Southern California Gas Company

Natural Gas Leakage Abatement Report

In partial fulfillment of

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.

And in Response to Data Request Southern California Gas Company R15-01-008
2020 Annual Report

By: Southern California Gas Company

Date: 06/15/20

SoCalGas
Attachment Q1

Mandatory Best Practice	Title	Emission Source	Question 1: A summary of changes to utility leak and emission management practices from January 1st, 2019 to December 31st, 2019
1	2018-2020 Compliance Plan Implementation	All	SoCalGas is continuing to implement its 2018-2020 Leak Abatement Compliance Plan.
3-7	Policies Regarding Blowdown Reduction	Blowdown from high pressure Transmission, Distribution, and Storage Pipelines	In 2019, SoCalGas published seven policies requiring pressure reduction to the lowest operationally feasible level in order to minimize methane emissions before non-emergency venting of high-pressure facilities. SoCalGas also published the Blowdown Emission Reduction Plan Form and updated the Blowdown Reporting Form to properly track blowdown reduction methods and efficacy.
9	Recordkeeping	All	In 2019, SoCalGas continued developing a centralized database to incorporate Leak Abatement Program records to enable automation of reporting. System plan, architecture and requirements were completed in 2019. This project continues through 2020.
11	Methane Emissions Minimization Policies Training	All	In 2019, SoCalGas completed development of a training module that provides employees with an overview of greenhouse gases, how they impact the environment, and how employees can help reduce methane emissions. This module was finalized in 2019 and will be a mandatory training requirement for all SoCalGas employees in 2020. SoCalGas also updated internal training materials for operational trainings to reflect policy updates regarding implementations of the 26 Mandatory Best Practices.
12	Knowledge Continuity Training Programs	All	SoCalGas will be incorporating the training program developed to meet the requirements of Best Practice 11 into new employee training bundles, so all new employees are trained on the importance of minimizing methane emissions.
13	Performance Focused Training Program	Distribution and Transmission facilities	In 2019, SoCalGas began developing a competency-based training program that will leverage mobile training formats to provide a comprehensive, multimedia training program. This new format will encompass methane mitigation policies and procedural changes to increase the agility and speed of policy change implementations. The first five training development modules were completed in 2019.

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16	Gas Distribution Leak Survey	Unprotected Steel Distribution Pipe	In 2019, SoCalGas hired and trained thirteen (13) incremental Construction Technicians and two (2) supervisors to prepare for implementation of annual survey on unprotected steel pipe. SoCalGas also purchased tools, vehicles, and instrumentation, and updated compliance systems with new survey requirements. In January 2020, SoCalGas began performing annual survey on unprotected steel distribution pipe.
16	Distribution Integrity Management Program Replacement of Bare Steel and Vintage Plastic Pipe	Underground Distribution Pipe	• In 2019, SoCalGas replaced 74 miles of non-state-of-the-art pipe, including 28 miles of unprotected steel and 46 miles of early vintage plastic pipe. Using the leak rate per mile per year for these categories of materials, these replacements are estimated to provide an annual emissions reduction of 463 MCF. • SoCalGas has a GRC-funded Bare Steel Replacement Program (BSRP) that focuses on the replacement of poor performing bare steel. SoCalGas targets replacing 29 miles of main and associated services annually above and beyond routine replacements in accordance with Distribution Integrity Management Program (DIMP) regulations implemented by the federal Pipeline and Hazardous Materials Safety Administration (PHMSA). • SoCalGas has a GRC-funded Vintage Integrity Plastic Plan (VIPP) that focuses on the replacement of poor performing early vintage plastic for all pre-1986 plastic pipe. SoCalGas targets replacing 78 miles of main and associated services annually above and beyond routine replacements in accordance with DIMP regulations implemented by PHMSA.
16	Leverage eGIS to Prioritize Non-State-of-the-Art Pipeline Replacement Programs	Distribution Pipelines	SoCalGas leveraged eGIS to enhance prioritization and optimization of non-state-of-the-art pipeline replacement programs by identifying leak clusters. Leveraging eGIS to more efficiently address the portions of the system with the highest leak rates increases the effectiveness of modernization programs and supports greater emission reductions. As part of DIMP, SoCalGas replaced 525 incremental services in 2019 by prioritizing leak clusters.
16	Perform Annual Survey onPre-1986 Aldyl-A Mains and Associated	Distribution Pipelines	SoCalGas continued performing annual leak surveys on pre-1986 Aldyl-A mains and associated services, compared with the previous 5-year leak survey cycles. The estimated emissions reduction achieved in 2019 associated with this effort was 41,368 MCF.

