Company: Southern California Gas Company (U 904 G)
Proceeding: 2019 General Rate Case
Application: A.17-10-008
Exhibit: SCG-05-R

REVISED

SOCALGAS

DIRECT TESTIMONY OF OMAR RIVERA

(GAS SYSTEM INTEGRITY)

December 2017

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

SoCalGas
A Sempra Energy utility®

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SUMMARY

O&M	2016 (000s)	2019 ($000s)	Change
Non-Shared	4,775	15,598	10,823
Shared	8,193	17,306	9,113
Total	**12,968**	**32,904**	**19,936**

Gas System Integrity is responsible for a collection of key activities and programs that contribute to the ongoing vitality of Southern California Gas Company's (SoCalGas or Company) gas operations and help SoCalGas achieve our overarching objective to provide safe, clean, and reliable natural gas service at reasonable rates. Gas System Integrity works alongside with Gas Transmission, Gas Distribution, and Storage operations by creating and issuing policies and standards that establish and validate compliance with applicable laws, regulations, internal policies, and best practices.

SoCalGas and San Diego Gas & Electric Company (SDG&E) take a shared-service approach to many natural gas pipeline operator responsibilities, especially in Gas System Integrity. The shared-service approach benefits both utilities and their ratepayers by enabling the utilities to pool their collective knowledge, experience, engineering expertise, and intellectual property. All the activities discussed in my testimony, either directly or indirectly, address potential safety and security risks while fostering continuous improvement. These activities are described in this testimony under the following broad categories or organizations:

- Gas System Integrity provides strategic direction and management of policies, procedures, and programs to comply with safety regulations, codes, and best practices in an efficient and consistent manner.
- Records Management and Programs establishes, manages, and maintains the policies and guidance for Operational Records Management practices, and operational control governance, while also managing the SoCalGas and SDG&E Damage Prevention and Public Awareness Programs.
- Pipeline System Construction Policy (PSCP) establishes, manages, and maintains policies and guidance for high- and medium-pressure pipeline construction. In addition, PSCP researches, evaluates, and tests tools and technologies used by SoCalGas field employees.

- Pipeline System Maintenance Policy (PSMP) establishes, manages, and maintains policies and guidance for the maintenance and inspection for Gas Transmission, Gas Distribution, and Storage operations. In addition, PSMP measures performance management and key performance indicators (KPIs), such as those that are related to total Underground Service Alert (USA) tickets, the number of third-party damages, leak indications, leak repairs, cathodic protection for overall compliance assurance, continuous improvement, decision making, and trending analysis.
- Gas Operations Training and Development provides competency building in the areas of planning, installation, maintenance, troubleshooting, repair, order reconciliation, emergency response, construction inspection for company pipelines and related facilities. Annually, the organization is responsible for conducting 500 courses of classroom and hands-on training to 3,000 trainees within Gas Transmission, Gas Distribution, Storage, Engineering, and Planning groups. Trainees learn to apply applicable Gas Standards, best practices, and real-world scenarios, and gain technical understanding from simple to complex mechanical tools and technologies. Each employee is trained on the identical tools, materials, and equipment they will encounter in the field and needed to competently perform their work.
- Enterprise System Support (ESS) manages, administers, and maintains hardware, software, and back-end processes that support the systems and applications of various organizations at SoCalGas, including Safety, Customer Service, Environmental, Gas Transmission, Gas Distribution, Storage, and Gas Engineering.
- Enterprise Geographic Information System (eGIS) provides integration and applications to make geographic information systems (GIS), Maintenance Management, Inspection, and Document Management data readily and easily accessible for users in various activities that support asset management to meet applicable laws, regulations, internal policies, and best practices.

My testimony also sponsors closely-related activities and associated requests for the Pipeline Safety and Compliance and Gas Contractor Controls organizations within SoCalGas:

- Pipeline Safety and Compliance strives to exceed compliance with applicable pipeline regulatory and safety regulations by also encompassing non-regulatory approaches toward continuous improvement. This organization oversees a robust compliance

system that demonstrates SoCalGas' commitment to pipeline safety and shapes essential enhancements for our employees, processes, and technologies.

- Gas Contractor Controls facilitates communications between the Company and key gas contractors to focus on safety, quality, compliance, and cost management. This is achieved through development and ownership of Company standards and forms related to construction inspection and reporting, contractor qualification process, cost approval and validation, construction fraud identification and reporting, and contractor performance tracking. Additionally, this area provides internal audit support, conducts contractor facility audits as part of the qualification process, and holds quarterly meetings with contractors to communicate key policies and facilitate two-way communications on topics of interest.

In preparing the Test Year (TY) 2019 General Rate Case (GRC) forecast for this testimony, I reviewed historical spending levels and developed an assessment of future needs. Because of the mature nature of the activities that I am sponsoring, most of my forecasts rely upon a five-year (2012 through 2016) average. The five-year average was chosen in most cases because it best represents the future expenses, and because it captures the fluctuations that my witness area can experience. Where appropriate, certain incremental upward or downward adjustments have been identified and made to the five-year average. In total, SoCalGas requests the California Public Utilities Commission (CPUC or Commission) adopt a TY 2019 forecast of $32,904,000 for Gas System Integrity operations and maintenance (O&M) expenses, which is composed of $15,598,000 for non-shared service activities and $17,306,000 for shared service activities.

REVISED
SOCALGAS DIRECT TESTIMONY OF OMAR RIVERA
(GAS SYSTEM INTEGRITY)

I. INTRODUCTION

A. Summary of Gas System Integrity Costs and Activities

My testimony supports the TY 2019 forecasts for O&M costs for both non-shared and shared services for the forecast years 2017, 2018, and 2019, associated with the Gas System Integrity area for SoCalGas. Table OR-1 summarizes my sponsored costs.

Table OR-1
Southern California Gas Company
Test Year 2019 Summary of Total Costs

GAS SYSTEM INTEGRITY (In 2016 $)			
	2016 Adjusted-Recorded (000s)	**TY 2019 Estimated (000s)**	**Change (000s)**
Total Non-Shared Services	4,775	15,598	10,823
Total Shared Services (Incurred)	8,193	17,306	9,113
Total O&M	**12,968**	**32,904**	**19,936**

SoCalGas' philosophy is to provide safe, clean, and reliable delivery of natural gas to customers at reasonable rates. This commitment requires that SoCalGas continue to invest in its employees, pipeline assets, and support services to mitigate risks associated with the safety of the public and employees; system reliability; and infrastructure integrity. Specifically, the activities discussed herein:

- maintain and enhance safety;
- reflect local, state, and federal regulatory and legislative requirements;
- maintain overall system integrity and reliability;
- respond to customer growth and continuous improvement;
- comply with franchise obligations; and
- maintain and strengthen a qualified workforce.

This testimony discusses non-shared and shared expenses in support of O&M functions for Gas System Integrity, Gas Operations Training and Development, Records Management and

Programs, Pipeline Safety and Compliance, Gas Contractor Control, Enterprise System Support, and Enterprise Geographic Information System organizations. All costs in this testimony are shown in 2016 dollars, unless otherwise noted.

In addition to this testimony, please also refer to my workpapers, Exhibit SCG-05-WP (O&M), for additional information about the activities described herein.

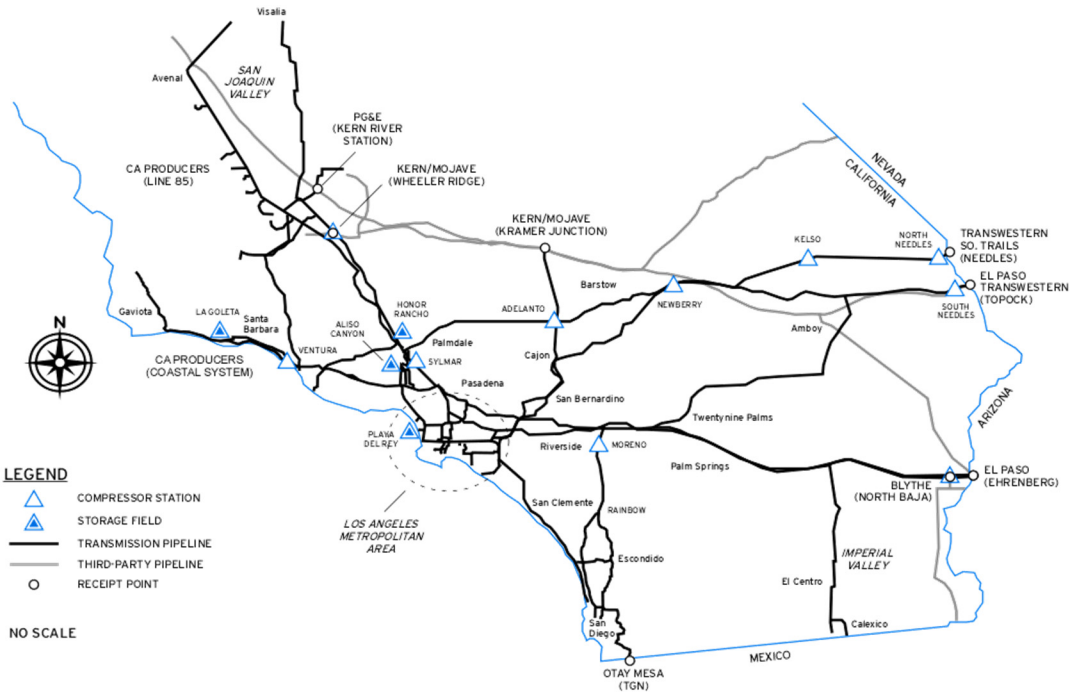
Gas System Integrity is responsible for a range of key activities and programs that support the ongoing safety and reliability of the gas infrastructure of both utilities in an efficient and repeatable manner. Gas System Integrity works alongside with Gas Transmission, Gas Distribution, Storage, Gas Engineering, Major Projects, Pipeline Integrity, and Information Technology, amongst other internal business partners, by creating and issuing policies and standards that help establish and validate compliance with applicable laws, regulations, internal policies, and best practices.

Gas System Overview

The SoCalGas natural gas system encompasses transmission lines, underground storage fields, and distribution lines. The SoCalGas gas system comprises approximately 3,455 miles of pipeline defined as "transmission lines" under applicable United States Department of Transportation (DOT) regulations,[1] 11 compressor stations, and four underground storage fields. The system is designed to receive natural gas from interstate pipelines and various California production sources from both offshore and onshore. The gas quantity is measured, odorized, analyzed for quality, and then allowed to flow through the pipeline network. This pipeline-quality gas is delivered to the Company's distribution system, storage fields, and noncore customers. Of the 3,455 miles[2] of DOT-defined transmission pipelines operated by SoCalGas, the Gas Transmission and Storage organizations are responsible for the safe operation and maintenance of approximately 2,751 miles of pipeline, and the Gas Distribution organization is responsible for the safe operation and maintenance of approximately 704 miles. In addition to the miles of DOT- defined transmission pipelines, the Gas Transmission organization is responsible for the safe operation and maintenance of approximately 229 miles of high-pressure pipelines that are defined as distribution under DOT regulations.

[1] 49 C.F.R. § 192.3.
[2] *See* PHMSA EOY 2016 SCG GT_GG_Annual_Form_PHMSA_F71002-1.

Figure OR-1 - SoCalGas Transmission and Storage System



The capacity of a storage field is measured in billions of cubic feet, or "Bcf." SoCalGas operates four underground storage fields, with a working inventory capacity of approximately 136 Bcf. These storage facilities are an integral part of the SoCalGas system and mitigate reliability risks by providing natural gas when flowing supplies are temporarily insufficient to meet customer load. Collectively, the storage fields support the mission to provide Southern California residents and businesses with safe, reliable, and cost-effective energy services.

The distribution system comprises approximately 51,070[3] miles of gas mains, approximately 49,516 miles of service lines, and 5.9 million meters.[4] As noted above, this includes approximately 704 miles of DOT-defined transmission pipelines that are maintained and operated by the Gas Distribution organization. SoCalGas is one of the largest natural gas distribution operations in the United States based on miles of mains and miles of services, providing service to thirteen counties.

Collectively, these components enable SoCalGas to safely and reliably deliver natural gas from receipt point to burner tip to over 21.6 million consumers in an area of approximately

[3] Total miles of mains that Gas Distribution operates including supply lines greater than 20% Specified Minimum Yield Strength (SMYS).
[4] *See* SoCalGas website: http://www.socalgas.com/about-us/company-info.shtml; *see also* EOY 2016 SCG PHMSA Form F7100.1-1 Gas Distribution System (Annual Report).

20,000 square miles stretching from Visalia in the north to Mexico in the south, and as far east as the California/Nevada border. To continue to provide safe, clean, and reliable service, SoCalGas must continue to make prudent investments in its infrastructure pursuant to applicable regulatory requirements.

My cost forecasts support the Company's goals of continuous improvement while providing safe, clean, and reliable delivery of natural gas to customers at reasonable rates, and while mitigating risks associated with hazards to customer/public and employee/contractor safety, infrastructure integrity, and system reliability.

Gas System Integrity is responsible for performing a range of activities that culminate in technical guidance to support, on a non-shared and shared basis, day-to-day functions for Pipeline Integrity, Gas Transmission, Gas Distribution, and Storage. These Gas System Integrity activities are described in this testimony under the categories of Gas System Integrity, Records Management and Programs, Pipeline System Construction Policy, Pipeline System Maintenance Policy, Enterprise System Support, and Enterprise Geographic Information System.

Gas System Integrity also manages and supports investments in Gas Operations Training and Development. Safety is rooted in all phases of training. Maintaining a skilled, qualified, and dedicated workforce is critical to SoCalGas' continued success. It is through the efforts of these employees that SoCalGas can continue to deliver safe, clean, and reliable service to customers and maintain the integrity of its pipeline infrastructure at reasonable rates. SoCalGas is experiencing increased pressures associated with maintaining a highly-trained and qualified workforce. These include:

- Increased regulatory pressure for stricter compliance assurance. To address this pressure, SoCalGas will add personnel to expand its quality assurance program, field instructors to assist with on-the-job training, compliance administrative advisors to more closely review employees' work, and records management clerks to manage pipeline archives to safeguard data integrity.
- Increased turnover in workforce, due primarily to retirements and employee movement because of promotions and transfers, continues to pose challenges to SoCalGas, particularly in the areas of knowledge transfer, skills development, and overall proficiency of the replacement workforce. Gas System Integrity is taking appropriate measures to maintain and strengthen its highly-skilled workforce,

recognizing that safety and system reliability cannot be sacrificed during times of employee transition. As new and less experienced employees step in to replace highly-skilled employees, SoCalGas is conscientiously training and mentoring them, giving them on-the-job experiences, and providing greater levels of supervision and quality assurance to instill a continued focus on proficiency and safety.

I also sponsor the cost for SoCalGas' Pipeline Safety and Compliance organization. Pipeline Safety and Compliance serves as the point of contact with the Commission during Safety and Enforcement Division (SED) audits and manages responses to various SED inquiries. Pipeline Safety and Compliance also helps coordinate interactions with the CPUC during other pipeline safety audits and emergency events, and in response to inquiries.

Additionally, my testimony also sponsors closely-related activities and associated requests for Gas Contractor Control. Gas Contractor Control is under the Project Management and Construction organization, which is an organization that was formed to help SoCalGas remain prudent and fiscally astute in managing large capital investments. Gas Contractor Control facilitates communications between the Company and key gas contractors focused on safety, quality, compliance, and cost management.

The Gas System Integrity, Records Management and Programs, Pipeline System Construction Policy, Pipeline System Maintenance Policy, Gas Operations Training and Development, Pipeline Safety and Compliance, Gas Contractor Control, Enterprise System Support, and Enterprise Geographic Information System organizations all work toward a common goal of continuous improvement while providing safe, clean, and reliable natural gas service at reasonable rates.

This testimony describes anticipated changes in operations, explains the basis for these changes, and includes projections for the resulting change in expenditures for each of the aforementioned areas.

