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: 06/15/21

Mandatory Best Practice(s)	Title	Emissions Source	Question 1: A summary of changes to utility leak and emission management practices from January 1st, 2020, to December 31st, 2020
1	2018-2020 Compliance Plan Implementation	All	SoCalGas is continuing to implement its 2018-2020 Leak Abatement Compliance Plan.
3 - 7	Pressure Reduction Policy; Project Scheduling Policy; Methane Evacuation Procedures; Methane Evacuation Work Orders Policy; Bundling Work Policy	Blowdown from high pressure Transmission, Distribution, and Storage Pipelines	In 2020, SoCalGas published a Blowdown Planning Gas Standard that described the various methods of Blowdown Emissions Reduction. The standard is meant to assist project managers and planners in reducing emissions with information and resources needed during the project planning process.
9	Recordkeeping	All	SoCalGas worked on developing a centralized database to incorporate Natural Gas Leak Abatement Program records to enable automation of reporting. System plan, architecture, and requirements were completed in 2019. The implementation of the initial phase of the project was completed in 2020.
11	Methane Emissions Minimization Policies Training	All	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. The module was finalized and was a mandatory training requirement for all SoCalGas employees in 2020. In 2020, over 95% of employees completed this training. SoCalGas also updated internal training materials for operational training to reflect policy

			updates regarding implementations of the 26 mandatory best practices.
12	Knowledge Continuity Training Programs	All	In 2020, SoCalGas continued to provide training on the importance of methane emissions to all employees that are new to the company.
13	Performance Focused Training Program	Distribution and Transmission facilities	SoCalGas has been developing a competency-based training program that will leverage mobile training formats to provide a comprehensive, multimedia training program. This new format encompasses methane mitigation policies and procedural changes to increase the agility and speed of policy change implementations. From 2019 through 2020, 88 training modules were completed.
16	Gas Distribution Leak Survey	Unprotected Steel Distribution Pipe	In 2020, SoCalGas was able to shift its 3-year survey cycle on unprotected steel to annually.
16	Distribution Integrity Management Program Replacement of Bare Steel and Vintage Plastic Pipe	Underground Distribution Pipe	In 2020, SoCalGas replaced 115 miles of non-state-of-the-art pipe, including 32 miles of unprotected steel and 82 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 733.34 MCF. SoCalGas has a GRC-funded Bare Steel Replacement Program (BSRP) that focuses on the replacement of poor performing bare steel. SoCalGas targets replacing 110 miles of main and associated services annually above and beyond routine replacements in accordance with Distribution Integrity Management Program (DIMP) regulations. 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.
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 address the portions of the system more efficiently with the highest leak rates increases the effectiveness of modernization programs and supports greater emission reductions. As part of DIMP, in 2020, SoCalGas replaced 749 incremental services by prioritizing leak clusters.
16	Perform Annual Survey on Pre-1986 Aldyl-A Mains and Associated Services	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. In 2020, annual leak surveys were initiated for unprotected steel.
17	Enhanced Methane Detection	Underground Pipelines	SoCalGas acquired a mobile gas speciation vehicle and hired one additional technician to perform mobile gas speciation analyses. This incremental effort became operational in 2020.
17, 20	Research Projects to Advance the Science and Tools Available to Detect and Quantify Leaks	Various	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 2020, SoCalGas participated in various industry research projects and conducted demonstrations and pilot studies. The following provides a summary of Research and Development work that was conducted in 2020: • Emission Factors – SoCalGas continued work on developing company specific emission factors for distribution buried leaks, leaks on customer meter facilities using soap bubble criteria, and distribution M&R stations. • Leak detection and localization (pinpointing) – SoCalGas evaluated manned aircraft aerial leak detection technology in 2020. There was continued development and evaluation of fixed-location sensors, various systems designed to measure atmospheric methane concentrations with increased sensitivity and accuracy, optical gas imaging, residential leak detection, belowground gas migration prediction, land-based leak detection using mobile vehicles, and aerial leak detection using drones. • Leak Quantification - SoCalGas evaluated emissions quantification technologies, including surface expression, mobile and aerial measurement in

