Risk Assessment and Mitigation Phase Cross-Functional Factor

(SCG-CFF-6)

Safety Management System

May 17, 2021

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CROSS-FUNCTIONAL FACTOR: SAFETY MANAGEMENT SYSTEM

I. INTRODUCTION

This Safety Management System Cross-Functional Factor (CFF) Chapter describes how Safety Management System activities impact the risks described in SoCalGas's Risk Assessment Mitigation Phase (RAMP) risk Chapters.

SoCalGas presents CFF information in this RAMP Report to provide the California Public Utilities Commission (CPUC or Commission) and parties additional information regarding the risks, controls, and mitigations described in its RAMP risk chapters. CFFs are not in and of themselves RAMP risks. Rather, CFFs are drivers, triggers, activities, or programs that may impact multiple RAMP risks. CFFs are also generally foundational in nature. Therefore, SoCalGas's CFF presentation differs from its RAMP risk chapters (*e.g.,* no risk spend efficiency calculations or alternatives are provided). SoCalGas's CFF chapters provide narrative descriptions of the CFF projects and programs that impact multiple SoCalGas's RAMP risk chapters through the 2022-24 time frame. Related cost forecasts are provided as available, consistent with an expected test year (TY) 2024 general rate case (GRC) request.

As described below, a Safety Management System (SMS) is an enterprise-wide framework that provides a standardized approach for managing safety across assets and activities. The SMS CFF, therefore, spans multiple lines of business and helps to mitigate several RAMP risks in this Report.

II. OVERVIEW

SoCalGas began the process of adopting a formal pipeline safety management system in 2016, soon after the release of the American Petroleum Institute Recommended Practice 1173 (API RP 1173) in 2015. Initially, SoCalGas focused on addressing pipeline safety; however, SoCalGas gradually expanded the scope of its safety management system to address all aspects of safety relevant to SoCalGas's business, creating one holistic safety management system. The adoption of SoCalGas's SMS in its current structure began in 2019 when SoCalGas created a new dedicated and consolidated safety-focused organization, named the Safety Management System organization, reporting directly to SoCalGas's Chief Safety Officer. Figure 1 below illustrates the SMS organizational structure at SoCalGas.

Figure 1: Safety Management System Organization

The scope of this SMS CFF chapter focuses on the SMS organization identified in Figure 1 above, and includes activities that are not specifically covered in other risk chapters or CFF chapters. For example, looking at the SMS organization in Figure 1 above, Safety Management group activities are incorporated in two RAMP Risks: Incident Involving an Employee and Incident Involving a Contractor. As such, the activities, projects, and programs of the Safety Management group are not specifically itemized in this SMS CFF chapter. Similarly, activities of the Emergency Management group are incorporated in the Emergency Preparedness and Response CFF chapter. As such, the activities, projects, and programs of the Emergency Management group are not specifically itemized in this SMS CFF chapter. Consequently, the scope of this SMS CFF chapter is limited to the activities of the remaining four groups: SMS Strategy, Pipeline Safety and Compliance, SMS Continuous Improvement, and Technology and Analytics. It is also important to note that SoCalGas's SMS is a framework that is designed to connect a multitude of safety activities, safety programs, safety policies, safety compliance plans, safety controls, and safety mitigations that have existed and have been evolving over a long period of time prior to the establishment of the API RP 1173 benchmark in 2015 and SoCalGas's SMS organization in 2019. For example, regulatory compliance and assurance are important elements of API RP 1173, and are the focus of one of SoCalGas's seven Safety Values (discussed below) and, as such, regulatory compliance activities that have been in place for a long time are all connected and addressed by the SMS framework. SoCalGas's SMS focuses on

being more deliberate and intentional about everything the Company has been doing, with the goal of fostering continuous improvement in all areas of safety.

The vision of the SMS is to provide a framework that integrates and connects everything SoCalGas does when it comes to safety with the goal to continuously enhance the safety of operations, strengthen the safety culture, and improve overall safety performance.

The implementation of its SMS is anchored in SoCalGas's Safety Values. In 2019, soon after establishing the dedicated Safety Management System organization identified in Figure 1 above, SoCalGas formally adopted the following seven Safety Values:

1. Leadership Commitment - SoCalGas leadership is fully committed to safety as a core value. SoCalGas's Executive Leadership is responsible for overseeing reported safety concerns and promoting a strong, positive safety culture and an environment of trust that includes empowering employees to identify risks and to "Stop the Job."

2. Risk Management - SoCalGas manages risk through a structured, increasingly data-driven approach that identifies threats and hazards, assesses and prioritizes risks, implements mitigation efforts, and engages in assessments and reviews to understand risk mitigation effectiveness.

3. Employee and Stakeholder Engagement – SoCalGas encourages and expects employees to take ownership and actively engage in safety practices and openly share and receive information with one another, our contractors, and external stakeholders to continuously enhance our safety practices.

4. Competence, Awareness and Training - SoCalGas is committed to providing employees the proper tools, resources, training, and oversight to promote safe operations. This includes training tailored to specific roles and educating employees on why our training, policies, and procedures are important to safety.

5. Emergency Preparedness and Response - SoCalGas maintains readiness to promptly respond to emergency incidents and events through an Incident Command System that incorporates response planning, training and equipping of personnel, and coordination with first responders and external stakeholders.