My testimony also references the testimony of several other witnesses, either in support of their testimony or as referential support for mine. Those witnesses are Gina Orozco-Mejia (Exhibit SCG-04, Gas Distribution), Andrew Steinberg (Exhibit SCG-12, Aliso Incident Expenditure Requirements), Hal Snyder and Randall Clark (Exhibit SCG-03/SDG&E-03, Fueling Our Future Policy), Maria Martinez (Exhibit SCG-14, Pipeline Integrity for Transmission and Distribution), Diana Day and Jamie York (Exhibit SCG-02/SDG&E-02,

Chapter 1: Risk Management and Policy and Chapter 3: RAMP to GRC Integration, respectively), Beth Musich (Exhibit SCG-06, Gas Transmission Operation), Deanna Haines (Exhibit SCG-09, Gas Engineering), Christopher Olmsted (Exhibit SCG-26, Information Technology), Carmen Herrera (Exhibit SCG-23, Fleet Services and Facility Operations), Neil Navin (Exhibit SCG-10, Underground Storage), and James Vanderhye (Exhibit SCG-34/SDG&E-32, Shared Services & Shared Assets Billing, Segmentation, & Capital Reassignments).

- Gas Distribution – Gas System Integrity gives support from centralized staff organizations, including from: System Integrity and Asset Management; and Pipeline Safety and Compliance. The support activities provided by these two groups are discussed by Ms. Orozco-Mejia (Ex. SCG-04). These activities include formal training to Gas Distribution employees at the Pico Rivera training facility; Gas Standards development and maintenance; the management of the Damage Prevention and Public Awareness Programs; tools and technology research and implementation; enterprise systems support (GIS, Click, Systems, Applications, and Products in Data Processing (SAP), etc.); and Operator Qualification program management.
- Enterprise Geographic Information System (eGIS) – Gas System Integrity sponsors eGIS, which houses and maintains pipeline information on all distribution pipelines operating at or below 60 pounds per square inch (psi) and is at the core of all Distribution Integrity Maintenance Program (DIMP) activities. DIMP is discussed by Ms. Martinez (Ex. SCG-14).
- Information Technology (IT) Capital Projects – Gas System Integrity sponsors projects that include IT technology solutions to meet business demand, which are therefore in support of the capital forecast of $109,193,000 further discussed by Mr. Olmsted (Ex. SCG-26). These capital costs are for projects that will modernize and enhance the search ability, traceability, and digitalization of operational asset records.

B. Summary of Safety- and Risk Assessment Mitigation Phase (RAMP)-Related Costs

Certain costs supported in my testimony are driven by activities described in SoCalGas and SDG&E's November 30, 2016 RAMP Report.[5] The RAMP Report presented an assessment of the key safety risks of SoCalGas and SDG&E and proposed plans for mitigating those risks. As discussed by Ms. Day and Ms. York (Ex. SCG-02/SDG&E-02, Chapters 1 and 3, respectively), the costs of risk mitigation projects and programs were translated from that RAMP Report into the individual witness areas.

In the course of preparing the Gas System Integrity GRC forecasts, SoCalGas continued to evaluate the scope, schedule, resource requirements, and synergies of RAMP-related projects and programs. Therefore, the final representation of RAMP costs may differ from the ranges shown in the original RAMP Report. Table OR-2 provides a summary of the RAMP-related costs supported by my testimony:

Table OR-2
Southern California Gas Company
Summary of RAMP-Related Costs

GAS SYSTEM INTEGRITY (In 2016 $)			
RAMP Risk Chapter	**2016 Embedded Base Costs (000s)**	**TY 2019 Estimated Incremental (000s)**	**Total (000s)**
SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins	796	2,535	3,331
SCG-2 Employee, Contractor, Customer, and Public Safety	0	4,980	4,980
SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure	119	0	119
SCG-7 Workforce Planning	0	1,050	1,050
SCG-8 Records Management	5,572	5,554	11,126
SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure	1,353	794	2,147
Total O&M	**7,840**	**14,913**	**22,753**

[5] I.16-10-015/I.16-10-016 Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company, November 30, 2016. Please also refer to Ex. SCG-02/SDG&E-02, Chapter 1 (Diana Day) for more details regarding the utilities' RAMP Report.

Ms. Day (Ex. SCG-02/SDG&E-02, Chapter 1), describes how safety and security risks are assessed and factored into cost decisions on an enterprise-wide basis. My testimony includes costs to mitigate Gas System Integrity risks primarily associated with public and employee safety, system reliability, regulatory and legislative compliance, and pipeline system integrity. Specific risks, mitigating measures and associated costs are further discussed in Section II of my testimony.

C. Summary of Costs Related to Fueling Our Future (FOF)

As described by Mr. Snyder and Mr. Clark (Ex. SCG-03/SDG&E-03), the utilities began the Fueling Our Future (FOF) initiative in May 2016 to examine operations across the Company and identify opportunities for efficiency improvements. Through this process ideas were generated, reviewed, analyzed, and targeted for implementation from 2017 through TY 2019. For some ideas, an implementation cost is applied to lay the ground work for subsequent savings. My testimony addresses FOF initiatives that result in improvements in the areas of Gas Operations Staff and Training and Pipeline Safety and Compliance. Table OR-3 provides a summary of SoCalGas' Gas System Integrity FOF cost efficiencies covered in my testimony.

Table OR-3
Southern California Gas Company
Summary of FOF Implementation Costs (+) and Benefit Savings (-)

GAS SYSTEM INTEGRITY (In 2016 $)			
FOF O&M	**Estimated 2017 (000s)**	**Estimated 2018 (000s)**	**Estimated 2019 (000s)**
FOF-Implementation	22	0	0
FOF-Ongoing/Benefits	-2	-153	-204
Total O&M	**20**	**-153**	**-204**

D. Summary of Aliso-Related Costs

In compliance with D.16-06-054,[6] Mr. Steinberg (Ex. SCG-12) describes the process undertaken so the TY 2019 forecasts do not include the additional costs from the Aliso Canyon Storage Facility gas leak incident (Aliso Incident), and demonstrates that the itemized recorded costs are removed from the historical information used by the impacted GRC witnesses.

[6] D.16-06-054, at 332 (Ordering Paragraph 12) and 324 (Conclusion of Law 75).

As a result of removing historical costs related to the Aliso Incident from Gas System Integrity adjusted recorded data, and in tandem with the forecasting method(s) employed and described herein, additional costs of the Aliso Incident response are not included as a component of my TY 2019 funding request. Historical Gas System Integrity costs that are related to the Aliso Incident are removed as adjustments in my workpapers, Ex. SCG-05-WP, and also identified in Table OR-4 below.

Some management employees in this workgroup provided customer support during the Aliso Incident, which required a reprioritization of Company resources. In order to adequately resume routine operations, $252,000 over the forecast base for TY 2019 is needed. Please refer to my workpapers, Ex. SCG-05-WP.

Table OR-4
Southern California Gas Company
Summary of Excluded Aliso-Related Costs

GAS SYSTEM INTEGRITY (In 2016 $)			
Workpaper	**2015 Adjustment (000s)**	**2016 Adjustment (000s)**	**Total (000s)**
2SI001.000, GAS OPERATIONS TRAINING & DEVELOPMENT	0	-54	-54
2SI002.000, PIPELINE SAFETY & COMPLIANCE	0	-4	-4
Total Non-Shared	**0**	**-58**	**-58**
2200-0302.000, BUSINESS PROCESS ESS IMPLEMENTATION AND ESS MOBILE SOLUTIONS	0	-9	-9
2200-2344.000, OPERATOR QUALIFICATION	0	-15	-15
2200-2360.000, QUALITY & RISK	0	-8	-8
2200-2376.000, ENTERPRISE GEOGRAPHIC INFORMATION SYSTEM (EGIS)	0	-25	-25
2200-2551.000, PIPELINE SAFETY OVERSIGHT	-15	-122	-137
Total Shared Services	**-15**	**-179**	**-194**
Total O&M	**-15**	**-237**	**-252**

E. Organization of Testimony

My testimony is organized as follows:

- Introduction
- Risk Assessment Mitigation Phase and Safety Culture
  - RAMP
  - Safety Culture
- Non-Shared Costs
  - Gas Operations Staff and Training
  - Pipeline Safety and Compliance
  - Damage Prevention
  - Asset Management
  - Gas Contractor Controls
- Shared Costs
  - Gas Operations Staff and Training
  - Pipeline Safety and Compliance
  - Damage Prevention
  - Asset Management
  - Records Management and Programs
- Conclusion

II. RISK ASSESSMENT MITIGATION PHASE AND SAFETY CULTURE

A. Risk Assessment Mitigation Phase

As illustrated in Table OR-5, a portion of my requested funds are linked to mitigating the top safety risks that have been identified in the RAMP Report. These top risks were identified through the RAMP process described in the RAMP Report and are associated with activities sponsored in my testimony. These risks are summarized in Table OR-5 below:

Table OR-5
Southern California Gas Company
RAMP Risks Summary

RAMP Risk	Description
SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins	This risk relates to the potential impacts from dig-ins resulting from third-party activities and is focused on the more serious results of third-party damage that lead to a release of natural gas with the possibility of hazard to life and property. The release of natural gas may not just occur at the time of the damage. A leak or rupture may also occur after the infrastructure has been damaged and reburied but becomes weakened over time.
SCG-2 Employee, Contractor, Customer, and Public Safety	This risk covers conditions and practices that may result in severe harm to employee, contractor, customer, and/or public safety. These conditions and practices may include driving, customer premises, and appliance conditions, as well as non-adherence to company safety policies, procedures, and programs.
SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure	This risk relates to the potential public safety and property impacts that may result from the failure of high-pressure pipelines (greater than 60 psi).
SCG-7 Workforce Planning	This risk covers the impact of not having a suitable workforce with the right skills to meet business needs due to the acceleration of workforce attrition and evolving business needs.
SCG-8 Records Management	This risk relates to the use of inaccurate or incomplete information that could result in the failure to construct, operate, and maintain SoCalGas' pipeline system safely or to satisfy regulatory compliance requirements.
SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure	This risk relates to the public safety and property impacts that can result from failure of medium-pressure pipelines (60 psi and less).

In developing my request, priority was given to these key safety risks to assess which risk mitigation activities Gas System Integrity currently performs and what incremental efforts are needed to further mitigate these risks. How my request was influenced by these key RAMP risks is further explained below by risk.

While developing the GRC forecasts, SoCalGas evaluated the scope, schedule, and resource requirement, and synergies of RAMP-related projects and programs to determine costs already covered in the base year and those that are incremental increases expected in the TY

2019. RAMP-related costs and activity descriptions are further described in Sections III and IV below, as well as in my workpapers. Table OR-6 also provides a summary of RAMP-related O&M costs by workpaper number.

Table OR-6
Southern California Gas Company
RAMP O&M Summary Breakdown of Costs

GAS SYSTEM INTEGRITY (In 2016 $)			
SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins	**2016 Embedded Base Costs (000s)**	**TY 2019 Estimated Incremental (000s)**	**Total (000s)**
2200-2345.000, PIPELINE SYSTEM CONSTRUCTION POLICY	0	1,115	1,115
2200-2417.000, SHARED PUBLIC AWARNESS ACTIVITIES	398	420	818
2SI003.000, PUBLIC AWARENESS	398	1,000	1,398
2SI004.000, ASSET MANAGEMENT	0	0	0
Total	**796**	**2,535**	**3,331**
SCG-2 Employee, Contractor, Customer, and Public Safety	**2016 Embedded Base Costs (000s)**	**TY 2019 Estimated Incremental (000s)**	**Total (000s)**
2200-7242.000, RECORDS MANAGEMENT - from 2200-2361	0	900	900
2SI001.000, GAS OPERATIONS TRAINING & DEVELOPMENT	0	250	250
2SI005.000, GAS CONTRACTOR CONTROLS	0	3,830	3,830
Total	**0**	**4,980**	**4,980**
SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure	**2016 Embedded Base Costs (000s)**	**TY 2019 Estimated Incremental (000s)**	**Total (000s)**
2SI001.000, GAS OPERATIONS TRAINING & DEVELOPMENT	119	0	119
Total	**119**	**0**	**119**

SCG-7 Workforce Planning	2016 Embedded Base Costs (000s)	TY 2019 Estimated Incremental (000s)	Total (000s)
2SI001.000, GAS OPERATIONS TRAINING & DEVELOPMENT	0	1,050	1,050
Total	**0**	**1,050**	**1,050**
SCG-8 Records Management	**2016 Embedded Base Costs (000s)**	**TY 2019 Estimated Incremental (000s)**	**Total (000s)**
2200-0302.000, BUSINESS PROCESS ESS IMPLEMENTATION AND ESS MOBILE SOLUTIONS	0	110	110
2200-0305.000, ESS PRODUCTION SUPPORT	0	100	100
2200-0306.000, WRK MGMT & DATABASES	0	200	200
2200-2360.000, QUALITY & RISK	0	315	315
2200-2376.000, ENTERPRISE GEOGRAPHIC INFORMATION SYSTEM (EGIS)	0	580	580
2200-7242.000, RECORDS MANAGEMENT - from 2200-2361	0	1,650	1,650
2SI002.000, PIPELINE SAFETY & COMPLIANCE	0	2,287	2,287
2SI004.000, ASSET MANAGEMENT	5,572	312	5,884
Total	**5,572**	**5,554**	**11,126**
SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure	**2016 Embedded Base Costs (000s)**	**TY 2019 Estimated Incremental (000s)**	**Total (000s)**
2200-2344.000, OPERATOR QUALIFICATION	0	794	794
2SI001.000, GAS OPERATIONS TRAINING & DEVELOPMENT	1,353	0	1,353
Total	**1,353**	**794**	**2,147**

The RAMP risk mitigation efforts are associated with specific actions, such as programs, projects, processes, and utilization of technology. For each of these mitigation efforts, an evaluation was made to determine the portion, if any, that was already performed as part of historical activities (*i.e.*, embedded base costs) and the portion, if any, that was incremental to

base year activities. Furthermore, for the incremental activities, a review was completed to determine if any portion of incremental activity was part of the workgroup's base forecast methodology (*i.e.*, base year, trending, averaging, etc.). The result was what SoCalGas considers to be a true representation of incremental increases over the base year.

While the starting point for consideration of the risk mitigation efforts and costs was the RAMP Report, as described above, further evaluation may have resulted in changes to the scope, schedule, and costs; therefore, the incremental costs of risk mitigation sponsored in my testimony may differ from those first identified in the RAMP Report.

My incremental request supports the ongoing management of these risks that could pose significant safety, reliability, and financial consequences to our customers and employees. The anticipated risk reduction benefits that may be achieved by my incremental ask are summarized in Sections III and IV of my testimony.

1. SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins

As noted in SED's assessment evaluating the RAMP Report, the risk of third-party excavation damages is the highest for SoCalGas. Excavation damage is a leading cause of pipeline catastrophes.[7] SoCalGas manages the risk of third-party dig-ins through mitigation actions that have been developed and implemented over many years, including:

- Training – The training mitigation consists of programs that provide personnel the knowledge to perform activities associated with locating and marking pipelines, such as (1) Locate and Mark training and (2) Locate and Mark Operator Qualification. Properly training and qualifying personnel to perform their job gives them the ability to follow applicable policies and procedures in a safe manner, which helps protect employees, contractors, and the public from the risk of a damaged pipeline.
- Locate and Mark Activities – This mitigation comprises three activities that are related to performing or supporting locate and mark: (1) Locate and Mark, (2) Pipeline Observation (stand-by), and (3) Staff Support. Covered in my testimony is the activity of Staff Support. The other activities are covered by Ms. Orozco-Mejia (Ex. SCG-04). Staff Support consists of SoCalGas employees, mainly in the Gas System Integrity organization. These employees are responsible for developing and

[7] SED's Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company, dated Mar. 8, 2017, at 30.

maintaining policies, processes, and procedures that provide guidance to locaters to stay in compliance with federal and state regulations.

- Damage Prevention Public Awareness Program – The Public Awareness Program is mandated pursuant to Title 49 C.F.R. § 192.616. The purpose of this mitigation is to develop and implement a continuing public education program focused on the following:
  - Use of the One-Call notification system;
  - Hazards associated with the unintended release of gas;
  - Physical indications that an unintended release of gas has occurred;
  - Steps that should be taken to protect public safety in the event of a gas release; and
  - Procedures for reporting unintended releases of gas.

In addition to these long-standing mitigation actions, SoCalGas will implement new incremental projects to further manage this risk, including the Automated USA Ticket Prioritization discussed below, as well as additional communication efforts to various audiences, which would include homeowners, excavators, farmers, and others that have the potential to damage subsurface installations. Other projects such as the standardization of locating equipment are covered in the testimony of Ms. Orozco-Mejia (Ex. SCG-04).