			gas plumes, optical imaging, system mass balance with advanced meters, and investigation of leak growth rates on plastic piping systems. • Operations – SoCalGas identified areas for a potential reduction of emissions from operation activities: In 2020, a leak screening decision tree was developed to identify large, buried leaks to prioritize them for repair. Evaluated quality of pipe fittings, solar turbine fugitive methane recompression system, mitigation of rod packing emissions, linear motor leak recovery compressor, and methods and technologies to mitigate pipeline blowdowns. • SoCalGas became a participant of two AGA sub-committees for 1) Residential Methane Detection and 2) Removing Meter Set Assembly (MSAs) from enclosed areas. In 2020, SoCalGas initiated the scoping process for residential methane detection.
18	Stationary Methane Detector Pilot	Above Ground High Pressure Facilities	SoCalGas purchased and installed stationary methane sensors for high pressure regulator stations to determine emission reduction capabilities and cost effectiveness of these systems. This pilot was completed in 2020 and has been under evaluation to determine system-wide implementation feasibility.
18	Distribution and Transmission Pipeline Leaks		SoCalGas requested funding in the GRC application to install methane sensors that link to the Advanced Meter network for SoCalGas. 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. SoCalGas has worked on project plan development, refining site selection criteria, and remote methane sensor system design enhancements. In 2020, a 3rd party Methane Sensor evaluation was initiated and is in progress. - SoCalGas requested in the 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 2020, SoCalGas continued performing training and evaluation of design and configurations at a fiber optic line installed at Situation City and this setup was reconfigured for additional testing. SoCalGas also started the scoping process of installing a fiber optic cable for a high-pressure pipeline.
19	Above Ground Leak Survey	Above Ground Facilities	- In 2020, SoCalGas finalized the evaluation selection and procurement of the Toxic Vapor Analyzers (TVAs) for use in Above Ground Storage. Training and use of the TVAs are scheduled for 2021. - Due to the COVID-19 pandemic, social distancing restrictions were applied to Distribution RMLD training. RMLD training requires in person training with limited class sizes that were conducted during 2020. Instrumented above ground surveys are planned to begin in 2021.
20a	Quantification	Distribution Pipeline Leaks	- In 2019 and 2020, SoCalGas conducted Pilot Studies at 10 distribution districts leak locations with potential large leak rates. The pilot studies included taking leak quantification measurements of leaks detected by distribution that met a decision tree, which was explained in the SoCalGas 2020 SB 1371 Compliance Plan. The methodology identifies and prioritizes Code 2 and Code 3 leaks that

			have leak rates exceeding 10 cubic feet per hour (CFH). System-wide roll-out will begin in phases for 2021.
20b	Electronically Track Verified Gas Leaks	Transmission and Distribution Pipelines - Leak Survey	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 2021 for Distribution and in 2022 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 paths. • Improve geographic evaluation and tracking of leaks with auto population of GIS coordinates for leak locations. • 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. • Reduce data entry errors and missed records.
20b	AVEVA modeling and updating P&IDs	Storage and Compressor Facilities	SoCalGas identified and prioritized the facilities to be modeled in AVEVA, a system that enables engineering to create data centric 3D models of facilities. Having these 3D models will make it easier to estimate emission volumes, tie leaks with our supply management programs to order replacement parts when needed and identify lead times for replacement, and identify if leaks are on critical system which will influence plans for repair. In 2020, SoCalGas completed the digitizing and mechanical walkdown of 1,500 process and instrumentation diagrams (P&IDs).

