and that the EF should be **4.8 Mcf NG/stn-yr**
 - Facility-level population emission factors (EFs) by category from 1996 GRI/EPA Study (~ 1992 data)
 - Emissions measured using tracer gas method and include both fugitive emissions (unintentional natural gas leaks) and pneumatic device venting
 - No vented emissions are associated with Farm Taps (pneumatics devices)
 - Emission Factors have large uncertainties, about $\pm 80\%$ (at 90% CI)
 - National EFs rather than based on SoCalGas or California-specific emissions data
 - Tap Facilities designs in other areas of the U.S. can vary from SoCalGas stations due to differences in operating pressures and environment

Tap Facilities Leaks and Emissions Proposed New Estimation Methodology

- » Proposed New Emission Estimation Methodology (2021+)
- » **Tap Facilities:**
 - Emissions estimated using:
 - Results of periodic SoCalGas leak surveys of Distribution Tap Facilities that determine leaks count by component type
 - Component leaker EFs from CARB MRR (Appendix A Table 7) same as Distribution M&R station leaks
 - Emission duration: Time from the leak repair to the last survey, or January 1st of the report year
- » The proposed new methodologies allow year-to-year emission reductions to be demonstrated

Periodic SoCalGas Leak Surveys Practices

Category	Leak Survey Frequency (Minimum)	Leak Detection Method
Tap Facilities (DOT-T)	2 survey per year	DPIR, OMD, or RMLD
Tap Facilities (DOT-D)	1 survey per year	DPIR, OMD, or RMLD
Direct Sales	2 survey per year. Monthly MSA inspection	Survey: DPIR or RMLD Inspection: Soap Test

Tap Facilities Leaks and Emissions Proposed Emission Factors

- » Component leaker EFs from CARB MRR (Appendix A Table 7)

Component	Emission Factor (scf CH4/hour/component)	scf CH4/ scf NG ^A	Emission Factor (Mscf NG/component-day)
Connector	1.69	0.95	0.0427
Block Valve	0.557	0.95	0.0141
Control Valve	9.34	0.95	0.2360
Pressure Relief Valve	0.27	0.95	0.0068
Orifice Meter	0.212	0.95	0.0054
Regulator	0.772	0.95	0.0195
Open-ended Line	26.131	0.95	0.6602

A. Subpart W default value for CH4 in NG [§ 98.233(u)(2)]

Direct Sales

Leaks and Emissions

» Direct Sales:

- SoCalGas and SDG&E define Direct Sale as large non-core gas customers with Industrial/Commercial MSA
- SoCalGas and SDG&E are continuously refining Management Systems data:
 - Data reviews indicated that small number of Direct Sales meters have been reported in both Appendix 2 and Appendix 6. Therefore, SoCalGas proposes removing the Direct Sale meters from Appendix 2 to avoid duplication in emissions estimation.
 - The overreporting of facilities can be attributed to oversight due to the large number of customers meters reported in Appendix 6.
- SoCalGas and SDG&E confirmed and concurrence of this change with PG&E and Southwest Gas.

Transmission M&R Stations

Station Leaks and Emissions

Next Steps

» Continuing and Future Work

- Transmission M&R Stations:
 - Conducting research studies at M&R Stations using methane sensors and aerial methane detection technologies to better understand emission sources and overall facility emissions in relation to current emission factors
 - Leveraging the studies' data to evaluate leak detections practices
 - This work will provide the industry with additional data for such type of facilities and to improve leak detection practices
- On-going modernization of Station Facilities:
 - Replacing and retro-fitting aging infrastructure (e.g., valves and fittings) to improve reliability
 - Replacing natural gas-driven pneumatic devices with lower bleed, air-driven, or electric devices
- Verify comprehensive inventory of Company M&R Stations and company-specific categories. Assets Field Verification projects are in progress and will yield to enhance the accuracy of the data across the management systems
- Continued monitoring and evaluation of the systems inventory data, the leak survey data, and analysis of leak survey data to identify and replace components that are chronic leakers

Questions?