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17	Enhanced Methane Detection	Underground Pipelines	In 2019, SoCalGas acquired a mobile gas speciation vehicle and associated equipment, and hired and trained one (1) additional technician to perform mobile gas speciation analyses. This incremental effort is expected to be operational in 2020.
17, 20	Research Projects to Advance the Science and Tools Available to Detect and Quantify Leaks	All	SoCalGas funded and actively participated in various research projects to advance the science related to estimating methane emissions from various portions of the natural gas system through refinement of emission factors and other emission quantification methods. SoCalGas is also involved in work to develop and advance technologies related to the detection and quantification of individual fugitive and vented methane emission sources. This work supports technological advancements in leak detection to find leaks earlier, quantify emissions, and target resources to optimally reduce natural gas emissions. Work is also conducted on a variety of new technologies related to pipeline safety and integrity that will synergistically reduce methane emissions. In 2019, SoCalGas participated in various industry research projects and conducted demonstrations and pilot studies. The following provides a brief summary of Research and Development work that was conducted in 2019[1]: • Emission Factors – SoCalGas continued work on developing company specific emission factors for distribution buried leaks, leaks on customer meter facilities, and distribution M&R stations. • Leak Detection and Localization (pin-pointing) - Development of fixed-location sensors, evaluation of various systems designed to measure atmospheric methane concentrations compared with “traditional” methodologies, optical gas imaging, residential leak detection, fence-line monitoring, and aerial leak detection from both manned aircraft and drones. • Leak Quantification - Evaluation of emissions quantification technologies, including surface expression, mobile measurement in gas plumes, optical

[1] SoCalGas and SDG&E’s Summary Report for Senate Bill 1371 Research and Development Projects and Pilot Studies Supporting the Utilities 2018 Leak Abatement Compliance Plans provides a comprehensive summary of work completed in this area; available at https://www.socalgas.com/sites/default/files/PUBLIC%20SoCalGas-SDG%26E%20NGLA%20RD%20and%20Pilot%20Studies%20Evaluation%20Report_Final.pdf

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			imaging, development of other potential approaches, and investigation of leak growth rates on plastic piping systems • Operations – Identified areas for a potential reduction of emissions from operation activities: evaluated quick repair methods for meter set threaded connections, evaluated quality of pipe fittings, and performed gap analysis of methods and technologies to mitigate pipeline blowdowns. • Geographic Tracking and Integrity Risk factors – Projects to develop data models to facilitate mobile data collection and to enhance Integrity Management Practices through identification of risk factors related to natural gas emissions.
18	Stationary Methane Detector Pilot	Above Ground High Pressure Facilities	In 2019, SoCalGas purchased and installed stationary methane sensors for high pressure regulator stations to determine emission reduction capabilities and cost-effectiveness of these systems. SoCalGas is evaluating the systems in laboratory and field settings, and anticipates results from data analyses in 2020 to inform a decision on system-wide implementation feasibility.
18	Synergies with Pipeline Safety Enhancement Plan (PSEP) Technology Plan	Distribution and Transmission Pipeline Leaks	• SoCalGas requested funding in the Test Year (TY) 2019 GRC application to install approximately 2,100 methane sensors that link to the Advanced Meter network across both SoCalGas and SDG&E. These sensors support providing early warning of leaks to schools, hospitals, or hard to evacuate facilities (e.g., nursing homes). SoCalGas installed ten sensors as a pilot to integrate with the network, back office systems, and associated processes. In 2019, SoCalGas worked on project plan development, refining site selection criteria, and remote methane sensor system design enhancements. • SoCalGas requested in the TY 2019 GRC to begin installing fiber optic cables along the route of high-pressure pipelines that can sense leaks and potential encroachments near the pipeline. In 2019, SoCalGas performed training and evaluation of design and configurations at a fiber optic line installed at SoCalGas' Situation City Training facility at Pico Rivera. To further this effort, SoCalGas changed its procedures to require any Transmission pipeline projects 12" or greater in diameter for a mile or longer to install a fiber optic sensing line.
19	Above Ground Leak Survey	Above Ground	In 2019, SoCalGas purchased Remote Methane Leak Detectors (RMLDs) to perform instrumented above ground survey on high pressure M&R facilities. SoCalGas also