- Automated USA Ticket Prioritization – Currently, the Company identifies ticket priorities using a manual process that could potentially lend itself to inefficiencies. The Company proposes to automate the prioritization process using sophisticated algorithms based on ticket and GIS information. Automating the USA Ticket Prioritization will enhance the Company's ability to consistently take appropriate measures in a timely effort. This automation will improve visibility for ticket management of high priority lines.
  - Alternative Considered – When developing this proposed incremental request, alternatives were considered early in the process and dismissed as the various team planning discussions identified this more appropriate option. Generally, alternatives are dismissed based on the cost of the alternative, which, in this instance, were additional Full-Time Equivalents (FTEs) that would primarily

normalize ticket management while not as effectively mitigating the risk based on consistently processing the highest priority lines.

2. SCG-2 Employee, Contractor, Customer, and Public Safety

At SoCalGas, the safety of employees, contractors, customers, and the public in the communities it serves is a core value. The Company safety culture has evolved over 150 years, and underpins the Company's programs, policies, procedures, guidelines, and best practices. In my testimony, the Employee, Contractor, Customer, and Public Safety risk primarily entails an employee and/or contractor who does not adhere to Company policies or procedures, which then results in a safety-related incident. SoCalGas manages this risk through mitigation actions that have been developed and implemented over many years, as well as proposed incremental projects, programs, and processes. Safety and compliance considerations are captured throughout the Company's policies and procedures. Below is a description of some of the mitigation actions performed by Gas System Integrity personnel to mitigate this RAMP risk.

- Contractor Management and Traffic Control – This mitigation is based upon specific Company needs and contractor qualifications in selecting a Contractor. Prior to the selection of a contractor, safety records are examined. Job requirements are specified in the Company's contracts with third parties, and contractors are required to meet all legal, regulatory, and contractual requirements, including safety requirements. During their work with the Company, the Contractor's performance is monitored. The Contractor Management and Traffic Control mitigation contributes to the commitment of contractor safety and aligns with other potential best practices[8] on contractor safety.
- Policies, Procedures, Standards, and Environmental and Safety Compliance Management Program – This mitigation is based upon SoCalGas formal procedures, processes, and standards, which provide guidance to employees and document the way work is to be performed. There are systems in place to track employee training, Operator Qualification (OpQual) certification, facility site inspections (Uniform Building Code requirements per Assembly Bill (AB) 32), and administration of the Company's Environmental and Safety Compliance Management Program (ESCMP).

[8] *See, e.g.*, Pacific Gas and Electric Company's (PG&E) 2016 Kern Power Plant Incident's Order Instituting Investigation (OII) I.14-08-022.

In addition to these long-standing mitigation actions, SoCalGas will implement incremental projects to further manage this risk, including the enhancement of Situation City Skills Training discussed below:

- Broaden "Situation City" Skills Training – By making enhancements to Situation City, SoCalGas will be able to better prepare employees for work in different environments, with different equipment, and on a wider variety of infrastructure components so they make sound decisions in the work environment. Please refer to Section III, Gas Operations Staff and Training, for RAMP-related costs and a more detail descriptions of the proposed enhancements.
    - Alternative Considered – When performing our evaluation of these mitigating actions, there were other alternatives that were considered, such as modernization of training techniques. Initially, this alternative was shown to not have sufficient benefits but based on further review of alternatives that provide hybrid approaches of e-learning and classroom enhancements, modernization of training techniques demonstrated worthwhile opportunities for optimization and enhancements to training.

3. SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure

As noted in SED's assessment evaluating the RAMP Report, one of the contributors to catastrophic pipeline failures in recent California history is excavation damage by third parties. Recent examples are the dig-ins on PG&E transmission lines in Fresno and Bakersfield that resulted in fatalities. SoCalGas manages this risk of a high-pressure pipeline failure through mitigations that have been developed and implemented over many years, including the following activities included in my testimony:

- Training – This mitigation addresses the minimum required safety training and qualification of field personnel that perform cathodic protection, construction, and other activity on the pipeline. Gas System Integrity trains and qualifies personnel working on pipelines in compliance with federal and state[9] OpQual requirements.

[9] 49 C.F.R. § 192 *et seq*., Subpart N – Qualification of Pipeline Personnel; General Order (GO) 112-F.

This training and qualification provides employees with the tools to understand operating procedures and to recognize and address abnormal operating conditions.

- Requirements for Corrosion Control – SoCalGas complies with the safety requirements prescribed by 49 C.F.R. § 192 Subpart I – Requirements for Corrosion Control Operations, which include monitoring of cathodic protection areas, remediation of cathodic protection areas that are out of tolerance, and preventative installations to avoid areas out of tolerance. These activities address threats related to external and internal pipeline corrosion.

The costs associated with mitigation activities related to the risk of catastrophic damage involving a high-pressure pipeline failure are covered in the base year and the base forecasts discussed in Sections III and IV of my testimony.

4. SCG-7 Workforce Planning

The Workforce Planning risk covers the risk of not having a suitable workforce with the right skills to meet business needs due to the acceleration of workforce attrition and evolving business needs. SoCalGas manages this risk of workforce planning through mitigations that have been developed and implemented over many years, including the following activities included in my testimony:

- Workforce Planning – This mitigation provides SoCalGas with the capability to identify the critical roles within the organization and distinguish the skills needed to adequately perform those jobs. In the Gas System Integrity organization, critical roles are those roles that have significant safety and operational consequences (*e.g.*, roles in departments such as System Projection, Gas Operations, Customer Services, etc.). In addition, workforce planning also helps with the development of employees so that they will have the right skills for current and future jobs within the Company. As part of the efforts in the development of employee teams, PSCP and PSMP, within the Gas System Integrity organization, are enhancing policies and best practices, which also plays a critical role in developing an appropriately sized workforce.
- Knowledge Transfer – This mitigation provides employees with the structure, support, and resources necessary to transfer knowledge related to critical jobs. To create knowledge transfer plans, SoCalGas proposes to conduct workshops and

develop additional documentation in support of the plans. In addition, knowledge transfer requirements are considered when any training and policies are enhanced.

  - Alternative Considered – When developing this proposed incremental request, the option of outsourcing knowledge management resources and development was considered as an alternative. This alternative was dismissed early in the process based on the level of employees' understanding of how internal processes work and because the critical areas of knowledge are SoCalGas specific.

- Leadership Training – This training mitigation consists of Leadership Training, which would include Essentials of Supervision, Leadership Training Camp, and the Leadership Challenge. These trainings would more effectively communicate SoCalGas' vision, engage employees with their job functions and performances, and instill our safety culture as part of leadership responsibilities. Training is critical to the successful implementation of safety-related practices and risk management, including for those in leadership positions.
  - Alternative Considered – When developing this proposed incremental request, an alternative that was considered was offering an increased number of leadership training sessions to expedite increasing leaders' skills. The alternative was considered early in the process and dismissed because it would require detailed workforce planning data to justify this alternative and to specify which trainings to focus on. SoCalGas' mitigation includes enhancements to workforce planning data through the implementation of new technology and an analysis of critical roles and trainings.
- Training – Technical Non-Human Resources (HR) – This mitigation focuses on technical training conducted by various organizations in the Company. Technical training is covered by other RAMP risks and includes skills training for employees to safely perform their jobs. Please refer to the RAMP Report for additional details.

The costs associated with mitigation activities related to the risk of Workforce Planning are covered in the base year and the base forecasts discussed in Sections III and IV of my testimony.

5. SCG-8 Records Management - Document Management

The Records Management risk involves the use of inaccurate or incomplete information and has potential public safety, property, regulatory, and financial impacts. SoCalGas manages this risk of records management through mitigation actions that have been developed and implemented over many years, including the following activities included in my testimony:

- Administrative – This mitigation focuses on the administration of and adherence with SoCalGas' record management policy and practices, resources to manage records, internal audits, and records retention. The Company's goal is to provide consistency and accountability among records management for oversight and administration.
- Training – This mitigation provides training to employees on records management because every employee plays a significant role. SoCalGas proposes to provide annual training that will refresh employee knowledge and enhance their ability to adequately prepare to manage records.
- Operational Compliance and Oversight – This mitigation relates to the collection, input, and management of data. An example within the Gas System Integrity organization would be the GIS databases. Furthermore, the Quality, Risk, and Compliance team, which is a newly created group within the Gas System Integrity organization, will provide quality assurance over the records related to high-pressure construction activities. These activities will focus on the completeness, accuracy, and traceability of records. A centralized records management group has also been created within the Gas System Integrity organization. This group will provide operational oversight for records management processes in specific operational areas and will provide dedicated full-time records management over the daily tasks and activities performed.
- Information Management System (IMS) – This mitigation consists of various applications that support records management, such as the Geographic Information System, Work Management, Document Management, and Real-Time Monitoring Systems. These applications provide SoCalGas system attribute information, descriptions of the applications, and their functions, which are further described in Sections III and IV below, as well as in my workpapers.

- Alternative Considered – When developing this proposed incremental request, an alternative that was considered was implementing one centralized records management IT system for all operational asset groups. The centralized system would therefore replace all currently existing systems mentioned above. Even though this alternative would minimize the potential for multiple systems to have differing records and may reduce some costs, this alternative would also prevent each operational asset group from identifying, implementing, and utilizing a system that best meets the needs of the specific operational asset group. The centralized system approach does not allow specialization because not all records require the same attributes to be collected and retained.

In addition to these long-standing mitigation actions, SoCalGas will implement incremental projects to further manage this risk. Below is a discussion of the incremental mitigation actions included in my testimony.

- Enterprise Asset Management System (EAM) – The EAM improves safety, integrity, transparency, and availability of pipeline asset records by integrating asset data with equipment safety and handling information, as well as validation. The implementation of the project consists of analyzing, defining, reconciling, and removing the inconsistencies of the pipeline-related data in various systems, consolidating redundant systems, redefining and updating business processes, and installing new hardware and software infrastructure. SoCalGas proposes an initiative to digitize its records, which is an initiative that is being undertaken by many companies and government entities.[10] This initiative will also add a search ability and traceability functionality. This will be particularly beneficial due to regulatory compliance standards increasingly requiring utilities to be able to efficiently and effectively identify specific attributes related to operational assets.
- Records Management – SoCalGas anticipates needing an additional employees who would effectively be records management specialists and will contribute to the enhancement of records management by strengthening written procedures, increasing

[10] *See, e.g.,* MAXIMUS Federal, *at* http://www.maximus.com/federal/technology/data-solutions/document-and-records-management.

analysis of systems, advancing information maturity scores, and enhancing existing training.

The costs associated with mitigation activities related to the risk of Records Management are covered in the base year and the base forecasts discussed in Sections III and IV of my testimony.

6. SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure

Medium-Pressure Pipeline Failure risk potentially impacts public safety and/or property. SoCalGas' mitigation plan for this risk consists of controls based on 49 C.F.R. § 192 and GO 112-F. SoCalGas manages this risk associated with catastrophic damage involving medium-pressure pipeline failure through compliance with applicable federal and state regulations, including the following activities included in my testimony:

- 49 C.F.R. § 192 Subpart N – Qualifications of Pipeline Personnel – The training, set forth in 49 C.F.R. § 192, Subpart N, requires a qualification program on covered tasks, recordkeeping, and evaluation. To prevent potential accidents, both employees and contractors will be trained on proper safety techniques and standards.

The costs associated with mitigation activities related to the risk of Catastrophic Damage Involving Medium-Pressure Pipeline Failure are covered in the base year and the base forecasts discussed in Sections III and IV of my testimony.

B. Safety Culture

SoCalGas' longstanding commitment to safety focuses on three primary areas: (1) employee/contractor safety, (2) customer/public safety, and (3) the safety of our gas delivery systems. This safety focus is embedded in what we do and is the foundation for who we are – from initial employee training, to the installation, operation and maintenance of our utility infrastructure, and to our commitment to provide safe, clean, and reliable service to our customers.

SoCalGas regularly assesses its safety culture and encourages two-way communication between employees and management as a means of identifying and managing safety risks. In addition to the reporting of pipeline and occupational safety incidents, there are multiple methods for employees to report close calls/near misses. At SoCalGas, safety is a core value so we provide all employees with the training necessary to safely perform their job responsibilities,

such as the Smith Driver refresher course, regular discussion on Illness Prevention, regular enforcement of "Stop the Job," and the importance of covering all personal protection equipment at all times. Implementing a company-wide pipeline safety management system in response to American Petroleum Institute's Recommended Practice 1173 (API RP 1173) will reinforce the safety culture. Through the implementation of API RP 1173, the organization will improve the integration of business needs and the risks of operations in a more systemic manner. By adopting the 10 tenets of the API RP 1173 standard, asset, investment, and risk decisions will become more optimized and repeatable, thus improving the safety performance of the organization and safety culture of our employees. Additional information regarding API RP 1173 is discussed below in Section III under Gas Contractor Controls.

As noted by SED's evaluation of our RAMP Report, third-party dig-ins pose the greatest hazard to our system and the safety of the communities we serve. As explained above, public safety is a top priority for SoCalGas. Gas System Integrity covers the management of the programs designed to mitigate the frequency and impact of third-party dig-ins. Additionally, SoCalGas responds to any emergency to its infrastructure. The Emergency Operations Center and/or the Gas Distribution and Gas Transmission Gas Emergency Centers activate to monitor, coordinate, communicate, and support our field crews and executives.

SoCalGas takes an integrated approach to pipeline integrity and safety, beginning with the design and construction of facilities and followed by continual evaluation and improvement of operation and maintenance activities, public communication and awareness, emergency response, safety programs and practices, the implementation of new technologies, defined procurement processes that facilitate materials traceability, and a workplace that encourages continual open and informal discussion of safety-related issues.

On a daily basis, SoCalGas' employees consider how to best prioritize safety-related work. Work elements are managed daily, based on a variety of risk factors and work drivers, such as federal and state regulatory requirements, customer and pipeline growth expectations, franchise obligations, permitting requirements, and conditions found during inspections. These work elements are prioritized based first on immediate safety and compliance considerations, and then, work is actively prioritized considering factors such as regulatory compliance deadlines, customer scheduling requirements, and overall infrastructure condition. Safety and compliance considerations are captured throughout the Company's policies and procedures.

III. NON-SHARED COSTS

"Non-shared services" are activities that are performed by a utility solely for its own benefit. Corporate Center provides certain services to SoCalGas and SDG&E and to other subsidiaries. For purposes of this GRC, SoCalGas treats costs for services received from Corporate Center as non-shared services costs, consistent with any other outside vendor costs incurred by the utility. Table OR-7 summarizes the total non-shared O&M forecasts for the listed cost categories.

Table OR-7
Southern California Gas Company
Non-Shared O&M Summary of Costs

GAS SYSTEM INTEGRITY (In 2016 $)			
Categories of Management	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
A. GAS OPERATIONS STAFF & TRAINING	1,072	4,734	3,662
B. PIPELINE SAFETY & COMPLIANCE	699	2,890	2,191
C. DAMAGE PREVENTION	398	1,641	1,243
D. ASSET MANAGEMENT	2,086	2,503	417
E. GAS CONTRACTOR CONTROLS	520	3,830	3,310
Total Non-Shared Services	**4,775**	**15,598**	**10,823**

A. Gas Operations Staff and Training

Included in this section of the testimony are activities and associated O&M expenses to address the core Gas Operations Training and Development duties in the Operation Training, Training and Support, Training Design and Support, Welding Training and Pipeline Maintenance Policy departments that are non-shared. These activities and expenses are summarized in Table OR-8 below.

Table OR-8
Southern California Gas Company
TY 2019 Core Gas Operations Staff and Training Expenses

GAS SYSTEM INTEGRITY (In 2016 $)			
A. GAS OPERATIONS STAFF & TRAINING	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
1. GAS OPERATIONS STAFF & TRAINING	1,072	4,734	3,662
Total	**1,072**	**4,734**	**3,662**

1. Description of Costs and Underlying Activities

The activities completed within this workgroup are categorized as Gas Operations Training and Development. Gas Operations Training and Development create future leaders through the delivery of effective/ high-quality learning experiences to operations employees throughout SoCalGas. The continued safe construction, maintenance, integrity management, replacements, and expansion of our pipeline system must be executed by approximately 2,500 Gas Transmission, Gas Distribution, and Storage employees located throughout SoCalGas' large and diverse service territory. Gas Operations Training and Development communicates and reinforces the SoCalGas safety culture and strives to instill a passion for success through interactions, such as regular dialogue, periodic dialogue sessions with frontline supervisors and employees, participation in employee seminars, ongoing refresher training, and one-on-one employee meetings. This request advances SoCalGas' ability to maintain compliance with the requirement set forth in SB 705 to maintain an adequately sized, qualified, competent, and properly trained gas corporation workforce, while also contributing to proposed mitigations in RAMP chapters SCG-1 Third-Party Dig-Ins, SCG-2 Safety, SCG-7 Workforce Planning, and SCG-8 Records Management.