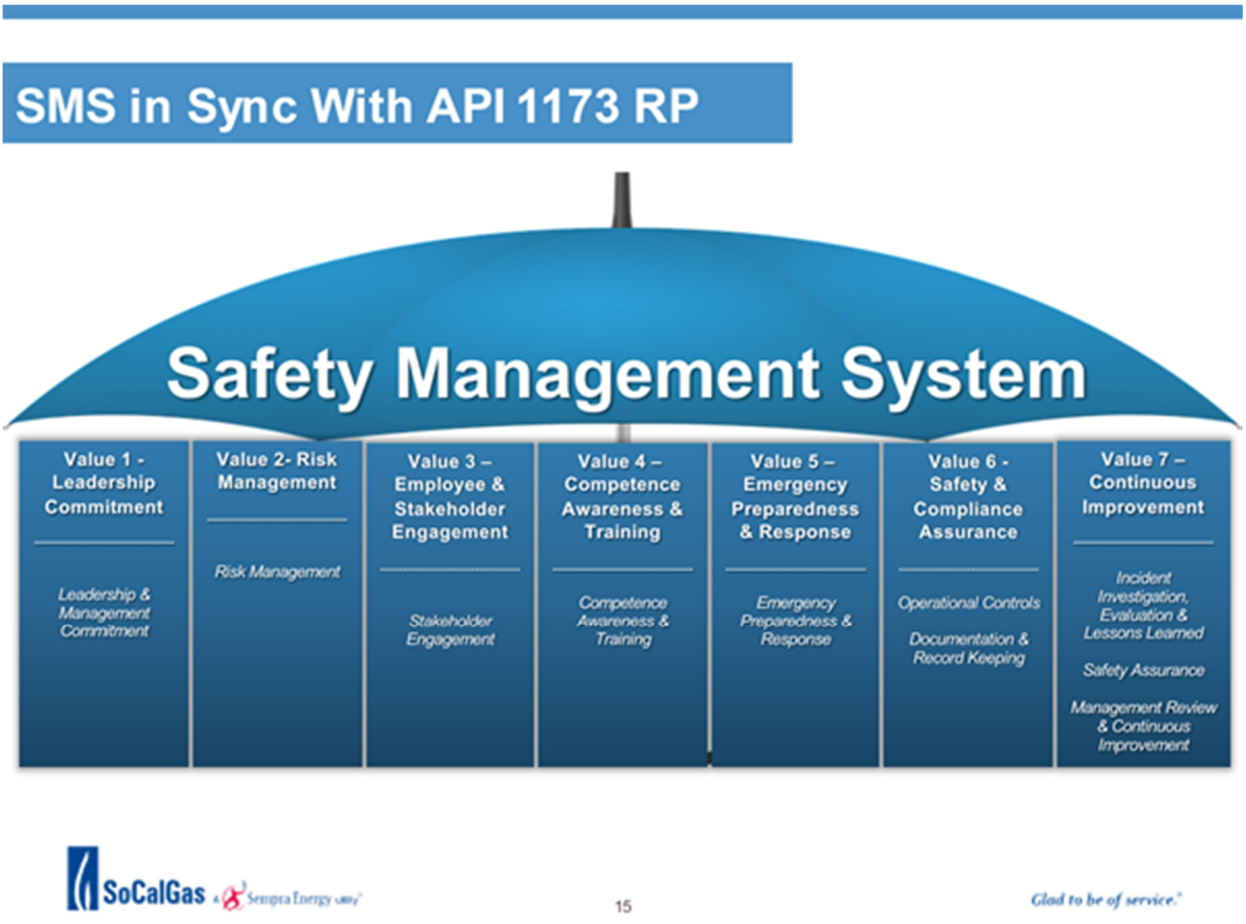
6. Safety and Compliance Assurance - SoCalGas maintains operational policies and procedures that document safety practices and standards, and compliance with applicable

regulations, and follows a "management of change" process to structure change when new policies and procedures are implemented.

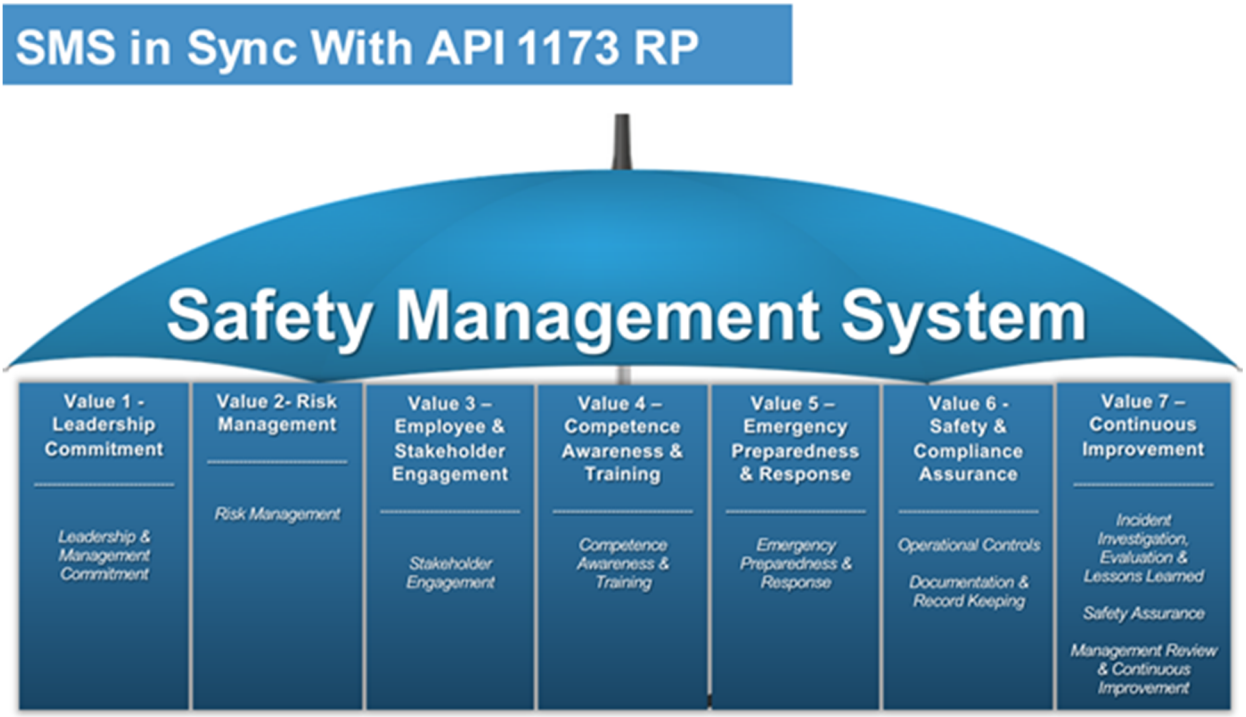
7. ***Continuous Improvement*** - SoCalGas strives to continuously improve and strengthen its safety performance and culture by setting clear and measurable goals, assessing safety performance through audits and self-assessments, inviting employee feedback, and applying lessons learned from incidents and near-miss events. SoCalGas also learns from and shares safety best practices among peer gas utilities and best in class companies in other industries.

