Company: Southern California Gas Company (U904G)
Proceeding: 2016 General Rate Case
Application: A.14-11-004
Exhibit: SCG-04-R

REVISED

SOCALGAS

DIRECT TESTIMONY OF FRANK AYALA

(GAS DISTRIBUTION)

March 2015

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Doc #295515

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GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
Total Non-Shared	105,258	137,077	31,819
Total Shared Services (Incurred)	3,409	7,909	4,500
Total O&M	**108,667**	**144,986**	**36,319**

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
Total CAPITAL	**218,164**	**274,426**	**271,848**	**273,616**

In total, Southern California Gas Company (SoCalGas or the Company) requests the Commission adopt its Test Year 2016 (TY2016) forecast of $144,986,000 for Gas Distribution Operations and Maintenance (O&M) expenses, which is composed of $137,077,000 for non-shared service activities and $7,909,000 for shared service activities. SoCalGas further requests the Commission adopt its forecast for capital expenditures in 2014, 2015, and 2016 of $274,426,000, $271,848,000, and $273,616,000, respectively. SoCalGas' O&M and capital requests are reasonable and fully justified in that:

- The activities are consistent with operational laws, codes, and standards established by local, state, and federal authorities.
- The activities are necessary to maintain the delivery of safe and reliable service to customers.
- The activities respond to operations, maintenance, and construction needs associated with projected customer and system growth and the demands of city, county, and state agencies under the Company's franchise agreements.
- The activities are necessary to maintain a qualified workforce.
- The activities support new field technologies.
- The activities support SoCalGas' commitment to mitigate risks associated with hazards to public and employee safety, infrastructure integrity, and system reliability.

The activities described in my testimony below are consistent with operational laws, codes, and standards established by local, state, and federal authorities. This includes inspection

and maintenance activities required under General Order 112-E, and by reference, 49 CFR 192. This work is necessary to safeguard the long term integrity of the system and includes compliance activities, such as facility inspections, cathodic protection maintenance, pipeline facility maintenance, and monitoring odorant levels. SoCalGas anticipates this work to continue to increase as it manages an aging infrastructure and to be responsive to regulatory and legislatives requirements. Furthermore, the work described in my testimony is in compliance with the requirements of Public Utilities Code Sections 961 and 963, which were enacted by Senate Bill (SB) 705 (Ch. 522, Stats. 2011). These code sections require "each gas corporation to develop and implement a plan for the safe and reliable operation of its gas pipeline facilities."[1]

The activities in my testimony are necessary to maintain the delivery of safe and reliable service to its customers. SoCalGas prioritizes its work to comply with laws and regulations and provide system integrity and reliability in accordance with our commitment to safety:

> Southern California Gas Company's longstanding commitment to safety focuses on three primary areas – employee safety, customer safety and public safety. 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 and reliable service to our customers.[2]

Following are some of the key work categories included in my request in support of this commitment to safety:

- Leak Repairs - Main and service line leak evaluation and repair work is completed to address public safety, infrastructure condition, and material failure. In addition to continuing with its historical level of work, SoCalGas requests incremental funding to reduce the level of pending leaks below historic levels. We believe that the incremental increase in funding will allow us to manage the risks associated with loss of containment.
- Locate and Mark - Gas facilities are located and marked to avoid third-party damage that could create a safety hazard and/or disrupt gas service. Through the completion of this work, SoCalGas provides important information to excavators to safeguard those working around gas facilities and protect the integrity of the pipeline system.

[1] Cal. Pub. Util. Code §§ 963(b)(3) and 961(b)(1).
[2] SoCalGas' Safety Plan, Attachment A-Executive Summary, filed June 29, 2012, in Rulemaking (R.) 11-02-019.

SoCalGas anticipates this work will continue to trend up, as seen in the last three years, due to an increase in construction activity in the public and private sectors.