Gas Operations Training and Development also consists of Field Technical Skills Training. The Operations Field Technical Skills Training team provides Gas Transmission, Gas Distribution, and Storage with the training and services described below. These trainings and services are necessary for the Company to follow applicable laws, regulations and standards and to help maintain the safety of the workforce and the public.

- Centralized and /or decentralized technical skills training is provided to employees who are new to their jobs, require refresher training, have been promoted to positions requiring additional technical skills, receive new equipment or technology, or are being introduced to changes in regulations.
- Compliance-driven qualifications and certifications are conducted for employees who perform such activities as operating cranes, making steel welds, or conducting plastic fusion joints.
- Instructional design services include updating existing training modules and developing new modules, as needed, in response to changes in standards, regulations, technology, or equipment. The Field Technical Skills Training team also explores new channels for training, such as online training and multi-media training aids.

Also, included under Gas Operations Training and Development are activities and associated O&M expenses within the workgroup of Pipeline Maintenance Policy. Pipeline Maintenance and Policy conducts a variety of operational services necessary for employees to complete their daily activities. These activities include identifying, developing, implementing, monitoring, and enhancing Company policies, procedures, tariffs, technologies, and/or reports used by Gas Transmission, Gas Distribution, and Storage. As SoCalGas strives for continuous improvement, business needs and regulatory requirements change, such as the recent changes with General Order 112-F and the workforce, work methods are often modified and new guidance must be developed and communicated to the workforce. This communication is essential to continue to provide safe, clean, and reliable service to customers and maintain the integrity of the gas system.

This cost supports the Company's goals of safety and reliability of SoCalGas' system by providing the proper level of operations leadership, operations support, and field technical skills training.

2. Forecast Method

In general, Gas Operations Training and Development activity increases as levels of work and workforce attrition increase; as new programs, processes and technologies are implemented; and as regulatory or compliance requirements change. For example, as SoCalGas has established Advanced Meter technology, training requirements for Measurement and Regulation (M&R) Technicians and Leads has been significantly impacted. A series of trainings were

conducted throughout the districts to bring employees up-to-speed. In addition to supporting proposed mitigations from RAMP chapters SCG-1 Third-Party Dig-Ins, SCG-2 Safety, SCG-7 Workforce Planning, and SCG-8 Records Management, existing training curriculum for M&R I and II and Lead has been modified to reflect the new technology; such as expected increases in training for locate and mark activities driven by California excavation law gains with the signing of Senate Bill (SB) 661, the Dig Safe Act of 2016, which establishes an enforcement board to act against those third-party excavators who violate the excavation law, adding to the upward pressure to an already increasing One-Call (811 Dig-Alert or USA) ticket volume in the State, which will result in more employees needing locate and mark training. SoCalGas used the 2016 adjusted forecast as a foundational forecast rather than the five-year because it represents the proposed level of leadership, management, support, training personnel, and associated non-labor necessary to maintain current operations. Added to this base are incremental work elements not reflected in the base forecast that are necessary to adequately fund Gas Operations Training and Development activities in TY 2019, as well as RAMP items. These work elements are described below.

The total incremental funding for these incremental increases is $2,662,000 over the 2016 adjusted recorded base in TY 2019.

Safety is rooted in all facets of Gas Transmission, Gas Distribution and Storage training. It starts with the formalized training that employees receive when they begin their career, is emphasized on the job and in refresher training, and then re-emphasized during training they receive as they advance to new jobs. Training courses are delivered to each function/classification in all field job progressions and vary from one to eight weeks for entry-level positions. Courses are taught utilizing various training methods and delivery by a centralized field training team, with most of the instructors previously holding a technical or field job at some point in their careers. These instructors are responsible for conveying consistent safety messages and confirming understanding of the classroom training by observing employees in simulated situations at SoCalGas' training complex in Pico Rivera.

In addition to the increase of workforce to address incremental work activities and the Workforce Planning risk, as described in RAMP SCG-7 Workforce Planning, Gas System Integrity is taking appropriate measures to maintain this highly-skilled workforce, recognizing that safety and system reliability cannot be sacrificed during times of employee transition. As

new and less experienced employees step in to replace highly-skilled employees, SoCalGas is conscientiously training these employees. Below are the incremental elements associated with improvement to the training program.

- **Technical Specialist for Modernization of Training Materials** – As proposed in RAMP SCG-7 Workforce Planning, activities within the scope of technical training include revamping and redesigning current technical training. These activities are covered by other RAMP risks including Employee, Contractor, Customer, and Public Safety, Catastrophic Damage Involving High-Pressure Pipeline Failure, Catastrophic Damage Involving Medium-Pressure Pipeline Failure, and Catastrophic Damage Involving Gas Infrastructure (Dig-Ins). These activities are included in the Workforce Planning risk to address the cross-cutting nature of this risk and illustrate the impact Workforce Planning has on safety across the entire organization. In addition to the activities proposed by the various RAMP risks for technical training, the Workforce Planning risk also proposes the development of a Management Technical Training program to be offered to all new front line supervisors since currently there is no formal technical training available to front line supervisors. These activities would help develop the technical skills and increase job specific procedural knowledge for employees and supervisors, thereby decreasing the rate of safety related incidents. Front line supervisors oversee processes that may be hazardous to employees and/or the public; therefore, this proposed training will help minimize potential safety incidents.
- **Cathodic Protection Technical Advisors** – This position will provide system wide strategic direction and accountability of program implementation such as remote monitoring cathodic protection equipment and overall system compliance. In support of the overall enhancement of the Cathodic Protection system and policies, this position will work to define current work practices to document end-to-end processes for future optimization efforts. Additionally, this position will oversee the installation of Rectifier Automation equipment, to validate accurate cathodic protection reads are within compliance windows. These new cathodic protection efforts will reinforce the systems across the SoCalGas pipeline network and keep areas working effectively to prevent pipeline corrosion.

- **Locate and Mark Trainer** – Historically we have seen an increase in the number of locate and mark tickets and we expect a continued increased through our continual efforts from our Public Awareness Program and SB 661(protection of subsurface installations) that was signed in September 2016. SB 661 added enforcement to the digging law by establishing the California Underground Facilities Safe Excavation Board. The Board is authorized to take action against those parties who violate the excavation law 4216. This new bill is expected to require more excavators to notify USA which will add upward pressure to an already increasing USA ticket volume in California. Thus, more employees will be needed to perform locate and mark activities in order for the Company to meet increasing USA ticket demands and prevent marking delays. Other notable impacts of the SB 661 include the requirement for marking the presence of known abandoned lines and keeping abandoned line records which will increase time spent locating each ticket and create additional work for supporting activities.
- **Clerical Instructor** – As discussed above, formal employee training is foundational to the development of employees. Furthermore, as SoCalGas continues to experience increased turnover further elevating our Records Management risk, increasing the possibility of inaccurate or incomplete information that could result in the failure to construct, operate, and maintain SoCalGas' pipeline system safely and prudently, while also limiting our ability to satisfy regulatory compliance requirements which is why the need for this training has increased. SoCalGas has identified an opportunity for enhancement, is the training for employees performing clerical work within Gas Transmission, Gas Distribution and Storage, such as Distribution Operations Clerk, Work Order Control Clerk, and Leakage Clerk. Instructors are responsible for accuracy of course materials, arranging required items for class, and following up with students and their supervisors following class to identify areas of continuous improvement so that students are prepared when they return from training. Additionally, Instructors act as Subject Matter Experts while adapting course content following a change to software or the process used by employees to complete the required tasks. The work these clerical workers perform directly impacts compliance and pipeline facility records management. Prior to teaching any course, the instructor

must be familiar with all technical content. If not a subject matter expert, the instructor is expected to become one through independent study, training, research and consultation with experts. As technology constantly changes for much of Gas Operations training curriculum instructors are constantly required to learn and modify the curriculum as appropriate. For example, when advanced meter technology was developed, it impacted M&R technician's jobs and therefore, required changes to M&R training curriculum. In addition, anytime a safety incident occurs in the field, training is analyzed as to whether the content is supportive of the elimination of any reoccurrence of the instance. Therefore, having knowledgeable, highly-skilled clerks contributes to the safety and integrity of the gas system.

- **Compliance Assurance Technical Advisor** – This position supports data accuracy of maintenance and inspection records, which also contribute to the records management proposed mitigation through operation compliance and oversight serving as the eyes and ears for Gas Operations. This position would prove valuable in maintaining data integrity in SAP and MAXIMO for SCG Gas Distribution, Gas Transmission and Storage managed assets related to M&I activities. As additional reports are developed, new user interface implementation in SAP and MAXIMO are needed to improve data quality and reduce compliance risk.

  With increase in reporting requirements from SED, incremental Technical Advisors will be needed to extract information from SAP and MAXIMO to create comprehensive data validation tools identifying missing or incorrect information. Some examples of increased regulations, either internal or external, include:

  - Implementation of tracking above-ground leaks separate from coded leaks, which include documenting leaks on meter set assemblies which was not previously required. This results in tracking and resolving additional leaks annually.
  - GO 112-F
    - Increase leak survey frequency for high pressure pipelines (DOT-defined transmission lines) from every year to every 6 months. In Gas Distribution, these lines are known as supply lines.
    - Additional requirements for managing encroachments, including notifications; development of written plans.

- Additional monitoring, reporting and recordkeeping, including new parsing of leak repair and response time data (*e.g.*, response time to make safe and arrive on scene captured in 5 minute intervals up to 45 minutes, 45-60 and greater than 60 minutes); new monitoring and reporting of timeliness to update maps; new criteria and notification for over pressure incidents; and new parsing of excavation damage data (*e.g.*, damages and costs related to homeowners)
- Additional leak survey frequencies
- Additional reporting requirements

o AB 1937

- An act to add Section 955.5 to the California Public Utilities Code, relating to natural gas.
- AB 1937, Gordon. Natural Gas Pipeline Safety Act of 2011: school and hospital notification of nonemergency excavation or construction of gas pipelines.
- This bill would require a gas corporation to provide not less than 3 working days' notice, as specified, to the administration of a school or hospital prior to undertaking nonemergency excavation or construction of a gas pipeline when the work is located within 500 feet of the school or hospital.

This position will support Gas Distribution, Gas Transmission and Storage to retrieve the correct information and make the necessary corrections in SAP and MAXIMO. As trends are discovered with specific data issues, additional validation mechanisms will be implemented in Click and SAP to help reduce the number of discovered errors. Furthermore, this advisor will assist in the preparation of reports for annual CPUC audits and will support Gas Distribution, Gas Transmission and Storage during SED audits to respond to data requests. The number of SED audits and data request continue to increase on an annual basis and this position will further support the timely response of these data request. The department (PSMP) this position will reside within supports Gas Distribution, Gas Transmission, and Storage that contributes to providing the inspection history managed assets. This position supports data review and reports of leading indicators providing information to Gas Distribution, Gas Transmission and Storage to better address potential data

inaccuracies prior to audits so that reports submitted to SED have the accurate information. This position would also support SED audits, extracting necessary reports responding to data request. Due to increased SED audits and data requests, it is anticipated the increase will require additional support to provide appropriate responses and accuracy.

- **Classroom Technology** – Further enhancing the employee training experience and knowledge transfer SoCalGas' proposes to continue its modernization of classroom technology, this modernization would include enhancing audio-visual equipment, introduction of handheld devices into the classroom and leveraging virtual technology for simulated activities.
- **Situation City Enhancements** – As described in RAMP SCG-2 Employee, Contractor, Customer, and Public Safety, there is an incremental project and program to expand "Situation City" training props by:
  - Constructing additional props, equipment types, working environments, and hazardous condition simulation capabilities at the skills center training facility to broaden employee exposure to real-world conditions.
  - Increase class size and provide mobile class rooms to meet changing needs.
  - Expand hands-on crew training as well as provide varied training locations for field representatives.
  - Provide additional digging sites and operating conditions.
  - Provide a strong connectivity to meet the computer activity and needs in the situation city vicinity.

  These changes would enable the Company to better prepare employees for work in different environments, with different equipment, and on a wider variety of infrastructure components so they make sound decisions in the work environment.
- **Employee Collaborative Training Program and Technical Academic Training Facility** – A new technical academic training facility will be created to host a collaborative training and development program partnership that is managed outside the company. This program will provide employees with the foundational skills needed to be better equipped to have successful careers. Training is directly related to the skills, knowledge, and strategies necessary to do a particular job that support

the company's safety program designed to maintain system integrity and public employee safety. This facility will be located within the SoCalGas territory, providing both classroom and hands on training for employees. The cost to locate, plan and develop a technical academic training facility can be found in the testimony of Ms. Herrera (Ex. SCG-23).

3. Cost Drivers

The Gas Operations Training and Development section is driven by costs in three major areas: operations leadership, operations support, and personnel training. All of which is increasingly influenced by, and evolving with multiple drivers, such as:

- The need to maintain a trained and qualified workforce. Increased turnover in workforce, discussed by Ms. Orozco-Mejia (Ex. SCG-04), presents issues of knowledge transfer, skills development, and overall proficiency of the replacement workforce. This drives costs related to Training and Technical Support. SoCalGas is taking proactive action to address employee training with the additional instructors and subject matter experts, modernization of its audio-visual aids, and improvements to its training facility.
- The need to maintain data integrity and leverage new information depositories. This will drive costs associated with reports and tools that will gather, consolidate, and summarize newly-available data to develop compliance reports and monitor the effectiveness of operations and identify future business improvements.
- Introduction of new construction and maintenance methods into office and field functions. This drives the costs associated with personnel needed to revise Gas Standards, training materials, conduct refresher training, provide technical support, and conduct assessments and enhancements of business process.

A net Fueling Our Future benefit savings of $3,000 is included in TY 2019 request for Gas Operations Staff and Training. This saving is for the benefit related to the FOF idea to remove high pressure training module from the initial Planning Associate training class and make it a follow-up elective to enhance info retention. The implementation cost applied to 2017 involves virtual training implementations.

B. Pipeline Safety and Compliance

Included in this section of the testimony are activities and associated O&M expenses to address the core Pipeline Safety and Compliance duties in the Director of Pipeline Safety and Compliance and Administration, Major Projects, Regulatory Compliance, and Controls, and Quality and Risk departments that are non-shared. These activities and expenses are summarized in Table OR-9 below.

Table OR-9
Southern California Gas Company
TY 2019 Pipeline Safety and Compliance

GAS SYSTEM INTEGRITY (In 2016 $)			
B. PIPELINE SAFETY & COMPLIANCE	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
1. PIPELINE SAFETY & COMPLIANCE	699	2,890	2,191
Total	**699**	**2,890**	**2,191**

1. Description of Costs and Underlying Activities

The Pipeline Safety and Compliance group is the lead for SED audits, communications and inquires and serves as a centralized gas compliance information center for the Company in collecting, trending, assessing, analyzing, investigating, communicating, and providing process improvement oversight for pipeline safety and compliance related issues.

Pipeline Safety and Compliance consists of multiple interconnected departments:

- **Pipeline Safety & Compliance Director (2200-2241)** – The Pipeline Safety and Compliance Director includes labor and non-labor for the Director and Administrative Assistant. The Director provides leadership and guidance to the overall Pipeline Safety and Compliance organization, which includes Major Programs and Project Controls, Pipeline Safety and Compliance (team that is SED's point of contact), Pipeline Safety Oversight, and Quality and Risk.
- **Pipeline Safety and Compliance** – This sub-team is the primary point of contact with SED during audits, inspections, investigations and for formal and informal data requests. The group coordinates the thirty plus weeks of audits conducted by SED throughout the year of each operational area and special audits, such as DIMP, TIMP,

Emergency Response Plan, Public Awareness, Drug and Alcohol, Operator Qualification, etc. and manages responses to various SED inquiries. The group responds to and provides all pre-and post-audit data requests, prepares formal response to the audit letters and closure letters. The team also works with the department personnel being audited to prepare for the audit to help facilitate an efficient inspection. For example, this team can witness the audit of programs in all areas of the Company and determine in a more centralized manner any potential inconsistencies in the execution of activities. This sub team also monitors and reports incidents to the Pipeline and Hazardous Materials Safety Administration (PHMSA) and SED, as required by 49 C.F.R. and GO 112, and coordinates incident site visits by SED when requested. Each incident has follow-up reports and data requests that the group prepares and submits per the time requirements of the specific regulations. The group further is responsible for submitting quarterly and annual reports to PHMSA and SED per the regulations previously mentioned, as well as needed reports of certain new construction, rehabilitation and replacement of specific facilities, safety related conditions, Maximum Allowable Operating Pressure (MAOP) Exceedances, and others. The group also provides advice, guidance, and information to Engineering and Gas Operations groups on pipeline safety issues relative to CPUC and 49 C.F.R. regulations. A fundamental tenet of Pipeline Safety and Compliance is to fully meet the expectations by PHMSA and the Commission.