These seven Safety Values, and how they align with API RP 1173 ten elements, are reflected in Figure 2 below:

Figure 2: SoCalGas Safety Values



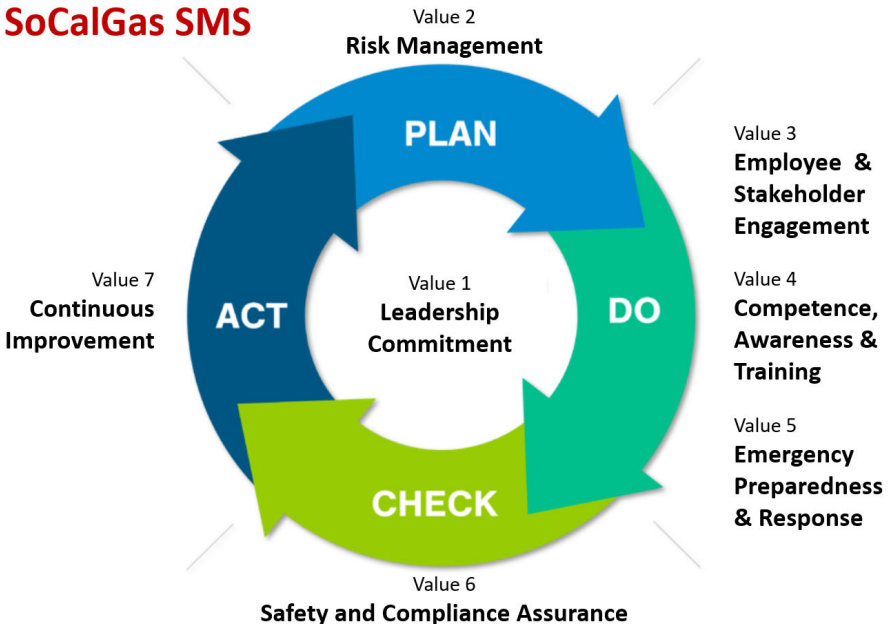
SoCalGas's SMS takes a broad and holistic view of safety management. SMS is intended to encompass all aspects of safety that are relevant to SoCalGas's business, including employee safety, contractor safety, natural gas infrastructure safety, customer safety, and public safety. SMS applies to every employee in the Company, including executives, directors, managers, supervisors, and front-line employees. SoCalGas's SMS integrates the ten elements of API RP 1173 within seven Safety Values as they relate to Company infrastructure, assets and operations, including transmission and distribution pipelines, compressor and regulator stations, gas control operations, underground and aboveground storage operations, gas engineering, buildings and facilities, engineering operations, construction operations and customer service operations. In addition, SoCalGas requires its Class 1 contractors to support the implementation of SoCalGas's SMS when working on any SoCalGas project. This support includes working safely, using "Stop the Job" authority as needed, and identifying and reporting safety risks and gaps in operating procedures for resolution. SoCalGas encourages its Class 1 Contractors to adopt a similar SMS appropriate for their size of operations and circumstances.



SoCalGas has established responsibilities at various levels to promote, support, develop, implement, and continuously improve our SMS in an effective and efficient manner.