- Leak Survey - SoCalGas proactively surveys its gas distribution system for leakage at frequencies determined based on the pipe material involved, the operating pressure, whether or not the pipe is under cathodic protection, and the proximity of the pipe to various population densities. SoCalGas forecasts that the historical upward trend in this work category will continue as the system expands and as the Company utilizes new technology (*e.g.,* Geographic Information System) to allow us to better assess gas distribution infrastructure and meet leak survey compliance requirements.
- System Renewal - This includes activities to replace and/or abandon pipeline facilities, such as mains, services, regulating and metering equipment, cathodic protection systems, and electronic equipment, that have reached the end of their useful lives and present risk of failure.

The activities in my testimony respond to operations, maintenance, and construction needs associated with projected customer and system growth and demands of city, county, and state agencies under the Company's franchise agreements. These activities support the Company's obligation to serve and mitigate system reliability risks. Some examples of this work include:

- New Business - System expansion is performed mainly to provide service to new customers and includes the installation of new pipeline infrastructure. These costs are incurred in response to SoCalGas' obligation to serve the growing customer base. SoCalGas anticipates this work will continue to increase as the number of new meter set installations increases with improving economic conditions.
- Capacity improvements such as adding new pipelines or replacing existing infrastructure with larger systems, is completed to accommodate customer and/or load growth. In addition to the routine work, SoCalGas forecasts the need for incremental large, non-routine, pressure betterments to support system capacity and reliability.
- Freeway and Franchise – This work is driven by external state, county, and municipal agencies that submit requests for SoCalGas to relocate pipe and associated facilities that would, in their current locations, interfere with planned construction or

reconstruction of freeways, highways, streets, sewers, storm drains, and water lines. SoCalGas anticipates that these agencies will continue with infrastructure improvements at the increasing rate seen in recent years, thus requiring an increase in funding to address SoCalGas' pipeline facilities alterations.

The activities in my testimony are necessary to maintain a qualified workforce. Safety is rooted in all phases of gas distribution training. As discussed further in my testimony below, SoCalGas is taking proactive action to address employee training, qualification, and work quality. An integral component of overall workforce proficiency is the Operator Qualification program. Operator Qualification compliance is closely monitored and employees are trained, either formally or informally, whenever significant changes occur in a work task or as required under SoCalGas' Gas Standards, CPUC General Order 112-E, and 49 CFR 192. 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.

The activities in my testimony support new field technologies. As SoCalGas continues to implement new field technologies to improve operations, the organization must embrace the change. Support systems must be in place to monitor the integration of these tools within the field and overall management practices. SoCalGas forecasts incremental activities associated with review of procedures and changes to processes; development of reports and tools to monitor the effectiveness of operations; identification and implementation of business improvements; and ongoing training of employees on system enhancements.

In preparing projections of TY2016 requirements, SoCalGas Gas Distribution Operations reviewed historical spending levels, including units of work, and developed an assessment of future requirements with consideration of the underlying cost drivers and associated risks. Depending on future expectations, a primary forecast methodology was selected based on historical averages, simple linear trending of historical data, base year (2013) adjusted recorded spending, estimated future growth, project-specific development based on identified projects or materials, or a combination of project-specific justification, as well as analysis of historic spending. In addition, work requirements that are incremental to levels of historical spending and necessary to maintain the safe and reliable operations of the distribution system and

supporting work processes were identified. An analytical calculation was then performed to determine the funding requirement of these new or more-extensive work elements. The overall result is a forecast that has its foundation based on the historical representation, to which are added prudent incremental expense requirements.

SOCALGAS DIRECT TESTIMONY OF FRANK AYALA
GAS DISTRIBUTION

I. INTRODUCTION

A. Summary of Costs

I sponsor the TY2016 forecasts for O&M costs for both non-shared and shared services, and capital costs for the forecast years 2014, 2015, and 2016, associated with the Gas Distribution area for SoCalGas.

In total, SoCalGas requests the Commission adopt its TY2016 forecast of $144,986,000 for Gas Distribution O&M expenses, which is composed of $137,077,000 for non-shared service activities and $7,909,000 for shared service activities. SoCalGas further requests the Commission adopt its forecast of capital expenditures for 2014, 2015, and 2016 of $274,426,000, $271,848,000, and $273,616,000, respectively. Table FBA-01 below summarizes my sponsored costs.