- **Major Projects, Regulatory Compliance, and Controls (2200-2540)** – The Major Projects, Regulatory Compliance, and Controls group supports regulatory compliance and filings related to major projects and programs, including the Pipeline Safety and Enhancement Plan (PSEP), the Aliso Canyon Turbine Replacement Project, and the Mobilehome Park Utility Upgrade Program. For additional detail, see the Pipeline Safety Enhancement Plan (PSEP) testimony of Rick Phillips (Exhibit SCG-15) and the Aliso Canyon Turbine Replacement testimony of David Buczkowski (Exhibit SCG-11). The Mobilehome Park Utility Upgrade Program is described in the Mobilehome Park Utility Upgrade Program testimony of Joseph Velasquez (Exhibit SCG-47).

This group is involved in all facets of regulatory compliance and review, including preparation of reports, applications, testimony and supporting workpapers and management of discovery. In addition, this group validates the accuracy of major project data, identifies and drives cost control and data collection improvements, and supports project closeout.

- **Quality and Risk (2200-2530)** – The Quality and Risk Management group performs quality assurance and quality control activities for various pipeline safety and compliance activities on gas utility assets. The group provides assessments and analyses resulting in recommendations and process improvements to compliance activities. Additionally, the group provides process improvement oversight with an emphasis on implementation tracking, effectiveness evaluation, and review of business control tracking for change sustainability. For example, this team has completed documentation audits on large capital projects, determined process improvements for improved documentation, tracked the implementation of the solution, and validated the improved process and sustainability through quality control checks. The Quality Management function has been centralized to optimize activities as part of FOF.

  Included in Quality and Risk Management's responsibilities is the implementation of data analytics. Through this expanded role, data will be gathered and analyzed to identify trends or other insights that will provide proactive information to both monitor and enhance internal processes.

This cost supports the Company's goals of complying with all state and federal pipeline safety regulations in the safe operation of our gas system.

2. Forecast Method

The forecast method developed for this cost category for labor and non-labor expenses is the base year method. In addition, incremental adjustments to the base year were included to represent the expense requirements anticipated in TY 2019. An average or linear trend could not account for anticipated growth in the activities for this cost category.

3. Cost Drivers

The key cost driver behind this forecast is the significant increase in Commission oversight of utility pipeline activities. This oversight includes an increase in the number and complexity of program and field audits, data requests, field visits, and discussions of best practices. For example, the annual OME audit typically has approximately 3 auditors, but in 2017 there were 12 auditors all making separate inquiries that involved extensive coordination of staff in all areas of gas compliance. Their findings needed to be investigated and analyzed, and enhancements developed and project managed. Also, to illustrate the volume SED audit increases, the number of SED audits has increased from 17 weeks in 2014 to 35 weeks in 2016. With the introduction of API RP 1173, there are key areas such as quality management, incident investigation, and communication of lessons learned that require formalized and robust processes to accomplish the desired proactive system safety process enhancements.

SoCalGas' resources are tasked with collecting, inputting, and managing data. Under the Operational Compliance and Oversight mitigation in RAMP SCG-8 Records Management, the Pipeline Safety and Compliance will provide quality assurance over the records, by displaying completeness, accuracy, and traceability of the records. For the breakdown of cost adjustments, refer to my workpapers, Ex. SCG-05-WP. A net FOF benefit savings of $201,000 is included in TY 2019 forecast for Pipeline Safety and Compliance. These savings are for the benefit related to the FOF idea that centralizes quality management, combining Quality Assurance and Quality Compliance occurring in staff organizations to optimize activities.

C. Damage Prevention

Included in this section of the testimony are activities and associated O&M expenses to address core Public Awareness Program duties. These activities and expenses are summarized in Table OR-10 below.

Table OR-10
Southern California Gas Company
TY 2019 Damage Prevention

GAS SYSTEM INTEGRITY (In 2016 $)			
C. DAMAGE PREVENTION	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
1. DAMAGE PREVENTION	398	1,641	1,243
Total	**398**	**1,641**	**1,243**

1. Description of Costs and Underlying Activities

SoCalGas has developed and implemented a federally-mandated Public Awareness Program, as prescribed in 49 C.F.R. § 192.616. The Public Awareness Program contributes to enhanced public safety by providing certain risk mitigation measures, as described in my testimony further below. In adopting these Public Awareness Program requirements, PHMSA determined that "[e]ffective public awareness programs are vital to continued safe pipeline operations" and that "[s]uch programs are an important factor in establishing communications with affected stakeholders, providing information necessary to enhance public awareness of pipelines, and communicating stakeholder roles relative to pipeline safety."[11] The federal regulations directing the implementation of this program specifically require that the program include activities to educate the public, appropriate government organizations, and persons engaged in excavation-related activities regarding: (1) use of the One-Call notification system prior to excavation and other damage prevention activities; (2) possible hazards associated with unintended releases from a gas pipeline facility; (3) physical indications that such a release may have occurred; (4) steps that should be taken for public safety in the event of a gas pipeline release; and (5) procedures for reporting such an event.[12]

"The program and media used must be as comprehensive as necessary to reach all areas in which the operator transports gas" and "must include activities to advise affected municipalities, school districts, businesses, and residents of pipeline facility locations."[13] The program must be

[11] Public Safety: Pipeline Operator Public Awareness Program; Final Rule, 70 Fed. Reg. 28833-01 (posted May 19, 2005) (*codified at* 49 C.F.R. § 192, 195).
[12] 49 C.F.R. § 192.616(d).
[13] 49 C.F.R. § 192.616(e)-(f).

conducted not only in English, but also "in other languages commonly understood by a significant number and concentration of the non-English speaking population in the operator's area."[14] The operator is required to track these communications and evaluate the messages for resonance and impact and "[t]he operator's program documentation and evaluation results must be available for periodic review by appropriate regulatory agencies."[15]

Annually, the SoCalGas Public Awareness Program reaches approximately:

- 21.6 million consumers;
- 157,383 excavators and land developers;
- 2,070 fire stations/ emergency officials; and
- 836 public officials.

Every two years, the program reaches:

- 736,237 residents and businesses along pipeline rights-of-way within SoCalGas distribution service territory;
- 20,609 residents and businesses along pipeline rights-of-way outside SoCalGas distribution service territory;
- 2,423 residents and businesses near storage facilities and compressor stations; and
- 1,937 schools.

To implement the Public Awareness Program, the Public Awareness Administrator (PAA) uses a matrix-managed approach relying upon multiple organizations within SoCalGas for plan element execution. The PAA is responsible for coordinating and managing the execution of the activities to successful completion. The program requires that PAA use various tools, such as software, to track and document activities. There are five audience categories for communications and each has its own message, medium, and frequency. New audiences can be developed, because certain audiences, for example farmers, may benefit from receiving specific information suited to a particular context, or otherwise do not identify with the content of another audience. SoCalGas faces the additional challenge of identifying and reaching non-gas customers who reside along pipeline rights-of-way. Developing mailing lists and messages that

[14] 49 C.F.R. § 192.616(g).
[15] 49 C.F.R. § 192.616(i).

would be recognizable as pertinent and not junk mail by this segment is complex, and SoCalGas is required to continuously make revisions to keep the messaging fresh and relevant.

2. Forecast Method

An adjusted forecast was chosen as the foundation for future labor and non-labor expense requirements. Increased Public Awareness activities could boost the number of calls to USA and reduce the number of damages. Therefore, we plan to augment our cost in these areas to further contribute to lowering the number of damages to our system while also contributing to mitigate our number one threat, third-party damages. Additionally, as a proposed risk mitigation plan for RAMP SCG-1 Third-Party Dig-Ins, SoCalGas proposes to increase the volume of current efforts while also exploring new creative way to saturate the message into target audiences.

3. Cost Drivers

The cost drivers behind this forecast are: (1) the requirements of 49 C.F.R. § 192.616; (2) the technical document, Public Awareness Programs for Pipeline Operators, API RP 1162, First Edition, also referred to as simply RP1162 or 1162, because 49 C.F.R. § 192.616 expressly requires operators to follow the guidelines and recommendations set forth in API RP 1162; and (3) program expansion recommendations by regulators.

Federal Public Awareness regulations specifically direct pipeline operators to continually assess and improve the effectiveness of their Public Awareness Programs. A key to help promote continuous improvement is for SoCalGas to evaluate the impact of its Public Awareness program. The impact from the Public Awareness Program lies within its communications both in content and medium (delivery). It is therefore necessary for SoCalGas to evaluate both the content of its messages and message delivery systems.

An example would be to undertake an assessment of messaging to raise safety awareness. This measurement requires surveys of various groups to determine how and to what extent the Public Awareness messages are reaching them. Not all messages or delivery systems work for all stakeholders. In other words, a one-size-fits-all approach is not the most effective way to communicate. Through formal measurements or surveys of the various audiences, SoCalGas assesses what is working and what is not.

The frequency of formal measurements or surveys, and how tailored those measurements and surveys are, are key factors that impact the costs of implementing a successful Public Awareness Program. More frequent and targeted assessments help SoCalGas to develop more

succinct and relevant messages and deliver them in formats and mediums that meet the needs of each particularly identified audience. The more frequent and targeted the surveys are, however, results in higher costs of conducting those surveys.

Another costs driver is the recommendations from the Commission's Safety Enforcement Division when it concluded its Public Awareness audit, in which it offered additional communication messages to existing audiences to further promote pipeline safety.[16] SoCalGas is judiciously incorporating staff recommendations into the Public Awareness plan, but the amount of information can become overwhelming to recipients. Therefore, caution must be exercised and carefully-crafted messages must be developed to avoid having information overlooked or discarded as "junk mail."

Lastly, another cost driver is review of any recommended additions made in the API RP 1162, Second Edition and making the necessary changes to our program. These changes will more than likely result in additional communication requirements, which may result in additional resources beyond what is forecast here.

D. Asset Management

Included in this section of the testimony are activities and associated O&M expenses to address the core Asset Management duties in the Work Management and Mobility Support, Administration of Enterprise System Support (ESS) Production Support, ESS-Work Management Systems Support, ESS Mobile Hardware, ESS Mobile Applications and ESS Construction, Planning and Design Work Management System Support departments that are non-shared. These activities and expenses are summarized in Table OR-11 below.

Table OR-11
Southern California Gas Company
TY 2019 Asset Management

GAS SYSTEM INTEGRITY (In 2016 $)			
D. ASSET MANAGEMENT	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
1. ASSET MANAGEMENT	2,086	2,503	417
Total	**2,086**	**2,503**	**417**

[16] *See* SDG&E/SoCalGas' Response to CPUC's Public Awareness audit results, dated June 17, 2013.

1. Description of Costs and Underlying Activities

Asset and data management requires computer-based work management systems, document management systems with integration to GIS, and technical computing management and support. Part of the activity performed in this workgroup is to maintain and upgrade software applications. These application systems and the management of field hardware and mobile applications, as well as supporting activities are necessary for the safe and efficient operation and maintenance of the gas infrastructure from receipt point through the Transmission, Distribution, and Storage pipeline networks, as well as to support Customer Services.

This category includes work performed to support computer programs and systems, as well as field hardware and mobile applications not provided by the Company's Information Technology group.

2. Forecast Method

The five-year average was chosen as the foundation for future labor and non-labor expense requirements. However, an adjustment was made to reflect an anticipated increase in requirements for personnel and non-labor cost in which additional staffing and resources are identified and described in the cost drivers below. These incremental costs have been added to the five-year average.

3. Cost Drivers

The cost drivers behind this forecast are: the expense requirements and activities to manage the compiling of test scripts inventory for software release cycles; and the administration and development of solutions related to asset management. Another cost driver is the mitigated Information Management System risk proposed in RAMP SCG-8 Records Management and the Automated USA Ticket Prioritization project proposed in RAMP SCG-1 Third-Party Dig-Ins. Some excavations may take priority over others because they are identified as more of a risk and require additional response from the Company. For instance, if the excavation is within 10 feet of a high-pressure facility, the Company must have a standby person at the site to watch the excavation near the facility. Currently the Company identifies ticket priorities using a manual process that may have more risk of human error. The Company is proposing to automate the prioritization process using complex algorithms based on ticket and GIS information. The prioritization will allow the Company to consistently optimize appropriate measures in a timely

manner. This will improve identification when high-pressure facilities may be involved that requires a standby. A breakdown of cost adjustments is addressed by Mr. Olmsted (Ex. SCG-26).

E. Gas Contractor Controls

Included in this section of the testimony are activities and associated O&M expenses to address the core Gas Contractor Controls duties. These activities and expenses are summarized in Table OR-12 below.

Table OR-12
Southern California Gas Company
TY 2019 Gas Contractor Controls

GAS SYSTEM INTEGRITY (In 2016 $)			
E. GAS CONTRACTOR CONTROLS	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
1. GAS CONTRACTOR CONTROLS	520	3,830	3,310
Total	**520**	**3,830**	**3,310**

1. Description of Costs and Underlying Activities

Gas Contractor Controls

The Gas Contractor Controls group has recently been established within the Project Management and Construction organization. Gas Contractor Controls collaborates with Company and industry leaders and subject matter experts to formulate and promote policy related to construction contractor safety and pipeline safety/quality oversight. To do this, they must perform the following duties:

- Establish, maintain, and expand construction contractor oversight program, including safety (occupational and process), to systematically review, assess, and enhance the management practices related to contractors;
- Provide written guidance on inspection of workmanship on the pipeline;
- Facilitate invoice approval process via online training and invoice submittal system user support; and
- Construction fraud vigilance and training.

To implement construction fraud vigilance, the Company diligently reviews the quality and cost of work performed by pipeline construction and other contractors. Inferior quality work

directly impacts the safety of pipeline operations, employees, and the public. The quality of the work, as well as the cost, can be impacted by fraudulent practices, such as replacing specified materials or equipment with those of inferior quality or quantity, modifying post-construction test procedures to reduce costs or conceal the unapproved replacement of materials or equipment, employing project staff that are less experienced than required by contract, and subcontracting work without Company approval to conceal the use of unapproved vendors or contractors.

Additional responsibilities include:

- As prescribed in the Agreement between SoCalGas and Utility Workers Union of America (AFL-CIO) and International Chemical Workers Union Council, SoCalGas must provide semi-annual reports to the union identifying contract employees doing represented work (excluding Distribution) and a report of Gas Distribution contract employment showing the ratio of company/contractor employees;
- Deliver pipeline construction fraud awareness training;
- Author and maintain Company Gas Standards, forms, and workflows related to construction contractor oversight and associated information/records collection, including those related to California Public Utilities Code Section 141 Construction and Safety Standards, which is a subpart of GO 112-F; and
- Develop Safety Congress presentation/content and facilitate quarterly meetings.

Pipeline Safety Management System (PSMS)

Develop and implement a company-wide PSMS API RP 1173, consistent with PHMSA's recommendation. "PHMSA fully supports the implementation of RP 1173 and plans to promote vigorous conformance to this voluntary standard."

API RP 1173 is a systematic way to identify hazards and control risks while validating that these risk controls are effective. This includes increased interdepartmental integration of all pipeline safety-related programs, risk management, development and monitoring of leading and lagging indicators, reporting and oversight processes, continuous program monitoring and improvement, enhanced incident investigation and lessons learned, safety culture evaluation, improved management of change and recordkeeping, enhanced emergency preparedness, and competence training. This area covers the entire lifecycle of the pipeline system, including support services such as:

- Leadership and Management Commitment – Lead the development, implementation, and continuous improvement of the PSMS;
- Stakeholder Engagement – Process for two-way communications with internal and external stakeholders regarding risk and safety;
- Risk Management – Process to identify, evaluate, and respond to pipeline threats throughout the lifecycle;
- Operational Controls – Process for safe installation, operation, maintenance, and emergency response, and activities including system integrity, change management, and use of contractors;
- Incident Investigation, Evaluation, and Lessons Learned – Procedures to investigate incidents and lessons learned from internal and external events to prevent reoccurrence;
- Safety Assurance – Processes including audit and evaluation of the effectiveness of the PSMS and risk management using metrics and KPIs;
- Continuous Improvement – Identify and implement corrective actions by using audit results, assessment, remedial actions, and data analysis to improve the PSMS;
- Emergency Preparedness and Response – Procedures to effectively respond to emergencies;
- Competence, Awareness, and Training – Process for personnel have the skills, training, education, knowledge, and experience to accomplish their PSMS responsibilities; and
- Documentation and Recordkeeping – Maintain a document control process.