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		Facilities	continued evaluating Toxic Vapor Analyzers (TVA) to provide method 21 leak survey training and equipment to storage employees. SoCalGas plans to finalize evaluation, selection and procurement of the TVAs in 2020. Training is expected to begin in 2021.
20a	Quantification	Distribution Pipeline Leaks	In 2019, SoCalGas conducted a Pilot Study at three (3) distribution districts to differentiate leak locations with potential larger leak rates. This included conducting leak quantification to prioritize repairs by leak rate. The method developed by SoCalGas identifies and prioritizes Code 2 and Code 3 leaks that have leak rates exceeding 10 cubic feet per hour (CFH). System-wide implementation is expected to begin in 2021.
20b	Electronically Track Verified Gas Leaks	Transmission and Distribution Pipelines	SoCalGas worked on developing an IT system to replace existing leak survey processes involving paper maps with a mobile application. Deployment is expected to begin in 2020 for Distribution and in 2021 for Transmission. Once fully integrated with eGIS and work management systems, this enhancement should: • Provide electronic maps in the field and collect Breadcrumb data along survey path; • Improve geographic evaluation and tracking of leaks with auto population of GIS coordinates for leak location; • Track when pipeline assets have been leak-surveyed/patrolled and capture all leak indications; • Improve recordkeeping of survey activities; • Reduce paperwork and data entry labor; and • Reduce data entry errors and missed records.
20b	AVEVA modeling and updating P&IDs	Storage and Compressor Facilities	In 2019, SoCalGas secured software licenses and hired project managers to support project Implementation. SoCalGas also hired a technical writer to develop new gas standards and policies. A total of 30 P&IDs were digitized and 3D modeling was 60% complete for one underground storage field. In 2020, SoCalGas expects to complete the digitizing and mechanical walkdown of 1,200 process and instrumentation diagrams (P&IDs).
21	Reduction of Above Ground Minor Leak Inventory	Distribution Meter Sets	In 2019, SoCalGas hired and trained 13 Construction Technicians to mitigate its inventory of above ground minor leaks. In addition, SoCalGas updated the leak repair policy to accelerate repair of above-ground minor leaks on the Distribution system to within 10 days of discovery.