TABLE FBA-01
Southern California Gas Company
Test Year 2016 Summary of Total Costs

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
Total Non-Shared	105,258	137,077	31,819
Total Shared Services (Incurred)	3,409	7,909	4,500
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GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
Total CAPITAL	**218,164**	**274,426**	**271,848**	**273,616**

The purpose of this testimony is to demonstrate the reasonableness of SoCalGas' Gas Distribution capital expenditure and expense forecasts required to operate and maintain the gas distribution system and construct new gas distribution facilities, as necessary. SoCalGas' fundamental philosophy is to achieve operational excellence while providing safe and reliable delivery of natural gas to customers at reasonable cost. 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 are:

- Required to maintain safety;
- Reflective of local, state, and federal regulatory and legislative requirements;
- Necessary to maintain overall system integrity and reliability;
- Responsive to customer growth;
- Compliant with franchise obligations; and
- Required to maintain a qualified workforce.

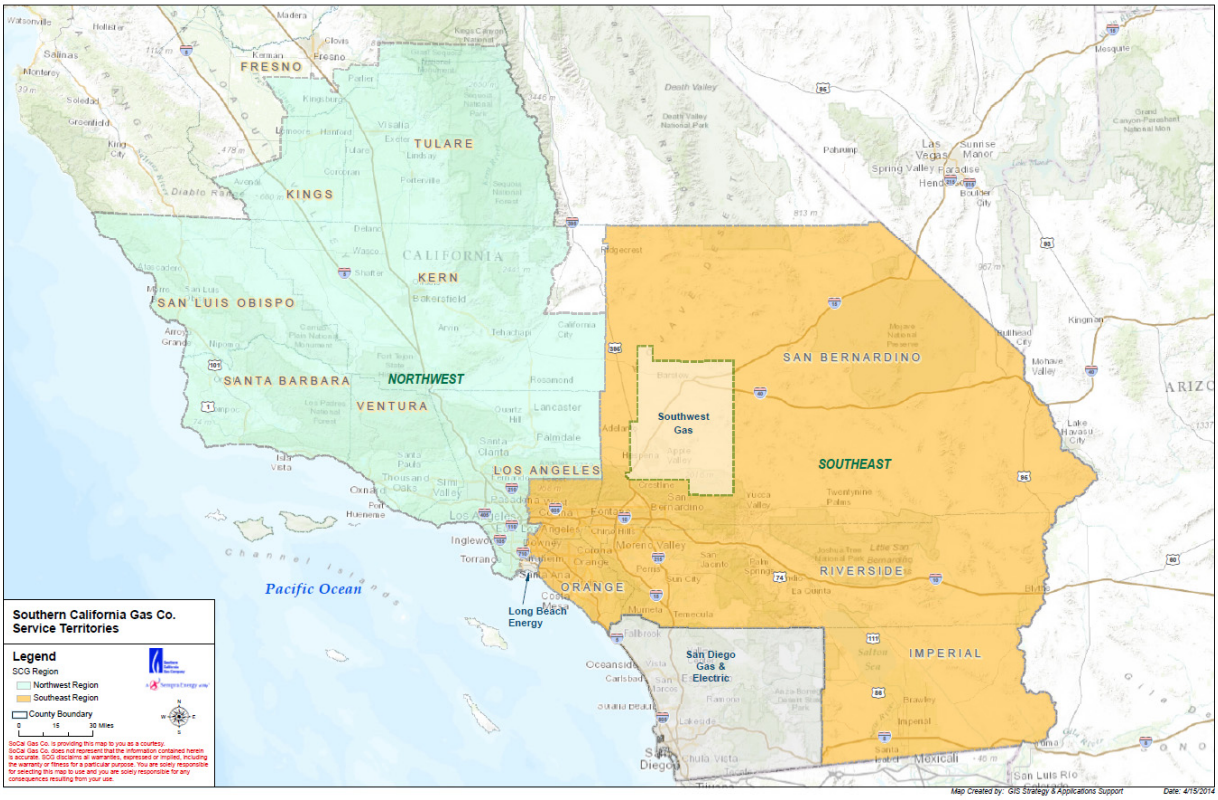
This testimony discusses non-shared and shared expenses in support of O&M functions for gas distribution mains and services, measurement and regulator stations, customer meters, regulators, and electronic equipment, and includes associated engineering, supervision, technical, and regional public affairs support. The capital expenditures represented here are in support of the installation, replacement, and relocation of distribution pipeline infrastructure. All costs in this testimony are shown in 2013 dollars, unless otherwise noted.