2. Forecast Method

SoCalGas chose a zero-based methodology because the Gas Contractor Control department was newly created in 2015, which has no past cost history for the newly inaugurated functions. Labor is composed of Gas Contractor Controls department management's direct salaries associated with the work to support the management and execution of large construction projects. A complementary cost element for each added position is the non-labor component. The non-labor cost is composed of employees' expenses, employee training costs, software

license fees for project management and control systems, and consulting fees. Under this category of work, SoCalGas requests a total of $3,830,000.

3. Cost Drivers

The cost driver for this work category is the labor to meet Company's practices and procedures and regulatory requirements, which is a proposed risk mitigation activity for contractor management and traffic control in RAMP SCG-2 Employee, Contractor, Customer, and Public Safety. The API RP 1173 group will be involved in developing a strategic safety management capability in accordance with the industry-recognized RP API 1173. Enhancing the safety culture at regulated utilities was referenced in a report by the Safety Policy Statement of the CPUC dated July 10, 2014:

The CPUC Guiding Principles include:

- "Ultimately we are striving to achieve a goal of zero accidents and injuries across all the utilities and businesses we regulate within our own workplace."
- "Continually assess and reduce the safety risk posed by the companies we regulate."
- "Hold companies (and their extended contractors) accountable for safety of their facilities and practices."

This new group will be the program structure that assesses, leverages, and integrates the in-flight improvement work across all aspects of the business and will support the creation of select new capability, for the benefit of ratepayers and our employees by supporting our goals of safety, reliability, affordability, and customer satisfaction.

There are many external and internal benefits of applying API RP 1173 within the organization. Externally, the implementation aligns the Company with the recommendations in 2015 from the SED that SoCalGas continues evolving its Risk Management Program. This aligned with initiatives, such as the 2016 RAMP Report, to qualitatively and quantitatively assess company-wide risks and their associated mitigation initiatives to improve safety. The implementation of API RP 1173 is yet another step towards more effective asset and risk management decision-making to ultimately improve safety performance. The implementation of API RP 1173 will also streamline future RAMP filings.

For the breakdown of cost adjustments, refer to my workpapers, Ex. SCG-05-WP.

IV. SHARED COSTS

As described by Mr. Vanderhye (Ex. SCG-34/SDG&E-32), shared services are activities performed by a utility shared services department (*i.e.*, functional area) for the benefit of: (1) SDG&E or SoCalGas, (2) Sempra Energy Corporate Center, and/or (3) any unregulated subsidiaries. The utility providing shared services allocates and bills incurred costs to the entity or entities receiving those services. Table OR-13 summarizes the total shared O&M forecasts for the listed cost categories below.

Table OR-13
Southern California Gas Company
Shared O&M Summary of Costs

GAS SYSTEM INTEGRITY (In 2016 $)			
(In 2016 $) Incurred Costs (100% Level)			
Categories of Management	**2016 Adjusted-Recorded (000s)**	**TY 2019 Estimated (000s)**	**Change (000s)**
A. GAS OPERATIONS STAFF & TRAINING	846	1,364	518
B. PIPELINE SAFETY & COMPLIANCE	2,888	4,593	1,705
C. DAMAGE PREVENTION	816	2,383	1,567
D. ASSET MANAGEMENT	3,643	6,416	2,773
E. RECORDS MANAGEMENT	0	2,550	2,550
Total Shared Services (Incurred)	**8,193**	**17,306**	**9,113**

I am sponsoring the forecasts on a total incurred basis, as well as the shared services allocation percentages related to those costs. Those percentages are presented in my shared services workpapers, along with a description explaining the activities being allocated. Please see my workpapers, Ex. SCG-05-WP. The amounts allocated to affiliates are presented by Mr. Vanderhye (Ex. SCG-34/SDG&E-32).

A. Gas Operations Staff and Training

1. Vice President System Integrity and Asset Management (Cost Center 2200-0225)

a. Description of Costs and Underlying Activities

Within the Gas System Integrity are the leadership and organization governance activities for cost center 2200-0225, which represent the Vice President's activities. The Vice President provides the leadership, guidance, and policies to direct the Gas System Integrity organization, which benefits both utilities.

The Vice President's activities extend beyond Gas System Integrity, since the Vice President is also responsible for Pipeline Integrity. The Vice President's expenses include technical and financial support, as well as policy issuance to successfully sustain the operation and provide the vision to further the goals of the Company. The Vice President's activities also include the governance, technical, and policy support for Gas Transmission and Gas Distribution functions at both utilities, in addition to Storage for SoCalGas.

b. Forecast Method

Both the labor and non-labor expenses for this cost centers have been consistent over recorded historical data. This trend is expected to continue, and for future labor and non-labor expenses, the five-year average methodology was chosen.

c. Cost Drivers

As discussed above, the Vice President provides leadership and guidance to the Gas System Integrity (this exhibit); Gas Transmission Operation, Beth Musich (Ex. SCG-06); Gas Major Projects, Michael Bermel (Exhibit SCG-08); Gas Transmission, Beth Musich and Michael Bermel (Exhibit SCG-07); Gas Control and System Operations/Planning, Devin Zornizer (Exhibit SCG-13); and Gas Engineering, Deanna Haines (Ex. SCG-09) organizations.

2. Field Technologies (Cost Center 2200-2023)

a. Description of Costs and Underlying Activities

Recorded to this cost center are the labor, employee expense, and non-labor materials and services to research and evaluate new tools and technologies that enhance or replace existing processes or tools and provide benefits in the form of improved safety and efficiency. This team helps mitigate risks associated with leak identification and repairs, locating of gas pipelines

ahead of excavations, and prevention of injuries to employees and the public. Field Technologies supports Field Operations by conducting evaluations of new tools and technologies, development of Request for Proposals, deployment of new equipment, and training to help employees become proficient in the use of new and existing tools and equipment.

b. Forecast Method

The five-year average was chosen as the foundation for future labor and non-labor expense requirements. However, an adjustment was made to reflect an anticipated increase in requirements for personnel and non-labor cost in which additional staffing and resources are identified and described in the cost drivers below. These incremental costs have been added to the five-year average.

c. Cost Drivers

The cost driver for this work category support the mitigation of risks by providing services, such as technology support and research of equipment, to meet Company's practices and procedures and regulatory requirements. Examples of this are provided below:

- Identification and repair of leaks to reduce the risk of explosion or fire.
- Accurate locating of gas pipelines ahead of excavation to avoid hit lines.
- Injuries to employees and the public.
- Continuous improvements for leak mitigation equipment, for both public safety and environmental compliance for methane leaks on our facilities.
- Refresher training on key equipment and technologies needed to meet regulatory compliance and public safety and eliminate potentials for fines.
- Develop strategies for tracking inspections and repairs to critical tools and equipment.

3. Gas System Integrity Staff & Programs (Cost Center 2200-2144)

a. Description of Costs and Underlying Activities

This cost center includes the salaries for the Gas System Integrity Staff & Programs Director and the Administrative Associate who support this organization. This cost center also includes the associated employee expenses, as well as miscellaneous supplies and materials.

b. Forecast Method

Both the labor and non-labor expenses for this cost centers have been consistent over recorded historical data. This trend is expected to continue, and for future labor and non-labor expenses, the five-year average methodology was chosen.

c. Cost Drivers

The cost driver for this work category is the labor to meet Company's practices and procedures and regulatory requirements, as the Director provides leadership and guidance to the Gas System Integrity Staff & Programs organization.

B. Pipeline Safety and Compliance

1. Pipeline Safety Oversight (Cost Center 2200-2551)

a. Description of Costs and Underlying Activities

The Pipeline Safety Oversight group provides centralized incident evaluation; compliance improvement oversight through monitoring and documenting the progress of corrective actions; and monitoring of compliance with federal and state regulatory requirements.

Centralized Incident Analysis strives to produce a consistent, structured process for compliance-related pipeline incidents, events, and close calls with the focus being to reduce repeat non-compliance events as well as new/unique non-compliance events. For example, an investigation of a missed inspection resulted in better defined proactive exemption reports and formally assigned roles and responsibilities in the system. This team will also be enhancing compliance enhancement project tracking and communication of lessons learned throughout the companies and with the company's gas pipeline contractors.

Compliance Improvement Oversight monitors and documents the progress of corrective actions towards conclusion. The Compliance Improvement Oversight team enhances the consistency in process improvement activities with emphasis on the implementation tracking, effectiveness evaluation and review of business control tracking related to the enhancement. Additionally, Compliance Improvement Oversight coordinates communication of corrective actions across departments to facilitate improvement lessons and opportunities are shared for system-wide learning and improvement.

Compliance Oversight is responsible for overseeing adherence to both federal and state regulatory requirements, tracking of new regulations, maintenance of the natural gas operator

safety plans, consistency with CPUC Safety Enforcement Programs, and tracking the follow-up implementation of post-SED audits.

b. Forecast Method

The forecast method developed for this cost category for labor and non-labor expenses is the base year method. In addition, incremental adjustments to the base year were included to represent the expense requirements anticipated in TY 2019. An average or linear trend could not account for anticipated growth in the activities for this cost category.

c. Cost Drivers

The cost drivers behind this forecast consist of the following:

- Increased federal and state regulations resulting in more stringent requirements and associated enhanced processes for compliance purposes. For example, the significant increase in audits by the CPUC with any resulting follow-up items to be tracked for correction and compliance and the Gas Safety Citation Programs' requirements and penalties.
- Continued implementation of centralized incident analysis, enhanced tracking & management of process improvement to meet PHMSA compliance requirements, and enhanced compliance oversight.
- Implement root cause analysis training which promotes effective solutions for consistency across the organization. Root cause analysis costs include: "train the trainer program;" developing a core curriculum; and training program costs.

2. Pipeline Safety and Compliance Manager (Cost Center 2200-2473)

a. Description of Costs and Underlying Activities

The Pipeline Safety and Compliance group serves as the point of contact with the Commission during SED audits and manages responses to various SED inquiries. The group leads all gas utility audits in areas related to policies and rules pertaining to General Order 112-F and provides counsel, guidance, and information to Gas Engineering and Gas Operations groups on pipeline safety issues relative to CPUC and DOT regulations. Specific activities include representing SoCalGas and SDG&E in all interactions with SED related to natural gas operations, as well as providing direction and guidance to utility personnel to maintain compliance with DOT/CPUC pipeline regulations.

This cost supports the Company's goals of complying with all state and federal pipeline regulations in the safe operation of our gas system.

b. Forecast Method

The forecast method developed for this cost category for labor and non-labor expenses is the base year method. In addition, incremental adjustments to the base year were included to represent the expenses anticipated in TY 2019. An average or linear trend could not account for anticipated growth in the activities for this cost category.

c. Cost Drivers

The key cost driver behind this forecast in the significant increase in Commission oversight of utility pipeline activities. This oversight includes an increase in the number and complexity of program and field audits, data requests, field visits, and discussions of best practices, please refer to the Pipeline Safety and Compliance discussed previously in Section II. Further, there has been an increase in field visits to Distribution work as well as integrity management-related field activities.

Additionally, the group is responsible for reporting incidents to the CPUC that meet certain activities with the implementation of General Order (GO) 112-F, the number of which has increased since the implementation of these new requirements. For example, there have been 57 reportable incidents in the First Quarter of 2017 compared with 26 for the same time period in 2016, a 119% increase.

3. Operator Qualification (Cost Center 2200-2344)

a. Description of Costs and Underlying Activities

Activities associated with this work group are performed by the Operator Qualification department, which manage the implementation and continual enhancements of the Operator Qualification Program. The Operator Qualification department is responsible for scheduling qualification activities, reviewing and auditing contractor qualification programs, keeping qualification records, monitoring records for possible compliance issues, evaluating the program for any deficiencies, and making changes and enhancements to the program. The activities and forecast in this department are part of the RAMP SCG-10 Catastrophic Damage Involving a Medium-Pressure Pipeline Failure risk, as described earlier in my testimony.

b. Forecast Method

The forecast method developed for this cost category for labor and non-labor expenses is the base year method. In addition, incremental adjustments to the base year were included to represent the expenses anticipated in TY 2019. An average or linear trend could not account for anticipated growth in the activities for this cost category.

c. Cost Drivers

Safety is fundamental to employee training and qualification. Maintaining a skilled, qualified, and dedicated workforce is critical to SoCalGas' success. It is through the efforts of these employees that SoCalGas can continue to deliver safe, clean, and reliable service to its customers and maintain the integrity of its pipeline infrastructure.

An integral component of overall workforce proficiency is the Operator Qualification program. Hence, the main cost driver for this workpaper is the management and process for the qualification of pipeline personnel as mandated by Title 49 of the Code of Federal Regulations (49 C.F.R. § 192, Subpart N). The Operator Qualifications Program continues to evolve to better align with industry leading practices, recommendations by Commission auditors, and to comply with SB 705, which requires pipeline operators to establish a safety plan that "is consistent with leading practices in the gas industry and with federal pipeline safety statutes." This includes adding new qualification elements or covered tasks related to the tasks identified by the American Society of Mechanical Engineers (ASME) Standard B31Q, developing qualification materials, and establishing an electronic record keeping process.

Operator Qualification compliance is closely monitored and employees are subsequently trained based on the programs requalification cycle and when significant changes occur in a covered task or as required under SoCalGas' Gas Standards, GO 112-F, and 49 C.F.R. § 192, Subpart N. SoCalGas forecasts several incremental activities to support this important safety aspect including a significantly expanded Operator Qualification program, incremental employee training, additional instructors, an expanded field quality assurance program, and improvements to the training facilities.

Furthermore, SoCalGas is expanding its Operator Qualification program to better align with recommendations from the CPUC auditors and industry leading practices, as well as to comply with SB 705. This includes adding new qualification elements, developing qualification

materials, establishing an electronic record-keeping process, and conducting training to qualify and requalify impacted employees.

The incremental increase over the base forecast associated with this incremental work element is $794,000 in TY 2019.

4. Quality and Risk (Cost Center 2200-2360)

a. Description of Costs and Underlying Activities

The Quality and Risk group performs quality assurance and quality control activities for various pipeline safety and compliance activities on gas utility assets. The group provides objective assessments and thorough analyses resulting in recommendations and process improvements. Additionally, the group provides process improvement oversight to enhance discipline in process improvement activities with an emphasis on the implementation tracking, effectiveness evaluation, and review of business control tracking related to the enhancement. The Quality and Risk group seeks to not only support the organization to meet regulatory requirements, but also proactively use tools and processes to enhance system safety and reliability through the implementation of continuous improvement across the business units. The Quality Management function has been centralized to optimize activities as part of Fueling our Future (FOF).

Compliance Management performs the following functions: (1) supports internal audit schedules, data requests, and implementation of recommendations; (2) supports external audits from PHMSA, CPUC, and other agencies; and (3) evaluates audit results and makes recommendations for new or enhancements to policies, practices, or other institutional improvements for SoCalGas and SDG&E.

Included in Gas Compliance Quality Management's responsibilities is the implementation of data analytics. Through this expanded role, data will be gathered and analyzed to identify trends or other insights that will provide proactive information to both monitor and enhance internal processes. The activities and forecast in this department are part of the RAMP SCG-8 Records Management risk, as described earlier in my testimony.

b. Forecast Method

The forecast method developed for this cost category for labor and non-labor expenses is the base year method. In addition, incremental adjustments to the base year were included to

represent the expenses anticipated in TY 2019. An average or linear trend could not account for anticipated growth in the activities for this cost category.

c. Cost Drivers

The key cost driver behind this forecast is overseeing compliance with all regulatory requirements and the proactive implementation of continuous improvement tools and processes that enhance system safety and reliability. These drivers include: an increase in the number and complexity of program and field audits; data requests; field visits; and implementation of continuous improvement tools and processes. For the breakdown of cost adjustments, refer to my workpapers, Exhibit SCG-05-WP.