As noted in API RP 1173: "Managing processes requires different techniques than managing individual activities. Pipeline safety management includes determining needs throughout the pipeline life cycle, provisioning sufficient qualified human and financial resources, identifying the proper sequence of a series of activities, monitoring and measuring the effectiveness of the activities performed, and applying changes or corrections to those activities as needed."[1] As SoCalGas continues the implementation of API RP 1173 and the SMS, there will be continued focus on assessing and strengthening the safety components of all work processes. This drive for continuous improvement in SoCalGas's processes and associated safety performance is nested in the "Plan-Do-Check-Act" cycle (PDCA), as reflected in Figure 3 below:

Figure 3: Plan-Do-Check-Act



As shown in Figure 3 above, PDCA is a core principle of a continuous improvement framework. PDCA is a four-step iterative cycle designed to achieve continuous improvement

[1] American Petroleum Institute, Recommended Practice 1173 (July 2015), at vii.

and is at the core of many management systems. Its principal aim is to encourage creating strategies and plans, executing those strategies and plans in line with guidelines, checking those actions for conformity, and using those results to adjust the next generation of plans. SoCalGas's seven Safety Values, presented in Figure 2, are consistent with the PDCA and the elements of API RP 1173. With this systematic approach to managing safety, SoCalGas's SMS aims to establish accountability and includes an organizational structure, policies, and procedures to support its implementation. It is comprehensive and iterative in nature, designed to identify, manage, and reduce risks. Safety incidents, including serious injuries to employees, contractors, and the public, are consequences we strive to eliminate through our SMS. For additional details on SoCalGas's SMS and the relationship with its safety culture, please refer to Chapter SCG RAMP-D, the safety culture chapter.

III. ASSOCIATED RISK EVENTS

All of SoCalGas's RAMP risks and other CFFs are connected with the SMS CFF. This connection is due to the SMS framework, which covers every aspect of SoCalGas's business when it comes to safety. As such, SMS Safety Values guide the ongoing implementation and improvements in each risk area. In turn, the controls and mitigations covered in all RAMP risks demonstrate how various safety programs adhere to the Safety Values and support SMS effectiveness. For example, the RAMP risk of Excavation Damage (Dig-In) on the Gas System benefits from SMS by requiring establishment of appropriate leading and lagging key performance indicators to measure the effectiveness of the various mitigation programs, and using the PDCA mindset to continually improve the program. Each RAMP risk will be guided by the Safety Values and will be subject to periodic assessments to evaluate the health of the programs and needed improvements.

IV. 2020 PROJECTS AND PROGRAMS

As noted in Section II above, the scope this SMS CFF Chapter is limited to the activities of the following four groups within the SMS organization identified in Figure 1 that are not captured in other RAMP risks or CFF Chapters: SMS Strategy, Pipeline Safety & Compliance, SMS Continuous Improvement, and Technology & Analytics.

A. SMS Framework

SoCalGas's SMS provides a framework that integrates and connects everything the Company does when it comes to safety in order to continuously enhance the safety of operations,

strengthen the safety culture, and improve overall safety performance. SoCalGas's SMS provides a framework that integrates and connects everything the Company does when it comes to safety in order to continuously enhance the safety of operations, strengthen the safety culture, and improve overall safety performance. This framework includes the following six focus areas (whereby each focus area is shown to relate to one or more of the seven Safety Values and highlights activities performed by the SMS Strategy group within that focus area):

1. Safety Management System Policy, Scope, Commitment, and Responsibilities

This focus area is covered under SoCalGas's Safety Value of "Leadership Commitment."

The purpose of this focus area is to maintain and continually improve foundational policies of SoCalGas's SMS. These include SoCalGas's Safety Values (discussed in Section II), SMS responsibilities (discussed in Section II), and the SMS standard. These policy documents establish the scope, objectives, and oversight responsibilities associated with Company-wide implementation of the SMS.

SoCalGas has developed a standard for internal SMS-related operations. The purpose of this standard is to establish a framework to define, develop, implement, maintain, and continue to improve SoCalGas's SMS. The standard identifies "Objectives" for each Safety Value of the SMS, along with a listing of key "Controls" that are in place and "Responsibilities" of various individuals and/or organizations to help achieve the stated objectives.

2. SMS Plan and Gas Safety Plan

This focus area is covered under SoCalGas's Safety Value of "Leadership Commitment."

The SMS Plan and Gas Safety Plan, further described below, are overarching policy documents that demonstrate how SoCalGas manages safety covering all aspects of our business.

SMS Plan

SoCalGas published its inaugural SMS Plan in 2020. This plan is a voluntary initiative of SoCalGas and is not driven by regulation or required by any regulatory agencies. The SMS Plan communicates the focus and direction of SoCalGas's efforts pertaining to all aspects of safety that are relevant to its business, including employee safety, contractor safety, customer safety, infrastructure safety, and public safety. It further demonstrates how everything SoCalGas does is connected to the Safety Values, and guides how the Company can continuously improve its safety culture. The 2020 SMS Plan serves as a baseline description of the SMS framework,

explains what aspects of safety, Company operations, and programs are covered by the framework, and demonstrates SoCalGas's commitment to achieving continuous improvement of safety culture and performance. The 2020 SMS Plan serves as a baseline description of the SMS framework, explains what aspects of safety, Company operations, and programs are covered by the framework, and demonstrates SoCalGas's commitment to achieving continuous improvement of safety culture and performance. SoCalGas intends to refine and publish the SMS Plan on an annual basis.

Gas System Operator Safety Plan (Gas Safety Plan)

The Gas Safety Plan is a statutory requirement established by the California Legislature in 2011,[2] which requires all gas corporations to develop a plan for the safe and reliable operation of Commission-regulated gas pipeline infrastructure. SoCalGas's Gas Safety Plan describes the Company's overarching safety strategy and performance encompassing all its plans, programs, and policies associated with meeting pipeline safety requirements. Each year, the Gas Safety Plan is reviewed and updated to highlight the changes from the prior year and is submitted to the CPUC in March. According to the Commission, "the rationale for developing a gas safety plan is to motivate a gas utility to reflect upon its existing methods and for it to change, to optimize, or to enhance the existing methods, using … the lessons learned from the San Bruno incident, as appropriate, to ensure that the gas utility has a prudent plan in place to protect public safety and worker safety."[3] The gas system operator safety plans convey the Company's safety performance expectations, policy principles, and goals/objectives for a gas utility's safety performance. SoCalGas has designed its annual Gas Safety Plan to satisfy each of these directives, and to implement "the policy of the state that the commission and each gas corporation place safety of the public and gas corporation employees as the top priority."[4]

3. Employee & Stakeholder Engagement

This focus area falls under SoCalGas's Safety Values of "Employee and Stakeholder Engagement" and "Competence, Awareness and Training."