In addition to this testimony, please also refer to my workpapers, Exhibits SCG-04-WP (O&M) and SCG-04-CWP (capital), for additional information about the activities described here.

B. Summary of Activities

SoCalGas' gas distribution system consists of a network of approximately 99,400 miles of interconnected gas mains, services, and associated pipeline facilities. These mains and services, constructed of both steel and plastic materials in varying sizes, are located in most streets within SoCalGas' service territory. The primary function of this distribution pipeline network is to deliver natural gas from SoCalGas' transmission system to approximately 5.8 million customer meters in an area of approximately 20,000 square miles, stretching from Visalia in the north to Mexico in the south, and as far east as the California/Nevada border, as depicted in Figure FBA-01 below.

FIGURE FBA-01
Southern California Gas Company
SoCalGas Gas Distribution Service Territory



SoCalGas Gas Distribution maintains a network of approximately 50,400 miles of gas mains, which operate at either high-pressure (over 60 pounds per square inch (psi)) or medium-pressure (60 psi and below). This system contains numerous valves capable of isolating the large service territory into smaller operating areas for operational, construction, and emergency purposes. SoCalGas operates regulator stations located throughout the system to maintain gas pressure, regulate the distribution system, and provide adequate capacity to meet customer needs. The final component of this network is the gas service lines that connect these high- and medium-pressure mains to each customer meter set assembly (MSA) and "house pipeline." SoCalGas Gas Distribution maintains approximately 49,000 miles of service lines.

SoCalGas routinely performs work to maintain the daily operation of the system, connect new customers, maintain the necessary capacity to serve all customers, replace damaged or deteriorating facilities, and relocate facilities to meet customer or governmental agency needs. This work is accomplished by a well-trained and skilled workforce. This workforce ranges from

frontline construction crews to technical planners and field engineers. There are approximately 1,700 distribution employees located at four operating region headquarter facilities and 52 operating bases throughout SoCalGas' service territory. These employees are responsible for maintaining safe and reliable operation of the gas distribution system.

C. The Gas Distribution Organization Supports SoCalGas' Operational, Safety, and Reliability Goals

My cost forecasts support the Company's goals of achieving operational excellence while providing safe and reliable delivery of natural gas to customers at reasonable cost, while mitigating risks associated with hazards to public and employee safety, infrastructure integrity, and system reliability.

As noted above, SoCalGas operates approximately 99,400 miles of pipeline mains and services to meet the natural gas energy needs of customers. SoCalGas is committed to continued long-term investment in its pipeline infrastructure to maintain the integrity of its distribution system and comply with applicable local, state, and federal laws and regulations. SoCalGas actively evaluates the condition of its pipeline system through maintenance and operations activities, and replaces pipeline segments to preserve the safe and reliable system customers expect. SoCalGas and its customers cannot afford to wait for a major incident to occur to respond with necessary replacement activities. With the forecasted level of funding, and by continuing to identify ways to improve gas distribution system installation, operation, maintenance, and support activities, SoCalGas will have the necessary resources to continue to manage the gas distribution system through business and operational challenges, and will continue to provide safe and reliable natural gas service at reasonable cost.

SoCalGas faces a number of challenges affecting both the physical operation of the pipeline system and cost management aspects of its business that contribute to the forecasts presented in this testimony. These challenges include:

Trained and Qualified Workforce

Safety is rooted in all phases of gas distribution training. Maintaining a skilled, qualified, and dedicated workforce is critical to SoCalGas' continued success. It is through the efforts of these employees that SoCalGas is able to continue to deliver reliable service to customers and maintain the integrity of its pipeline infrastructure at reasonable cost. 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 as a result 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 Distribution is taking appropriate measures to maintain 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.
- Furthermore, SoCalGas is expanding its Operator Qualification program to better align with recommendations from CPUC auditors and industry leading practices, as well as 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."[3] This includes adding new qualification elements, developing qualification materials, establishing an electronic record-keeping process, and conducting training to qualify impacted employees.