C. Damage Prevention

1. Shared Public Awareness Activities (Cost Center 2200-2417)

a. Description of Costs and Underlying Activities

The activities associated with the shared service component of Public Awareness include the central management of both SoCalGas and SDG&E's Public Awareness plans. This co-operator approach offers some resource efficiencies by leveraging the knowledge to the benefit of both companies. As noted in the non-shared service discussion, the Public Awareness work group is focused on the mandates from 49 C.F.R. § 192.616, which requires the development and implementation of a public awareness program.

The Public Awareness team is an intra-company group consisting of representative of the key departments that are responsible for communications with targeted audiences and are involved in the development and implementation of public awareness communications.[17]

b. Forecast Method

The forecast method developed for this cost category for labor and non-labor expenses is the base year method. In addition, incremental adjustments to the base year were included to represent the expenses anticipated in TY 2019. An average or linear trend could not account for anticipated growth in the activities for this cost category.

[17] In support of Public Awareness, please refer to Ex. 04 SCG/Orozco-Mejia.

c. Cost Drivers

The cost drivers behind this forecast are increased PHMSA requirements and increased communication activities brought about by Commission Public Awareness audit recommendations. In addition, as stated in the Baseline Risk Mitigation Plan proposed in RAMP SCG-1 Third-Party Dig-Ins, Public Awareness is mandated pursuant to Title 49 C.F.R. § 192.616. Its purpose is to develop and implement a continuing public education program focused on use of the One-Call notification system; hazards associated with the unintended release of gas; physical indications that an unintended release of gas has occurred; steps that should be taken to protect public safety in the event of gas release; and procedures for reporting unintended releases of gas. SoCalGas utilizes multiple channels for this communication, such as billboards, bill inserts, radio announcements, bumper stickers, safety events, press releases, social media, and sponsorships to capture a vast audience.

2. Pipeline Systems Construction Policy (Cost Center 2200-2345)

a. Description of Costs and Underlying Activities

Pipeline Systems Construction Policy focuses on the safe construction of high and medium pressure pipelines and associated systems. Currently SoCalGas assigns one (1) FTE to its system-wide development and maintenance high-pressure construction policies and practices and two (2) FTEs dedicated to the development and maintenance of medium-pressure construction policies. SoCalGas is dedicated to building safe, clean, and reliable pipeline systems that meet all applicable specifications, requirements, and regulations.

Damage Prevention Strategies is a subset of Pipeline Systems Construction Policy, manages the damage prevention program focusing on preventing excavation damages to SoCalGas' buried pipelines. Damages resulting from excavation activity are the greatest threat to SoCalGas' pipeline infrastructure with potential for catastrophic consequences to public safety. Over the last 5 years, USA tickets have increased by 32%. This growth is forecast into the future as the current California excavation law gains additional enforcement and existing public awareness efforts increase excavators' awareness of digging laws. In 2016, the California Governor signed SB 661 which established an enforcement Board that is authorized to act against those parties who violate the excavation law. The amendments are expected to compel more excavators to call USA, which will add upward pressure to an already increasing ticket

volume in the State. Thus, more employees will be needed to perform locate and mark activities in order for the Company to meet increasing USA ticket demands and prevent marking delays,[18] as further discussed by Ms. Orozco-Mejia (Ex. SCG-04).

SoCalGas is dedicated to mitigating the risk and associated hazards of excavation damages through the expansion of its Damage Prevention program by employing additional resources to proactively identify specific threats to its pipelines. As proposed in RAMP SCG-1 Third-Party Dig-Ins, a management team is needed to analyze the excavation reporting collection and data to identify trends and develop continuous improvement action plans. The team will be specialized in targeting excavation trends needing the most attention and will have a presence in the field to meet with excavators on the jobsite and provide safe digging education. The team will also work with internal stakeholders to improve internal locate and mark activities and provide incident investigation support. A review of the current state of SoCalGas' excavation damage prevention program substantiates the need to increase resources dedicated to preventing damage to its natural gas pipelines and averting the potential for injuries and property damage:

- Approximately sixty percent (60%) of excavation damages to the SoCalGas natural gas system results from contractors and property owners failing to call USA prior to digging.[19] It is important to enhance education of the public regarding the requirement to notify SoCalGas, through the Regional Notification Centers, of planned excavations in the vicinity of its gas pipelines. SoCalGas intends to assign resources to patrol its service territory to proactively identify contractors or property owners digging without USA tickets and educate them on the requirements of California's excavation laws.
- Improved data collection is needed for trend analysis and development of actions to address the root causes and offenders driving excavation damages in the SoCalGas service territory. Resources in the field are needed to collect this data.
- Strengthen partnerships with local cities and municipalities to identify repeat offenders and work collectively to require excavation laws are followed as part of the permitting process. Resources familiar with the state's excavation laws are needed to

[18] *See* RAMP Catastrophic Damage Involving Third-Party Dig-Ins (Chapter SCG-1), filed Nov. 30, 2016, at SCG 1-15.
[19] *Id.*

effectively communicate to city officials of their ability to take actions and sanction parties not adhering to the law.

- Expand coordination of contractor and public education in avoiding damage to underground substructures when excavating.

The forecast for this is $865,000 in 2019 for an additional 8 FTEs supporting Dig-In Prevention Program. These FTEs will perform the following duties:

- Investigate and collect detailed data on excavation damages.
- Visit excavators in the field; meet and talk through 811 process of safe excavation. Ask for candid feedback on SoCalGas' procedures and processes to help streamline and simplify where needed.
- Work with Claims and integrity Management to identify routine excavation damage offenders. Know when they are working jobs in the Analysts area and pay closer attention to jobs.
- Spot-check locate and mark activities, especially higher risk tickets.
- Work with Operating Districts, equipment, procedures, and locate and mark techniques.
- Meet with Municipal Planning Departments about excavation laws and permitting process.
- Meet with builders, new business planners, contractors. Discuss opportunities to minimize excavation damages.

<u>Gold Shovel</u>

The project encompasses SoCalGas' adoption of the Gold Shovel Standard. The Gold Shovel Standard is a program designed to strengthen professional contractors' commitment to safe excavation practices through incentives tied to obtaining contracts with the utility. All contractors who perform excavation activities when performing contractual work for SoCalGas will be required to be Gold Shovel Standard certified, which includes development of safe excavation policies and practices, process for acquiring employee feedback, and protection against retaliation of whistleblowers. Gold Shovel Standard membership will improve SoCalGas' insight to the excavation safety practices of the contractors it hires by allowing the

utility access to information regarding damages caused by contractors working for other entities anywhere in the United States.

The forecast for this project is $5,000 per year beginning in 2017.

b. Forecast Method

The five-year average was chosen as the foundation for future labor and non-labor expenses. However, an adjustment was made to reflect an anticipated increase in personnel and non-labor costs in which additional staffing and resources are identified and described in the cost drivers below. These incremental costs have been added to the five-year average.

c. Cost Drivers

The common drivers for the three damage prevention activities in this workgroup are the level of general construction and development activity in the public and private sectors. Examples of these types of construction activities include private construction projects, such as commercial and industrial centers, strip malls, residential remodeling projects, and city, county, and state projects, such as freeway and street improvements, and storm drain and sewer work. In addition, as SoCalGas' infrastructure expands into outlying areas to provide service to new residential developments, increased activity follows, as developers move in to construct schools, shops, restaurants, etc., to meet the needs of those new communities.

Local and state agencies continue to impose new, and often more stringent, operating conditions that can result in increased cost pressures to maintain the gas distribution system. Increasing permit costs and construction requirements, such as engineered traffic control plans, additional paving requirements, and a growing trend toward restricted working hours, will increase SoCalGas' expenses when excavating for depth to identify elevation data of SoCalGas' facilities in public rights-of-way in advance of construction projects.

D. Asset Management

1. Business Process ESS Implementation and ESS Mobile Solutions (Cost Center 2200-0302)

a. Description of Costs and Underlying Activities

The activities associated with this cost center include the labor and expenses associated with implementation of Systems to support Business Processes associated with Material Traceability, Materials Management, and development of departmental websites development.

These expenses include the team lead, one Business Analyst, one project specialist and one Senior Business analyst. Activities managed include compiling test script inventory for software release cycles; administration; developing business solutions related to materials management software; and developing reports, departmental websites, and other essential data deliverables to meet increased demand for customized information visualization and data analytics. The information provided by this group, along with its related activities, help support the operation and engineering groups to assess probability and consequence of asset failure. This information supports the mitigation of safety and reliability risks.

b. Forecast Method

The five-year average was chosen as the foundation for future labor and non-labor expenses. However, an adjustment was made to reflect an anticipated increase in personnel and non-labor costs in which additional staffing and resources are identified and described in the cost drivers below. These incremental costs have been added to the five-year average.

c. Cost Drivers

The cost drivers behind this forecast are: the projected expenses and activities to manage development and maintenance of software related to material traceability, departmental website development and maintenance, the compiling of test scripts inventory for software release cycles; and the administration and development of solutions related to asset management. As a proposed mitigation plan in RAMP SCG-8 Records Management, SoCalGas proposed to continue the process to consider the implementation of the Enterprise Asset Management System (EAM) solution on a phased basis. The EAM solution is intended to be SoCalGas' core operating environment that will integrate historical and current data stored in various SoCalGas enterprise systems, including data stored in the Geographic Information System (GIS),[20] Document Management System,[21] Maintenance Management System,[22] and System Monitoring & Control.[23] EAM improves safety, integrity, transparency, and availability of pipeline asset

[20] GIS contains asset material attributes, locational and connectivity details, pipeline integrity assessment details, etc.
[21] Document Management System contains work order documents, pipeline condition maintenance reports, photographic records, etc.
[22] Maintenance Management System contains asset material attributes, inspection details, etc.
[23] System Monitoring & Control system contains system monitoring information, historical SCADA information, etc.

records by integrating asset data with equipment safety and handling information as well as validating that appropriate documentation is used. Experience has shown that effective integration with GIS, Work Management (WM), Material Management (MM), Document Management (DMS) and Real-time Monitoring Systems provides the ability to access, use, display, and manage pipeline related records and data in timely and efficient manner.

Overall, the EAM project implementation consists of analyzing, defining, reconciling and removing the inconsistencies of the pipeline related data in various systems, consolidate redundant systems, redefine business processes and install new hardware and software infrastructure. EAM will employ the enterprise application integration (EAI) approach. EAI is an open integration approach that will be incorporated in a hybrid approach with point-to-point application programming interfaces (APIs).

In parallel to EAM, SoCalGas proposes an initiative to digitize its records. This is an initiative that is being undertaken by many companies and government entities.[24] SoCalGas' records have evolved over the life of the operational assets, and transferring existing paper records to an electronic format (digitization) is one aspect of modernizing SoCalGas' records. In addition to digitization, SoCalGas' initiative will also add search ability and traceability functionality. Regulatory compliance standards increasingly require that utilities be able to efficiently and effectively identify specific attributes related to operational assets. As a result, having applications for records management that enable search ability and traceability functionality are important.

2. Applications (Cost Center 2200-0303)

a. Description of Costs and Underlying Activities

The Applications cost center includes expenditures for labor and non-labor expenses to support a broad range of computer programs and systems that are not provided by the Company's Information Technology group. The work included within this cost center is to manage, develop, and support Records and Document Management Systems to support specialized computer-aided drafting and design for Engineering Applications; manage and support the Gas computer-aided drafting and design and policies; manage and support hardware,

[24] *See e.g.,* MAXIMUS Federal, *at* http://www.maximus.com/federal/technology/data-solutions/document-and-records-management.

file management, and back-end processes; manage help desk tickets and client support calls; manage, develop, and maintain the Formal Communications Document Library and Publish Gas Standards; and develop and maintain Gas Operations internal websites. Expenditures covered in this cost center accounts for labor and expenses to support computer programs and systems not provided by the Company's Information Technology group. The work included within this cost center is to: manage, develop, and support specialized computer-aided drafting and design for Engineering Applications; manage and support the Gas computer-aided drafting and design policies; manage and support hardware, file management, and back-end processes; manage Help Desk tickets and client support calls; manage, develop and maintain the Formal Communications Document Library and publish Gas Standards; and develop and maintain Gas Operations internal websites.

b. Forecast Method

Both the labor and non-labor expenses for this cost centers have been consistent over recorded historical data. This trend is expected to continue, and for future labor and non-labor expenses, the five-year average methodology was chosen.

c. Cost Drivers

The cost drivers behind this forecast are continued support of the information systems.

3. ESS Production Support (Cost Center 2200-0305)

a. Description of Costs and Underlying Activities

ESS organization maintains and provides support for business applications used by Gas Transmission, Distribution, and Storage organizations for both utilities. These applications are utilized by the organizations in support of meeting regulatory requirements.

ESS develops and maintains more than two dozen applications that are used by Gas Transmission and Gas Storage organizations. The group also provides first-level support to users of several enterprise business application users that are developed and maintained by the central Information Technology (IT) organization. Users of business applications are supported through phone calls, emails, Help Desk ticketing system, and walkups from 6:00 am to 6:00 pm during week days. The team monitors interfaces between applications, resolve program interface issues, publishes client communications (release notes, information bulletins, outage notifications, technical bulletins, interim process bulletins, applications instructions, webcasts, etc.), supports

hardware used in the field (mobile devices and peripheral equipment), maintains training environments, and manages systems modifications/change requests including software quality assurance (QA) activities.

A list and description of the applications maintained by ESS in support of meeting regulatory requirements can be found in the glossary in Appendix A of this testimony.

b. Forecast Method

The five-year average was chosen as the foundation for future labor and non-labor expenses. However, an adjustment was made to reflect an anticipated increase in personnel and non-labor costs in which additional staffing and resources are identified and described in the cost drivers below. These incremental costs have been added to the five-year average.

c. Cost Drivers

The cost drivers behind this forecast are the expenses and activities, as stated previously, which include testing, evaluation, selection, strategic planning, and providing support to users of business applications that are used by Gas Transmission, Gas Distribution, and Gas Storage organizations for both SoCalGas and SDG&E. As a proposed mitigation plan in RAMP SCG-8 Records Management, Information Management System (IMS) is a broad category that encompasses the various applications that support records management such as the Geographic Information System, Work Management, Document Management, and Real-time Monitoring Systems. These applications provide SoCalGas system attribute information such as design, materials and construction methods, pipeline condition, past and present operations and maintenance, local environmental factors, and failure data (*e.g.*, leaks). The IMS allows employees and contractors to assist them in performing their operational work safely and accurately. For the breakdown of cost adjustments, refer to the testimony of Mr. Olmsted (Ex. SCG-26).

4. Work Management and Databases (Cost Center 2200-0306)

a. Description of Costs and Underlying Activities

Activities associated with this cost center include the support of Work Management Systems for Measurement and Regulation (M&R), System Protection Specialists (SPS) and Work Order Tracking (WOT) applications, AutoSol Enterprise System (AES), and the MyProjects enterprise system. This cost center also supports the SDG&E Gas Technical

Services Group in Miramar; specifically, the Electronic Data Management System (EDMS) and the Cathodic Protection Data Management (CPDM) applications. These systems are key operational systems to support field functions to verify pipeline and ancillary facilities continue to be fit for service. The activities and forecast in this department are part of the RAMP SCG-8 Records Management, as described earlier in my testimony.

b. Forecast Method

The five-year linear forecast method was chosen for the labor in this group because the historical data indicate that activities and staffing levels have been consistently linear and this trend is expected to continue. Therefore, the most appropriate method to estimate future expenses is the five-year linear forecast. However, new and unique work management and database development are required for compliance; thus, additional staffing and resources are incremental costs that have been identified and added.

c. Cost Drivers

The primary cost drivers are system expansions and the need for upgrades to key operational software applications, cumulative application, and server support from the growth.

5. Contract and Maintenance (Cost Center 2200-0308)

a. Description of Costs and Underlying Activities

This cost center accounts for the labor and non-labor expenses associated with software licenses and maintenance contracts for Operations Technology. Operations Technology manages, administers, and maintains hardware, software, and back-end processes that support the systems and applications of various organizations at SoCalGas and SDG&E, including Safety, Distribution, Customer Service, Environmental, Transmission and Engineering.

b. Forecast Method

Both the labor and non-labor expenses for this cost centers have been consistent over recorded historical data. This trend is expected to continue, and for future labor and non-labor expenses, the five-year average methodology was chosen.

c. Cost Drivers

The cost driver is the periodic license renewal of various software in Gas Engineering used to support the operation. Upgrades and licensing fees are externally driven based on the manufacturer's life-cycle schedule and breadth of the upgrade.