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2 See Senate Bill 705 (Leno 2011) (adding P. U. Code §§ 961 and 963).

3 Decision (D.) 12-04-010 at 19.

4 Pub. Util. Code § 963.

The successful execution of the SMS is critically dependent on the actions of SoCalGas's employees and external stakeholders. SoCalGas relies on them to identify and resolve safety risks and adopt and implement safety practices to strengthen and protect SoCalGas infrastructure.

SoCalGas has developed an SMS Stakeholder Engagement Plan, which explains communication and engagement activities for internal and external stakeholders regarding risk identification and management, safety performance, and as appropriate, other elements of the SMS. SoCalGas relies on front-line employees and contractors to bring safety issues to the attention of management for assessment and resolution. Therefore, SoCalGas regularly engages with front-line workers to raise awareness and understanding of their roles and responsibilities within the SMS framework and facilitating a healthy safety culture of non-punitive reporting of safety concerns. The SMS Stakeholder Engagement Plan will be reviewed periodically using the PDCA methodology to address gaps and integrate emerging best practices.

In 2021 and going forward, SoCalGas plans to develop additional training and competence tools to further improve employee and contractor skill sets. The goal of the additional training is to fully integrate and mature SMS components, including the PDCA methodology, the concept of cascading failures and how to recognize such failures, the intentional focus on revealing risks, and the granular details of the SMS framework. These engagement efforts require the support of vendors for instructional design, development, and deployment of training materials, videos, posters, badge cards, conducting engagement surveys, using analytics and technology platforms, and other items to help embed and gauge the effectiveness of the messages within the workforce.

4. Centralized Electronic Management of Change Process

This focus area is part of operational controls covered under SoCalGas's Safety Value of "Safety and Compliance Assurance."

Management of Change (MOC) is an integral component of operational controls. It is a process that systematically recognizes and communicates to the necessary parties changes of a technical, physical, procedural or organizational nature that can impact system integrity. Its purpose is to reduce the possibility of introducing additional risk, or inadvertently increasing the risk, to public or employee health and safety, the environment, or the community as the result of a change. Under normal (non-emergency) circumstances, the MOC process requires that

technical, procedural, organizational, and operational changes are reviewed, documented, and communicated internally and externally to impacted stakeholders as appropriate prior to implementation. When circumstances dictate (*e.g.*, emergency situations), SoCalGas may implement a change prior to MOC review to preserve the health and safety of the public, employees, community, or a pipeline system.

SoCalGas has well-established MOC processes within its Integrity Management, Gas Control, and Gas Standards management programs. With the broader MOC initiative under the SMS framework, SoCalGas is in the process of consolidating various MOC processes into one centralized electronic MOC process to provide greater consistency and rigor for managing changes throughout the Company. This centralized electronic MOC process will establish minimum requirements for Company-wide operations. Furthermore, the process will identify the types of changes that must be managed, levels within the organization that have the authority to approve the changes, a threshold for changes that need to go through the centralized electronic MOC process. The centralized electronic MOC process will also help facilitate communications and sharing of approved changes with impacted organizations.

5. SMS Maturity Assessments

This focus area is covered under SoCalGas's Safety Value of "Continuous Improvement."

Assessment of a safety management system on an ongoing basis is essential to assuring that the system is achieving its desired goals and objectives and is making progress towards effective risk management and improved safety performance. The purpose of such an assessment is to examine the conformity of a safety management system with appropriate external benchmarks and evaluate the system's growth and development beyond conformance, otherwise known as maturity assessment.

SoCalGas's SMS includes a variety of methods to conduct assessments on an ongoing basis. These include:

- Reviews and assessments that are an integral part of various safety programs, such as the integrity management programs, and self-assessments and inspections performed pursuant to its Environmental & Safety Compliance Management Program;

- Annual management reviews of its entire SMS led by the SMS organization under the direction of SoCalGas's leadership;
- Periodic reviews and/or audits performed by the independent audit group of its parent company, Sempra Energy;
- Peer reviews performed by industry associations (such as the American Gas Association); and
- External third-party audits and assessments conducted of its SMS.

To maintain independence and objectivity, SoCalGas will periodically conduct conformance and maturity assessments utilizing external third-party industry experts.

There are several benchmarks available for assessing the effectiveness of a safety management system. One such benchmark that is relevant to SoCalGas business is API RP 1173. SoCalGas has retained the American Petroleum Institute and is in the process of conducting its first inaugural conformance and maturity assessment which is planned to be completed in 2021.

Regardless of the methods employed to conduct the assessments, the results of such assessments will be shared with impacted stakeholders through the annual SMS Plan for follow-up and closure of improvement opportunities identified by the assessments. SoCalGas also plans to utilize the assistance of expert consulting companies to assist with developing and/or implementing improvement opportunities generated from internal and external assessments.