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21	Reduction of Non-Hazardous Leak Inventory	Distribution Pipeline Leaks	• SoCalGas continues to address its nonhazardous Code 3 steel leak inventory, including hiring and training 36 incremental employees to reduce the inventory. • In 2019, SoCalGas repaired approximately 3,941 non-hazardous Code 3 steel leaks. Upon submission of this report, SoCalGas has reduced its Code 3 steel leak inventory to less than 36 months for its oldest leak.
21	Increased Compressor Rod Packing Replacements	Transmission and Storage Compressors	In 2019, SoCalGas installed nineteen (19) packing replacements at Transmission Compressor Stations and nine (9) packing replacements at Storage facilities, providing an estimated reduction of 24,220 MCF of methane. Increasing the frequency of rod packing replacements reduces methane emissions that may occur due to worn or damaged rod packings that allow natural gas to escape while compressors are in operation
22	Pipe Fitting Specifications	Threaded Fittings	In 2019, SoCalGas began performing an evaluation of quality control processes to reduce emissions through threaded fittings, based on findings from a 2018 research project on the quality of threaded fittings. This work continues in 2020.
23	Replacement of High Bleed Pneumatic Devices	High Pressure Facilities	Five (5) high-bleed pneumatic devices on SoCalGas' system were replaced in 2019. One (1) remaining device is scheduled for replacement in 2020.
23	Use Billing Calibration Factor In lieu of Meter Replacement	Customer Meters	In 2019, SoCalGas continued work to initiate the Billing Calibration Factor In lieu of Meter Replacement project. This project enables SoCalGas to reduce emissions from planned meter changes. Advice Letter (AL) 5403 was approved in January 2020, authorizing a pilot program to apply a 2% meter calibration adjustment factor in lieu of meter replacement. The system architecture update was completed in March of 2020.
23	Reduce Venting During Blowdowns and Improve Data Collection	High Pressure Transmission and Distribution Pipelines	• SoCalGas Transmission Pipelines routinely require maintenance to support system integrity and safety. In these situations, gas often must be evacuated from pipelines. As a best practice, SoCalGas lowers the pipeline pressure where feasible to reduce the potential volume of methane emissions. In 2019, SoCalGas avoided 45,463 MCF of methane emissions by reducing line pressure prior to blowdowns. • In 2019, SoCalGas continued implementing a methane capture system which compresses pipeline gas into a compressed natural gas tube trailer and then re-

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			introduced the gas into the pipeline. SoCalGas estimates this further reduced methane emissions by an additional 4,051 MCF.
23	Vapor Collection Systems	Compressor Stations	In 2019, SoCalGas continued the design and construction of a vapor collection system at a transmission compressor station, which is expected to be completed in 2020. SoCalGas is also designing a study to be performed after completion to evaluate the system for emission reductions and cost-effectiveness to determine if this strategy should be further implemented at other stations.
23	Expanded Storage Integrity Management Program	Storage Wells	In addition to SoCalGas' existing maintenance and prevention programs, SoCalGas has been implementing an expanded an accelerated Storage Integrity Management Program ("SIMP"). The SIMP program uses state-of-the-art inspection technologies to validate storage facility safety and integrity and identify potential issues. SIMP includes a baseline assessment and regular, periodic reassessments of wells and associated surface facility integrity; safety enhancements; and proactive assessment, management, planning, repair, and replacement of storage facilities. SIMP involves the expanded use of contract workover rigs to evaluate downhole casing and tubing conditions and enhanced methods of evaluating surface equipment such as valves, wellheads, and well laterals.
23	Storage Facility Improvements	Underground Storage Facilities	SoCalGas implemented several projects at Storage facilities in 2019 to reduce vented and fugitive emissions, including the following: • Orifice Meter Overhaul: A set of orifice meters with a history of high leak rates were rebuilt to reduce emissions • Main unit packer leakage measurement: This project improves measurement of rod packing at compressor facilities. This improvement project enables measurements to be collected at individual packers, enabling proper identification and replacement of leaking packers. • Capital Meter Removal: Several flow meters used to measure the flow of gas to various storage facilities were no longer in service and were a source of emissions. The meters were removed and replaced with pipe. • Electronic Chemical Feed Pumps: Many existing chemical injection pumps are powered by pressurized natural gas, and gas is emitted after it has powered the pumps. This project replaces those pumps with electric motor driven pumps to