Aging Infrastructure

SoCalGas has a long history of delivering safe and reliable natural gas service, notwithstanding the fact that a significant portion of the pipeline infrastructure has been in service for more than 50 years. Good maintenance practices have allowed SoCalGas to safely and reliably operate these pipeline facilities for this extended period of time, but this cannot

[3] Cal. Pub. Util. Code § 961(c).

continue forever. As the Company's pipeline infrastructure continues to age, it requires higher levels of maintenance, which results in higher costs.

In addition to aging pipelines, SoCalGas is also addressing the aging of other pipeline infrastructure, such as measurement and regulation equipment, electronic systems, and cathodic protection system components, such as anode beds and rectifiers. All components of the gas distribution system have a finite useful life that must be observed and repairs must be anticipated in order to avoid service interruptions, non-compliance situations, or adverse safety conditions.

System Expansion

SoCalGas' pipeline system continues to expand as new construction adds to the customer base and the need for pipeline infrastructure. New facilities add to the inventory of assets that require operations and maintenance attention. Pipelines must be leak-surveyed to monitor asset condition and any identified deficiencies must be corrected. Facilities must be located and marked to minimize potential damage from outside sources. System valves, meters and regulators must be inspected, operated, and maintained. Each of these actions must be completed in accordance with federal and state regulations and are critical to maintaining a safe and reliable distribution system for a growing base of customers.

Customer and Load Demands

As a public utility, SoCalGas is obligated to provide customers within its service territory natural gas service in accordance with tariff rules. As the customer base grows and expands, new demands are placed on existing infrastructure. For example, customer load growth creates the need for facility upgrades, increasing customer density can require the relocation of existing infrastructure, and general business improvements require the Company to protect its infrastructure from potential damage due to third-party construction. Field experience indicates that more favorable economic conditions lead to increases in various work requirements. SoCalGas anticipates that as the economy continues to recover,[4] this will impact activities related to customer and load demands.

State and Municipal Agency Construction Requirements

The construction, operation, and maintenance of SoCalGas' vast pipeline system require interaction and compliance with numerous agencies. These agencies continue to impose new

[4] IHS Global Insight is used as a directional indicator for general economic conditions and potential economic growth.

and often more stringent administrative, planning, and field construction operating conditions that can result in increased cost pressures to maintain the gas distribution system. This includes increased costs associated with permits, traffic control plans, paving repair requirements, and restricted work hours. SoCalGas works diligently with these agencies to find solutions that are in the best interest of customers and agencies. Nevertheless, these rules often result in cost increases.

Integration of Technology

SoCalGas is implementing technology-based systems and processes that will change the way personnel plan, monitor, and document construction projects. The forthcoming process changes will require training of employees on the new technology tools and business process changes. Once this technology is implemented, the organization must embrace the change. Support systems must be in place to facilitate the integration of these tools within field and management practices. This will require technical support for impacted employees, updating of field procedures and training materials, and support to implement process changes. Reports and tools will need to be established to gather, consolidate, and summarize newly-available data to monitor the effectiveness of operations and identify future business improvements.

D. Gas Distribution Safety and Risk Considerations

SoCalGas' Risk Management and Policy witness, Diana Day (Exhibit SCG-02), and Gas Operations Risk Policy witness, Douglas Schneider (Exhibit SCG-03), describe how safety and security risks are assessed and factored into SoCalGas' investment decisions. My testimony includes costs to mitigate Gas Distribution risks primarily associated with public and employee safety, system reliability, regulatory and legislative compliance, and pipeline system integrity.

O&M and capital 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.