6. Enterprise Geographic Information System (eGIS) (Cost Center 2200-2376)

a. Description of Costs and Underlying Activities

The need to gather and harmonize the disparate data sets is being addressed by the synchronization of the GIS system. This includes the synchronization of eGIS and High-Pressure Pipeline Database (HPPD) data into a single GIS data model. The high-pressure pipe (maximum operating pressure greater than 60 psi), medium-pressure pipe (maximum operating pressure less than or equal to 60 psi), storage field pipe, and other above-ground facility pipes exist across multiple GIS and computer-aided drafting and design databases and software platforms. For example, transmission pipeline integrity requires a real-world representation of a pipeline location to calculate a risk assessment on a pipeline and therefore, cannot use a model that does not have a GPS level accuracy, such as the enterprise GIS system.

Since the Transmission Integrity Management Program (TIMP) is comprised of facilities operated by the Transmission, Distribution and Storage organizations at SoCalGas, data often resides in multiple systems with different levels and types of data attribution. Gas Distribution and Storage have specific O&M compliance requirements that cannot be efficiently met in the high-pressure pipeline database or with the current set of business processes because the vendor-supported application does not allow for internally developed customizations. Given TIMP requirements, and the constraints of the existing systems, a solution needs to be evaluated and executed to keep the data consistent and to improve and reconcile data attribution. The eGIS does not allow for linear referencing and the HPPD does not allow for much of eGIS' functionality (*i.e.*, network tracing to support cathodic protection, dimensioning to support locate and mark, etc). The proposed enhancements will enable improved pipeline asset management, safety, and integrity modeling and will better enable the ability to meet current and future regulatory and reporting requirements, which further support base and proposed mitigation plans for RAMP SCG-8 Records Management. The activities associated with the synchronizing project include the following:

- Providing a synchronized view of high-pressure asset data across GIS and computer-aided drafting and design systems;
- Developing new data models for high-pressure distribution, transmission, and storage data;

- Reconciling existing assets and their attribution;
- Converting selected linear asset data to a geospatial format to support connectivity modeling;
- Converting and reconciling various existing electronic and non-electronic data sources into a single robust database to manage, store, preserve, and deliver key documents and information; and
- Link documentation to asset data in GIS and Maintenance Management Systems.

Furthermore, the activities associated with this cost center include the following:

- Identification and documentation of system of record;
- Conversion of linear assets to geospatial data and Quality Assurance/Quality Control of data;
- Technical enhancements for forward-looking data capture;
- Policy changes and process improvements; and
- Improved risk assessment, analytics, and reporting capabilities.

b. Forecast Method

The five-year linear forecast method was chosen for the labor in this group because the historical data indicate that activities and staffing levels have been consistently linear and this trend is expected to continue. Therefore, the most appropriate method to estimate future expenses is the five-year linear forecast. However, new and unique work management and database development are required for compliance; thus, additional staffing and resources are incremental costs that have been identified and added.

c. Cost Drivers

The cost drivers behind this forecast are the expenses and activities in this cost center as well as the O&M component of the High-Pressure Synchronization project. Other cost drivers for this group include multiple resources to support upward pressures and efforts related to AVEVA 3D modeling of storage pipelines, Renewable Natural Gas, and best practices for Records Management Operational Compliance & Oversight, please refer to the proposed mitigation plan in RAMP SCG-8 Records Management.

E. Records Management and Programs

1. Records Management and Programs (Cost Center 2200-7242)

a. Description of Costs and Underlying Activities

SoCalGas has launched a centralized records management and programs organization for several reasons. First, it allows SoCalGas to continue executing on its proposal of an Enterprise Asset Management(EAM) system and the modernization of records while additionally identifying other potential opportunities to improve its records management program and oversight on day-to-day activities.

This organization would provide centralized operational oversight for records management processes in specific operational areas and would provide dedicated full-time records management over the daily tasks and activities performed. Records management specialists representing each functional area in Gas Operations would serve as the 'eyes and ears' of the centralized operational records management organization and be a bridge to provide real-time feedback on continual improvement of SoCal Gas' records-related programs. Additionally, this group will work with expert consulting resources to help evaluate the current Records Management policies and procedures, benchmark industry best practices, evaluate compliance with current and proposed regulatory requirements, and identify any potential areas of improvement.

As a proposed mitigation plan in RAMP SCG-8 Records Management, SoCalGas anticipates needing an additional 15 employees who would effectively be records management specialists; 1-3 individuals for each functional area (Gas Transmission, Gas Distribution, Storage, and Engineering). These resources would be in addition to Financial Systems and Record Coordinators. These new resources will contribute to the enhancement of records management within SoCalGas by strengthening written procedures so that operating maps and data are updated and accurate, while also increasing analysis of systems by adding continuous improvements to these processes to support the mitigation of incidents. The new resources will also contribute to the advancement of information maturity scores, under the Generally Accepted Records Keeping Principles (GARP), while also communicating recordkeeping expectations to Gas Transmission, Gas Distribution, and Storage, reinforcing employees' responsibilities in

records management policies and procedures. These resources will also enhance existing training on records management that will further support increasing GARP maturity levels.

This organization will oversee the Gas Standards Governance, which contributes to operating and maintenance procedures that help mitigate human error and compliance, while promoting consistently safe employee actions. These quality control procedures will support adherence to establish standards and procedures for pipeline materials, equipment, and construction that will reside within the Records Management and Programs organization. SoCalGas anticipates needing an additional 4 employees in support of the Gas Standard Governance.

b. Forecast Method

SoCalGas chose a zero-based methodology because the Records Management and Programs department was newly created in late 2016/early 2017, which has no past cost history for the newly inaugurated functions. Labor is composed of Records Management and Programs Department management and non-management direct salaries associated with the work to support the management and execution of large projects. There is a complementary cost element for each added position. It is the non-labor component. The non-labor cost is composed of employees' expenses, employee training costs, software license fees for project management and control systems, and consulting fees. Under this category of work, SoCalGas is requesting a total of $1,900,000. Specifically, the increase over the 2017 recorded costs is $500,000. This increase reflects the full year's salary of the staff to be hired in 2018 and to begin implementation and enhancement of planning, project controls, and quality management systems and practices.

c. Cost Drivers

The cost drivers behind this forecast are the time and effort to develop the new Records Management and Programs organization.

V. CONCLUSION

The SoCalGas forecast of the O&M expenses represented in my testimony balances compliance obligations, risk, and the cost to deliver safe, clean, and reliable natural gas service.

Thus, SoCalGas requests the Commission adopt a TY 2019 forecast of $32,904,000 for Gas System Integrity O&M expenses, which is composed of $15,598,000 for non-shared service activities and $17,306,000 for shared service activities.

In summary, these forecasts reflect sound judgment and represent the impact from higher regulatory expectations to continuously enhance the safety of the SoCalGas natural gas system and provide safe, clean, and reliable natural gas service at reasonable rates. The Commission should adopt the forecasted expenditures discussed in this testimony because they are prudent and reasonable.

This concludes my prepared direct testimony.

VI. WITNESS QUALIFICATIONS

My name is Omar Rivera. My business address is 555 West Fifth Street, Los Angeles, California 90013. I am employed by SoCalGas as the Director of Gas System Integrity Staff & Programs. In this position, I am responsible for providing strategic direction and management of policies, procedures and programs to comply with safety and other codes in an efficient and repeatable manner. The principles of continuous improvement are embraced to optimize and standardize activities while enhancing safety. Metrics for performance monitoring are set, monitored, and acted upon with Operations.

I have been employed at SoCalGas since 2000, and have held a variety of positions with increasing responsibility within Operations (Gas Distribution & Gas Transmission), Gas Engineering and Project Management Departments. I have worked in much of the SoCalGas and SDG&E service territories where I have been responsible for various areas related to managing an operations transmission district, planning, installation, replacement of gas infrastructure, as well as providing leadership in implementing Gas Standards, business process enhancements, and compliance assurance support. I have held my current position as Director of Gas System Integrity Staff & Programs since January 2017.

I hold a Bachelor of Science degree in Mechanical Engineering from California State Polytechnic, Pomona.

I have not previously testified before the Commission.

LIST OF ACRONYMS

ACRONYM	DEFINITION
AB	Assembly Bill
AES	AutoSol Enterprise System
API	American Petroleum Institute
APIs	Application programming interfaces
ASME	American Society of Mechanical Engineers
Bcf	Billions of cubic feet
C.F.R.	Code of Federal Regulations
CPDM	Cathodic Protection Data Management
CPUC	California Public Utilities Commission
DIMP	Distribution Integrity Maintenance Program
DMS	Document Management System
DOT	Department of Transportation
EAI	Enterprise application integration
EAM	Enterprise Asset Management System
EDMS	Electronic Data Management System
eGIS	Enterprise Geographic Information System
ESCMP	Environmental and Safety Compliance Management Program
ESS	Enterprise System Support
FOF	Fueling Our Future
FTE	Full-Time Equivalent
GARP	Generally Accepted Records Keeping Principles
GIS	Geographic Information System
GO	General Order
GRC	General Rate Case
HPPD	High-Pressure Pipeline Database
HR	Human Resources
IMS	Information Management System
IT	Information Technology
KPI	Key Performance Indicator
M&R	Measurement and Regulation
MAOP	Maximum Allowable Operating Pressure
MDT	Mobile Data Terminal
MM	Material Management System
O&M	Operations and Maintenance
OII	Order Instituting Investigation
OpQual	Operator Qualification
PAA	Public Awareness Administrator
PG&E	Pacific Gas and Electric Company
PHMSA	Pipeline and Hazardous Materials Safety Administration
PSCP	Pipeline System Construction Policy
PSEP	Pipeline Safety Enhancement Plan
psi	pounds per square inch

PSMP	Pipeline System Maintenance Policy
PSMS	Pipeline Safety Management System
RAMP	Risk Assessment Mitigation Phase
QA	Quality assurance
RP	Recommended Practice
SAP	Systems, Applications, and Products in Data Processing
SB	Senate Bill
SDG&E	San Diego Gas & Electric Company
SED	Safety and Enforcement Division
SMYS	Specified Minimum Yield Strength
SoCalGas	Southern California Gas Company
SPS	System Protection Specialists
TIMP	Transmission Integrity Management Program
TY	Test Year
USA	Underground Service Alert
WM	Work Management System
WOT	Work Order Tracking

APPENDIX A – Glossary of Applications

Application	Description
SAP-PM	System for managing Maintenance and Inspection work in Gas Distribution as well as the pipeline construction Planning and Design.
Click Scheduling	System for Scheduling and Dispatching Maintenance and Inspection work
Click Mobile	System for electronic delivery of work orders to the field personnel and capturing Maintenance and Inspection results
NBMS	New Business Management System to initiate new business projects
CMS	Construction Management System to plan and reconcile construction work (this has been replaced by SAP PM CPD (Construction, Planning, & Design with a planned decommissioning date of 2018. In flight work continue to be processed through CMS).
Data Mart/BI	Tools for storage, analysis and reporting of Distribution Maintenance and Inspection, and Pipeline Construction results
ARCOS	Automated Resources Call Out System to assemble and track repair utility crews for emergency and after hour work by automating the calling process and complex scheduling, union and business rules.
Maximo	System for managing Maintenance and Inspection work in Gas Transmission and Gas Storage
WOT	Work Order Tracking – Business Process/Work Management system for managing activities in Gas Distribution Technical Services.
MyProjects	Business Process/Work Management system for managing construction projects in Gas Engineering, Gas Transmission, PCM, PSEP and Gas Storage.
PDMS	Pipeline Document Management System
DRIP Forms	Electronic forms used for collecting Inspection data related to DRIP program
GIPP Forms	Electronic forms used for collecting Inspection data related to GIPP program

SLIP	Electronic forms used for collecting Inspection data related to SLIP program
DIMP/TIMP Risk Mgmt	Risk calculating application & Risk Score Reporting tool for SCG and SDG&E
GOPS	System for creating weather conditions reports
Lab Analysis	Data collection and approval workflow management system for lab analysis related to determining leaks root causes
IBM Cognos	Reporting system for Maximo, Eccentex, and Visiflow applications
Interlocs	Mobile system for Maximo work order delivery and Inspection Data Collection
OSI/PI	Data historian and Engineering/Operations analysis system for Gas Storage Supervisory Control and Data Acquisition (SCADA) Data
Autosol/AES	Electronic Pressure Monitoring and Alarm System for SCG and SDG&E
DDB	Electronic repository for storage and retrieval of Engineering Design Drawings
DDS	Electronic Design Data Sheet – Engineering Test Pressure Calculator
KorTerra	System for Locate and Mark activities. Receives USA tickets from our one call centers (North and South) and assigns tickets to our field Mobile Data Terminal (MDT) Locate and Mark users.
GIS	Geographic Information System - system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data
eGIS	Enterprise Geographic Information System – GIS which stores high and medium pressure pipeline data with a traceable network and conflated and dimensioned of a commercial land base.
HPPD	High Pressure Pipeline Database – GIS which stores high pressure pipeline data using real-world coordinates (GPS) and provides for linear referencing / stationing of assets.
AVEVA	Design software solution utilized to model complex assets in 3D

APPENDIX B – IT Capital Projects

IT Capital Projects	In 2017 $ (000s)	In 2018 $ (000s)	In 2019 $ (000s)	In Total $ (000s)
19060 3DPM-Work Order Sketching 2018 & 2019	0	1,714	1,714	3,428
19061 Gas GIS 2018-2019	0	4,634	4,637	9,271
19063 M&R (CLICK) Image Document Management	0	938	655	1,593
19064 Operator Qualification & Training Process Automation	1,291	412	0	1,703
19065 SCG CPD Enhancements Phase 4	1,141	1,673	0	2,814
19072 GT Leak Survey	0	854	3,682	4,536
19094 Click Enhancements Project	5,137	3,898	2,000	11,035
84255 3DPM WORK ORDER SKETCHING 2016 & 2017	1,145	623	0	1,768
84206 GAS GIS 2015 & 2016	4,721	0	0	4,721
84220 MATERIAL TRACEABILITY - SAP BATCH MGMT	4,360	0	0	4,360
84281 OSI PI GAS OPS DATA HISTORIAN & REPORTIN	468	342	0	810
84298 HP GAS CONSTRUCT RECORD & INFO MGMT SYSTEMS	275	0	0	275
84312 HP GAS CONSTRUCT RECORDS & INFO MGMT CONSOLIDATED SOLUTION	2,204	841	0	3,045
19131 HP GAS CONSTRUCT RECORDS & INFO MGMT SOLUTION PH2	0	4,187	2,271	6,458
84232 VIRTUAL LEARNING INTEGRATION TO SAP	953	0	0	953
84309 CPD PHASE 3	2,685	0	0	2,685
81452 CLICK UPGRADE (CU)	926	0	0	926
19125 GAS OPERATIONS DEPARTMENTAL WEBSITE REFRESH	575	0	0	575
19066 Enhanced M&R KPI and Analytic Reports	0	878	0	878

19067 Field Data Collection with eForm	0	1,903	1,903	3,806
19068 Gas Distribution and M&R Improvements	1,126	1,886	904	3,916
19069 Gas Operations: Maintenance & Inspection Project (Phase II)	0	3,417	1,256	4,673
19070 High Pressure Construction (Move from My Projects to SAP)	0	3,575	14,107	17,682
19071 Measurement and Reliability Compliance (MRC) CPD Metrics and Analytics	620	334	0	954
19073 Enhanced Operations and Compliance Departmental Reporting System	1,337	0	0	1,337
19075 Gas Materials Traceability Wave 3 & Wave 4	181	3,106	263	3,550
84225 GIS UPGRADE	4,743	0	0	4,743
19122 MDT Refresh 2018-2020	0	2,574	2,574	5,148
19114 FoF - GOPA Phase 4	1,082	211	257	1,550
In Total $ (000s)	**34,970**	**38,000**	**36,223**	**109,193**

SCG 2019 GRC Testimony Revision Log – December 2017

Exhibit	Witness	Page	Line or Table	Revision Detail
SCG-05	*Omar Rivera*	*OR-25*	*Table OR-8*	*Changed "3,734" to "4,734"*
SCG-05	*Omar Rivera*	*OR-25*	*Table OR-8*	*Changed "2,662" to "3,662"*