6. SMS Benchmarking

Benchmarking is an important component of SoCalGas's SMS. This focus area is covered under SoCalGas's Safety Value of "Continuous Improvement." SoCalGas's SMS Benchmarking includes both comparing SoCalGas practices to those of other best-in-class companies to improve safety performance and reviewing other industry benchmarks outside of the natural gas utility environment.

SoCalGas is actively involved in a variety of industry groups to share best practices and learn from industry peers. For example, SoCalGas participates with the American Gas Association, American Petroleum Institute, and Western Energy Institute. This participation includes leading committee and subcommittee efforts on many industry initiatives, participating as speakers at industry events, and serving on planning committees for educational conferences

and workshops. Recently, SoCalGas presented its safety journey and development of its SMS at an AGA SMS Workshop conducted virtually during April/May 2020.

SoCalGas also has ongoing informal outreach efforts with several peer utility companies within and outside of California. This collaboration with peer companies and with external standards is an important source of ideas for continuous improvement.

B. Pipeline Safety and Compliance Oversight

The Pipeline Safety and Compliance group located within the SMS organization acts as the intermediary to state and federal regulatory agencies and divisions, including the CPUC, Safety and Enforcement Division (SED), Pipeline Hazardous Materials Safety Administration (PHMSA), CalFire (Dig Safe Board), and California Geological Energy Management Division (CalGEM). The Pipeline Safety and Compliance group is the primary point of contact to those agencies in audits, inspections and investigations and provides the groundwork for related compliance reporting as well as continuous improvement opportunities resulting from regulatory agency interaction activities described below. This program includes the following three focus areas:

1. Monitoring, Distributing and Tracking CPUC and DOT/PHMSA Regulations

This focus area is covered under SoCalGas's Safety Values of "Safety & Compliance Assurance," "Employee & Stakeholder Engagement," and "Continuous Improvement."

SoCalGas has a process and dedicated resources to monitor, distribute and track regulatory actions that impact pipeline safety, and distribute crucial notices that provide interpretive guidance and/or key insights to internal stakeholders for managing compliance with the pipeline safety regulations. Staff identifies key issues, ramifications of proposed rules, final rules, or other activities related to regulatory action.

SoCalGas has a process for learning and identifying improvement opportunities from external gas infrastructure safety incidents. This process includes a dedicated resource for tracking and sharing pipeline safety-related incidents that occur across the nation and updates on findings and recommendations for improvements from various regulatory agencies, including the CPUC, DOT/PHMSA, and National Transportation Safety Board (NTSB)

2. Incident Monitoring and Reporting

This focus area is covered under SoCalGas's Safety Value of "Emergency Preparedness and Response," "Safety and Compliance Assurance," and "Competence, Awareness and Training."

The Pipeline Safety and Compliance group monitors incidents 24 hours a day, 365 days a year through Message Center Reports (MCRs) for both SoCalGas and the gas operations of SDG&E. Reporting of certain incidents is mandated by Title 49 of the Code of Federal Regulations to be reported to the PHMSA. Incidents defined and mandated by General Order (GO) 112F are to be reported to the CPUC. Each reported incident to PHMSA and the CPUC may have multiple follow-up reports required to those agencies. The team also conducts annual training on the MCR process with operations groups to ensure understanding of the importance of timely opening of MCRs and consequences of late reports to the agencies.

CPUC Decision 16-09-055, related to Natural Gas and Electric Safety Citation Programs, made reporting of certain self-identified violations voluntary. The Pipeline Safety and Compliance group supports internal operations organizations with addressing and reporting items covered by this program. The Pipeline Safety & Compliance group also facilitates responding to CPUC data requests and customer complaints relating to safety.

3. Regulatory Audits and Inspections

This focus area is covered under SoCalGas's Safety Value of "Continuous Improvement.

Each year, the CPUC conducts audits of operations districts, areas, storage fields along with other specialized audits on programs such and Drug and Alcohol, Operator Qualifications, Emergency Management, Control Room Management, Integrity Programs, and other programs. In 2018, the CPUC reorganized and created a new division called the "Regional Division" with the intent to focus on gas utility construction projects throughout the state. The CPUC construction inspections (some of which are unannounced) may involve reviewing work plans, checking worker knowledge and competence through Operator Qualification evaluation, checking that the correct procedures are being used and that the crew is following the procedures, witnessing welding or fusing of pipe, witnessing pressure tests and proper back-filling. Audits are also conducted by CalGEM. The Pipeline Safety and Compliance group supports all internal stakeholders during these audits.

C. Continuous Improvement and Quality Assurance

The purpose of continuous improvement in SoCalGas's SMS Plan is to create an environment and culture where feedback mechanisms are part of decisions and to create processes that result in collective participation and learning from events to achieve the safest outcomes. This is necessary to achieve safety excellence by listening, assessing, and learning.

Continuous Improvement (CI) gathers information from three primary areas: Incidents, Feedback, and Performance Measurement. Internal and external incidents are analyzed, and lessons learned are extrapolated. These incidents include motor vehicle incidents, contractor and subcontractor incidents, and gas system safety incidents. Feedback is gathered from employees, contractors, regulatory agencies, safety culture surveys, and audits & assessments. Performance Measurement includes analyzing data, reviewing Key Performance Indicator trends, and benchmarking. In addition, through gathering information and management review, SoCalGas identifies, pursues, and monitors safety-focused projects utilizing PDCA cycle. The ultimate goal of CI is to create a safety culture that is integrated into every activity and process with the help of every SoCalGas employee. This program includes the following four focus areas:

1. Incident Evaluation Process

This focus area is covered under SoCalGas's Safety Value of "Continuous Improvement."