Generally, examples of O&M activities categorized as safety and compliance include: leak survey and patrols; leak repairs; locate and mark, stand-by observations, and depth checks;

inspections of valves, bridges, spans, and measurement and regulation facilities; and maintenance of cathodic protection systems. These elements are generally prioritized ahead of work that can be safely managed to occur within a more flexible schedule. For example, in the case of Code 1 (hazardous) leaks,[5] Gas Distribution crews are required to take immediate and continuous action until the hazard has been mitigated. Activities with more flexible schedules that are also required to safeguard the integrity of the pipeline system include: main and service alterations; compliance work self-audits; and employee training. Additionally, there are a number of support activities necessary to complete work. These include: dispatch and work scheduling; supervision; technical support; tools; technology systems; and quality assurance.

In addition to O&M activities, to maintain safe and reliable service, SoCalGas makes a variety of capital improvements, including pressure betterment projects to improve areas of low pressure, pipeline renewals to replace deteriorated pipelines or obsolete equipment, installations and replacements of cathodic protection systems, and the purchase of electronic monitoring devices for pressure tracking. The specific factors considered in the prioritization process of capital work may vary depending on the type of project. For example, new business installations and freeway and franchise relocations are coordinated to address customer scheduling requirements. Pressure betterment requirements are assessed in concert with engineering analysis of system design, and in compliance with reliability guidelines. The prioritization of pipeline projects (*e.g.,* mains, services, cathodic protection, valves, and regulator station replacements) is driven by a review of maintenance activities and findings, results of field workforce inspections, and records of condition. These inspection evaluation elements are some of the factors used to determine replacement needs.

Other factors considered for the replacement of assets include the age of the infrastructure, general equipment reliability, and/or design obsolescence. In addition, during the evaluation of distribution main and service replacements, field and technical staff consider the results from a computational model used to help assess the risk-rank of pipeline segments.

Since capital work is dynamic, ongoing assessment of system operations is necessary. For example, construction timelines can be affected by permitting, material availability, customer schedules, other construction-related factors, and/or additional work requirements that

[5] Leaks are prioritized for ongoing field response based on a number of factors including location, concentration of gas, and hazard to the public and property.

may arise throughout the year in response to maintenance, inspection, and other routine activities. These real-time operational situations are considered when evaluating and subsequently addressing daily distribution pipeline safety and reliability risks.

E. Support To and From Other Witnesses

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 Douglas Schneider (Exhibit SCG-03, Gas Operations Risk Policy), Maria Martinez, (Exhibit SCG-08, Pipeline Integrity for Transmission and Distribution), Sara Franke (Exhibit SCG-10, Customer Services Field and Meter Reading), Carmen Herrera (Exhibit SCG-15, Fleet and Facility Operations), Jill Tracy (Exhibit SCG-17, Environmental Services), Chris Olmsted (Exhibit SCG-18, Information Technology), Mark Diancin (Exhibit SCG-25, Shared Services and Shared Assets Billing Policies and Processes), and Rose-Marie Payan (Exhibit SCG-30, Customers) .

1. Small Meter and Regulator Purchases

I sponsor the capital costs associated with the purchase of both Gas Distribution and Customer Services meters and regulators. The labor costs associated with the replacement of small meters and regulators, typically at residential and small commercial sites, can be found in the prepared direct testimony of Sara Franke, Exhibit SCG-10. Additional information about these capital purchases may be found in Section IV.M (Measurement and Regulation Devices) of my testimony.

2. Curb Regulator Replacements

In addition to sponsoring my own organization's costs, I also provide business justification for witness Sara Franke, Customer Services Field, for work related to the proactive replacement of curb regulators. This effort will replace an incremental number of regulators that are either susceptible to corrosion or have exceeded their life expectancies. Additional information about this work element and the capital cost to purchase these units are included in Section IV.M (Measurement and Regulation Devices) of my testimony. The labor costs associated with the installation of these curb regulators may be found in the prepared direct testimony of Sara Franke, Exhibit SCG-10.

3. Information Technology Capital Projects

I provide the business justification for 13 Information Technology capital projects that are sponsored by Chris Olmsted in his prepared direct testimony, Exhibit SCG-18. The business

justification for these projects may be found in Section IV.P (Information Technology Capital Projects) of my testimony.