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			reduce gas venting to atmosphere. The project includes the installation of the pumps and ancillary piping, supports, and utilities to make the system functional. • Facility Drawdown System: A drawdown system was installed to reduce emissions during maintenance, and construction work. • Blowdown System Installation: SoCalGas is installing multiple small compressors at strategic locations throughout the field to compress gas between systems to capture gas that would otherwise be emitted during maintenance and construction work. • Wellhead Venting Reduction: Wellhead annuli Emit gas at certain pressure thresholds. SoCalGas is building pipes to flow these emissions into a nearby line to reduce emissions. • Quarter Turn Valves: SoCalGas is replacing pressure transmitter needle valves with quarter turn ball valves to promote complete isolation and reduce leakage. The quarter turn ball valves are expected to be easier to use and maintain and are expected to result in more complete isolation and to further reduce emissions.
24-26	Excavation Damage Prevention	Distribution and Transmission Pipeline Damages	• SoCalGas continues to conduct damage prevention programs that address the nine damage prevention elements found within the Protecting Our Infrastructure of Pipelines and Enhancing Safety Act, 49 U.S.C. § 60134(b). • Reduction of damages supports public safety, system integrity, and emission reductions. • SoCalGas continues to promote other damage prevention measures such as protection of gas facilities from outside force damage, monitoring of third-party excavation activities near high pressure lines, and proactive monitoring of Company facilities. • In 2019, SoCalGas invested over $600,000 in safe digging media campaigns to promote safe excavation practices and contacting 811 before digging. These funds were used to augment SoCalGas's safety media campaign with additional radio, television, events, and print message ads about contacting 811 before digging.

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SoCalGas is a member of the EPA Methane Challenge Program and implements the Excavation Damages Best Management Practice.
In the TY 2019 GRC, SoCalGas proposed using data analytics to automate the prioritization process of Underground Service Alert (USA) tickets using sophisticated algorithms based on ticket and GIS information. This automation should improve visibility for ticket management of high priority lines and draw additional attention to be focused on tickets with higher risk ranking. Ticket prioritization was piloted in 2019 in four Distribution districts, the results of the pilot are discussed in Chapter 5 of the 2020 Compliance Plan.
SoCalGas has increased 811 calls while decreasing damages since the inception of the Leak Abatement Program as shown in the following table:

<table>
<tr><th colspan="6">SoCalGas Damage Prevention</th></tr>
<tr><th></th><th>2015</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th></tr>
<tr><td>Distribution 811 Tickets</td><td>650,880</td><td>626,922</td><td>661,413</td><td>722,201</td><td>832,913</td></tr>
<tr><td>Excavation Damages</td><td>4,954</td><td>3,566</td><td>3,455</td><td>3,683</td><td>3,326</td></tr>
<tr><td>Damages per 1000 tickets</td><td>7.61</td><td>5.69</td><td>5.22</td><td>5.10</td><td>3.99</td></tr>
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</td></tr>
<tr><td>25</td><td>Dig Ins and Company Standby Monitors</td><td>Buried Pipe</td><td>In 2019, SoCalGas completed the development and piloted implementation of an algorithm that allows prioritization of USA tickets to identify high risks excavation projects and perform proactive intervention.</td></tr>
<tr><td>26</td><td>Dig Ins and Repeat Offenders</td><td>Buried Pipe</td><td>In 2019, SoCalGas completed developing the project scope and system requirements for implementing system improvements so that damage data may be better analyzed and aggregated for reporting. SoCalGas also began initial work in developing improved mobile forms for gathering and submitting data into the system to improve record keeping. This work is expected to be completed in 2021.</td></tr>
<tr><td>N/A</td><td>Refinement of Emission Factors</td><td>Various</td><td>SoCalGas is participating in and conducting studies to revise emission factors for various facility types. This work is being done in collaboration with California Air Resources Board (CARB) and the California Public Utilities Commission (CPUC). SoCalGas is planning</td></tr>
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			to share proposals on the refinement of Emission Factors in the upcoming 2021 Winter Workshop.