For pipeline safety incidents involving operations, SoCalGas established the Incident Evaluation Process (IEP) to identify gaps in processes and procedures from a systematic perspective and provide recommendations through corrective action that lead to enterprise-wide process improvements. The incident evaluations are an integral part of the natural gas industry's continuous improvement.

The IEP strives to produce a consistent, structured process for a causation analysis on specific events that may have impacts to the safety, integrity, or reliability of the natural gas pipeline system. The IEP is applied to evaluate the system, policy and/or process cause(s) from an incident, determine the cause that led to the condition, identify corrective actions that would minimize the possibility of a recurrence. The lessons learned from the incident evaluation enables SoCalGas to strengthen policies and procedures and to anticipate risk mitigation.

After larger-scale events, such as natural disasters or major operational disruptions, a comprehensive after-action analysis is performed to identify lessons-learned and opportunities

across the entire response and recovery process. This concept is further explained in the Emergency Preparedness and Response Chapter CFF-3.

2. Incident Lessons Learned/Effectiveness Review

This focus area is covered under SoCalGas's Safety Value of "Continuous Improvement."

Lessons learned and effectiveness reviews are key components of an organizational culture committed to continuous improvement and risk management review. The lessons learned process flow is comprised of defining the objective, collecting the information, verifying applicability, storing the information, and disseminating the outcome. Lessons learned identified in corrective actions are periodically evaluated and reviewed for the effectiveness of the implemented procedures and processes. The effectiveness review is conducted to review potential consequences and opportunities on significant events to see if there are patterns or trends related to the corrective action items.

3. Quality Management Assessments

This focus area is covered under SoCalGas's Safety Value of "Continuous Improvement."

The goal of quality management is to provide independent and objective assessment of the gas operations and construction processes. SoCalGas verifies that quality is planned, defines quality control and quality assurance activities, and collaborates with key stakeholders to drive continuous improvements. The team contributes to the "Check" and drives "Act" portions of the PDCA continuous improvement cycle utilized by the Company's SMS. The assessments performed constitute a check of Gas Operations and Construction procedures and processes, and the corrective actions that result from these reviews improve these procedures and processes. This group proactively uses tools and processes to enhance system safety and reliability through the implementation of continuous improvement across the Company.

4. Compliance Assurance

This focus area is covered under SoCalGas's Safety Value of "Safety & Compliance Assurance."

Compliance Assurance monitors assets and data to ensure the Company remains compliant per Company Gas Standards and Federal Code of Regulations. Specifically, Compliance Assurance: (1) analyzes operational data (*e.g.,* leak survey data) and reports (*e.g.,*

inspection history reports) to identify opportunities for process change either in the field or administrative processes, (2) develops business requirements for changes/enhancements to supported systems to meet business needs (*e.g.,* automation of maintenance planning activities), (3) supports the Information Technology team in testing and implementation of existing and new software and technology solutions for operations, and (4) maintains standard reports (*e.g.,* monthly Leakage metrics) and creates new standard reports (*e.g.,* Cathodic Protection Out of Tolerance report) to support operations.

D. Technology and Analytics

SoCalGas continues to find ways to link key performance indicators, data, and technology to enhance safety performance and safety culture. This program includes the following two focus areas:

1. Performance Indicator Monitoring, Tracking and Reporting

Performance indicator monitoring, tracking, and reporting is covered under SoCalGas's Safety Value of "Continuous Improvement."

Continuous improvement occurs when performance is measured and quantified. This is accomplished using Key Performance Indicators (KPIs), including analyzing data and trends generated from SoCalGas operations activities. There are numerous lagging, leading, and process KPIs that are vital to measuring the effectiveness of our operations, risk management, and adequacy of our SMS. Lagging KPIs include incidents involving injuries, and property damage; leading KPIs include measures demonstrating risk reduction, such as corrective actions implemented based on audits, inspections, and incident investigations; process KPIs demonstrate completion or improvement of activities and their supporting processes and procedures. SoCalGas has worked closely with the CPUC, within the Safety Model Assessment Proceeding (S-MAP), to identify metrics that would enable us to monitor our safety performance and the CPUC to compare metrics across California utilities and over time.

SoCalGas maintains a process for the identification, collection, and analysis of data generated from operations and maintenance, integrity management, audits and evaluations, management reviews, and other relevant sources related to the suitability and effectiveness of our SMS.A dashboard was developed to provide a consistent platform to visualize KPIs, which include elements of employee safety, contractor safety, pipeline safety, compliance, and damage prevention, all of which are part of the S-MAP metrics adopted in D.19-04-020.

Also included are other operational dashboards and reports designed to deliver and view KPI and other business reporting metrics for SoCalGas's operations. SoCalGas will continually identify leading and lagging indicators to enhance the safety of our operations.

2. Integration of New Technology and Enhanced Data and Analytics Capabilities for Continuous Safety Improvement

This focus area is covered under all of SoCalGas's seven Safety Values.