			Additionally, 3-D Back Modeling was completed for facilities which included 220 miles of pipe, 1550 pieces of equipment, 8,300 structures, and 77 laser scan locations.
21	Reduction of Above Ground Minor Leak Inventory	Distribution Meter Sets	In 2020, SoCalGas completed 5,400 above ground minor leak inventory. SoCalGas no longer classifies above ground leaks as AG Minor but as Non-Hazardous above ground leaks. SoCalGas policy has created guidelines to address mitigating Non-Hazardous leaks ranging from 6 months to 10 days depending on the leak's proximity to a building.
21	Reduction of Non-Hazardous Leak Inventory	Distribution Pipeline Leaks	SoCalGas continues to address its Non-Hazardous Code 3 steel leak inventory, including hiring and training 36 incremental employees to reduce the inventory. In 2020, SoCalGas repaired approximately 4,388 Non-Hazardous Code 3 steel leaks and reduced its inventory to 32 months. SoCalGas will continue to mitigate its Non-Hazardous Code 3 Steel leaks by reducing the leak repair timeframe to 24 months by the end of 2021.
21	Increased Compressor Rod Packing Replacements	Transmission and Storage Compressors	In 2020, SoCalGas installed 20 packing replacements at Transmission Compressor Stations and 12 packing replacements at Storage facilities, providing an estimated reduction of 27,680 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	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. In 2020, the report was finalized and the development of a statistical test plan scope to further examine threaded connections was initiated.
23	Replacement of High Bleed Pneumatic Devices	High Bleed Pneumatics	The last high-bleed pneumatic device on SoCalGas' system was replaced in 2020. There are no known remaining high bleed devices in the system.
23	Use Billing Calibration Factor In lieu of Meter Replacement	MSA Blowdown	SoCalGas continued work to initiate the Billing Calibration Factor in lieu of Meter Replacement project. This project enabled 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 to allow SoCalGas to use a Billing Calibration Factor in lieu of meter replacements.
23	Reduce Venting During Blowdowns and Improve Data Collection	Transmission Pipeline Blowdowns	In 2020, SoCalGas continued implementing a methane capture system which compresses pipeline gas into a compressed natural gas tube trailer and then re-introduces the gas into the pipeline. SoCalGas estimates this further reduced methane emissions by an additional 303,193 MCF.
23	Vapor Collection Systems	Compressor Stations	In 2020, SoCalGas continued the construction of the Vapor Collection System at a transmission compressor station. After additional design and troubleshooting, the system was finalized and will be fully operational in 2021. A study will be conducted to evaluate the system for emission reductions and cost effectiveness to determine if this strategy should be implemented at other stations.
23	Expanded Storage Integrity	Storage Wells	In addition to SoCalGas' existing maintenance and prevention programs, SoCalGas has been implementing an

	Management Program		expanded and 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	Storage	SoCalGas implemented several projects at Storage facilities in 2020 to reduce vented and fugitive emissions, including the following: • 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. • Facility Drawdown System: A drawdown system was installed to reduce emissions during maintenance, and construction work. • Wellhead Venting Reduction: Wellheads annually emit gas at certain pressure thresholds. SoCalGas is building pipes to flow these emissions into a nearby line to reduce emissions. • Field Instrument Air Project: This project included the installation of compressors, piping, supports, air

			receivers, and utilities to make the system functional and replace the use of gas with compressed air for motive functions.
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 PIPES Act listed in legislation, Title 49 U.S.C. (United States Code) §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 2020, SoCalGas invested over $1,337,200 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, tv, events, and print message ads about contacting 811 before digging. □ SoCalGas is a member of the EPA Methane Challenge Program and implements the Excavation Damages Best Management Practice. □ In the GRC, SoCalGas proposed using data analytics to automate the prioritization process of USA tickets using sophisticated algorithms based on ticket and GIS information. This automation will improve visibility for ticket management of high priority lines

			and allow for additional attention to be focused on tickets with higher risk ranking. Ticket prioritization was piloted at four Distribution districts; the results of the pilot were discussed in Chapter 5 of the 2020 SB 1371 Compliance Plan. Implementation continued in 2020 and ticket prioritization was conducted for six districts managed by four Damage Prevention Analysts.
25	Dig Ins and Company Standby Monitors	Underground Pipes	In 2020, SoCalGas completed the first phase of implementation of an algorithm that allows prioritization of USA tickets to identify high risk excavation projects and perform proactive intervention.
26	Dig Ins and Repeat Offenders	Underground Pipes	In 2020, SoCalGas completed defining project scope system requirements gathering along with design for the implementation of system improvements. SoCalGas also began the project's development process and expects to be completed by Q4 2021.