As described in the Enterprise Risk Management Framework Chapter RAMP-B , SoCalGas implements a comprehensive Enterprise Risk Management framework to manage risk through a structured, increasingly data-driven approach that identifies threats and hazards, assesses, and prioritizes risks, implements mitigation efforts, and engages in assessments and reviews to understand risk mitigation effectiveness. Continuous improvement is a foundational value of both the SoCalGas SMS framework and the Enterprise Risk Management framework. Integration of new technology is needed to support data analytics and continuously improve upon SoCalGas's SMS and risk management frameworks and enable greater visibility of enterprise risk and risk mitigation performance. SoCalGas is currently working on several projects to upgrade the technology used for various activities covered by the SMS. These include enhancing:

- SMS related data collection and analytics with the use of technology
- Incident Management System/Situational Awareness Platform to support emergency response and preparedness
- Safety Incident Management System with the new SAP Environment, Health, and Safety Management (EH&S) platform

A robust SMS needs an infusion of new technology so that it continues to evolve with the changing business environment. One such area SoCalGas plans to explore is an application/system that manages large amounts of safety and operational data (*e.g.,* observations, indicators) obtained from key sources (*e.g.,* people, assets, programs, processes) by using artificial intelligence in a way that it allows SoCalGas to better anticipate issues.

V. 2022-2024 PROJECTS AND PROGRAMS

SoCalGas anticipates integrating the programs identified in this section into its TY 2024 GRC Application. Given the "cross-cutting" nature of SoCalGas's SMS (*i.e.,* spans all lines of

business), the SMS's specific impacts to each operating unit will be presented within SoCalGas's next GRC.

A. Develop Incident Evaluation Central Database and Further Enhance Causal Analysis Training

As the IEP (*see* Section IV.C.1) evolves, it is anticipated that SoCalGas will also need to enhance the capability to build a centralized database for all incidents and near-miss reports across the Company. The development of this centralized database will allow for further integration, oversight, and analysis to identify trends and other insights and support compliance documentation.

Maintaining a skilled, qualified, and dedicated workforce is critical to SoCalGas's success, as discussed in CFF-7 of this RAMP Report addressing Workplace Planning. A supplemental training for causal analysis will further enhance SoCalGas's strong safety culture given its focus on learning from incidents and continuous improvement. SoCalGas seeks to continue developing more comprehensive, consistent, and centralized incident evaluation training across the Company that aims to help employees: (1) build the timeline of events that represents our understanding of what took place (which is the foundation of a causal analysis); (2) identify the cause for each causal factor (why the error/failure happened); (3) develop meaningful corrective actions (to mitigate the issue in order to avoid reoccurrence); (4) develop and share lessons learned that might help reduce the potential of recurrence; and (5) periodically review the incident evaluation process and procedure and benchmark against industry's best practices.

B. Expand Quality Assessment Program

SoCalGas plans to expand quality assessments and enhance consistent quality oversight across the Company (see Section IV.C.3). SoCalGas also plans to enhance a selection process for adding new quality assessment programs through a risk ranking approach by analyzing available data sources and benchmarking with external organizations. These efforts will also include the development and implementation of an electronic data collection tool for field and office assessments to increase efficiency, accuracy, and data sharing capabilities. The data will be gathered and analyzed to identify trends or other insights that will provide information to monitor and enhance internal processes.

C. Expand Compliance Assurance Program

Beginning in 2021, SoCalGas plans to expand operational assets and data monitoring to continue identifying and mitigating compliance data accuracy risks so that the Company remains compliant per Gas Standards and Federal Code of Regulations. As we continue to evolve the Compliance Assurance Program (see Section IV.C.4), we anticipate a need to enhance the capability to (1) automate all maintenance planning activities for Gas Distribution asset types; (2) implement new and enhance existing Inspection Forecasting reports for all Gas Distribution asset types; (3) produce new asset exception reports to identify potential data concerns; and (4) create new custom user interfaces in asset management system for additional user groups.

D. Pipeline Safety Self Assessments

Pipeline and Safety Compliance group is planning to implement a new self-assessment program focusing on pipeline safety compliance. The program includes field pre-audits and inspections for operations groups to review compliance items in a proactive manner. Under this program, staff will perform Odor Intensity Tests, pre-audit dry runs, and other inspection types with the employees to increase their comfort while completing their tasks in front of an audience of assessors who are attempting to proactively identify and mitigate hazards, risks, and safety incidents. Utilizing the PDCA tool, this program is designed to reveal and mitigate risks in a proactive manner to continue to improve SoCalGas's pipeline safety performance.

VI. COSTS

The table below contains the 2020 recorded and forecast dollars for the programs and projects discussed in this CFF.

Table 1: Costs (Direct After Allocations, in 2020 $000)[5]

Line No.	Description	Recorded		Forecast			
		2020 Capital	2020 O&M	2022-2024 Capital (Low)	2022-2024 Capital (High)	TY 2024 O&M (Low)	TY 2024 O&M (High)
1	SMS Framework	0	823	0	0	782	946
2	Pipeline Safety & Compliance Oversight	0	718	0	0	682	825
3	Continuous Improvement and Quality Assurance	0	2,042	0	0	1,940	2,349
4	Technology & Analytics	0	553	0	0	525	636
5	Develop Incident Evaluation Central Database and Further Enhance Causal Analysis Training	0	0	0	0	100	145
6	Expand Quality Assessment Program	0	0	0	0	113	164
7	Expand Compliance Assurance Program	0	0	0	0	300	434
8	Pipeline Safety Self Assessments	0	0	0	0	300	434

[5] Costs presented in workpapers may differ from this table due to rounding. The figures provided are direct charges and do not include company loaders, with the exception of vacation and sick. The costs are presented in 2020 dollars and have not been escalated in forecasts beyond 2020.