4. New Meter Set Forecast

Gas Distribution's New Business construction capital costs, and related meter and regulator unit purchases, are driven by the number of new customer meter set installations. Details on the forecast of customer meter sets can be found in the workpapers of SoCalGas' Customers witness, Rose-Marie Payan, Exhibit SCG-30-WP. Additional information about the forecasts related to new meter sets may be found in Sections IV.B (New Business Construction) and IV.M (Measurement and Regulation Devices) of my testimony.

5. Economic Growth

Gas Distribution relied on non-farm employment growth, as reported by IHS Global Insight, as a directional indicator for general economic conditions and potential economic growth. This IHS Global Insight employment forecast is shown in the SoCalGas Customers workpapers of witness Rose-Marie Payan, Exhibit SCG-30-WP. Additional information may be found in the following sections of my testimony: Section I.C (Customer and Load Demands); Section II.B.1 (Locate and Mark); Section II.C (Asset Management); Section IV.C (Pressure Betterment); Section IV.G (Main and Service Abandonments); Section IV.J (Pipeline Relocations – Freeway), Section IV.K (Pipeline Relocations – Franchise), and Section IV.L.1 (Other Distribution Capital Projects).

6. Incremental Vehicles

In order to perform the incremental work associated with the forecasted level of O&M and capital activities, SoCalGas is adding the following vehicles in each year:

TABLE FBA-02
Southern California Gas Company
Incremental Vehicles

Vehicle Type	2014	2015	2016	Testimony Sections
Light Duty Vehicle	36	27	33	II.B.1, II.B.2, II.B.4, II.B.7, II.C, II.D, IV.O
Medium Duty Vehicle (Van)	2	0	0	II.D
Heavy Duty Vehicle (Crew Truck)	37	19	15	II.B.5, II.B.6, IV.B, IV.C, IV.E, IV.I, IV.L.2
Total	75	46	48	

The costs associated with these vehicles may be found in the direct testimony of Carmen Herrera (Exhibit SCG-15).

7. Shared Services

I sponsor the O&M Shared Services forecasts on a total incurred basis, as well as the shared services allocation percentages related to those costs. This may be found in Section III of my testimony, O&M Shared Costs. The dollar amounts allocated to affiliates are presented in the Shared Services and Shared Assets Billing Policies and Processes testimony of Mark Diancin, Exhibit SCG-25.

8. Distribution Integrity Management Program Activities Moving to Gas Distribution Operations

Three activities currently funded through 2015 as part of a Distribution Integrity Management Program (DIMP) pilot program have proven to be successful and will become part of routine Gas Distribution operations by 2016. These activities are discussed in my testimony in Section II.D (Operations Management and Training). These activities are included in the 2014 and 2015 DIMP forecast in the prepared direct workpapers of Maria Martinez, Exhibit SCG-08-WP.

9. Leak Reduction Effort

Leak repair work is completed to address public safety, infrastructure condition, and material failure. Over the years, SoCalGas has accumulated a backlog of non-hazardous leak indications. After the San Bruno pipeline incident occurred in Northern California, customers and legislators expressed concern regarding SoCalGas' pending (non-hazardous) natural gas leaks. SoCalGas has examined its practice of maintaining a non-hazardous leakage backlog and is taking action to significantly reduce these leaks. This reduction of pending leaks is in alignment with SB 1371, which requires the adoption of rules and procedures to reduce natural gas emissions, specifically from natural gas leaks.[6] This bill is discussed in the prepared direct Environmental Services testimony of Jill Tracy, Exhibit SCG-17. Additional information about this may be found in Section II.B (Field Operations and Maintenance) and Section IV.F (Service Replacements) of my testimony.

[6] *See* SB 1371 Natural gas: leakage abatement (September 21, 2014).

F. Exclusion of Advanced Metering Infrastructure (AMI)

Commission Decision (D.) 10-04-027 authorized SoCalGas to deploy AMI to approximately six million customers over a period of seven years. Based on this timing, SoCalGas does not expect to complete AMI deployment until 2017. Accordingly, as described in Witness Rene F. Garcia's testimony (Exhibit SCG-39), all SoCalGas forecasts presented in this application, including the forecasts in this testimony, reflect business operations, processes and practices without AMI deployment (i.e., "business as usual"). It should be noted, however, that implementation of AMI involves both costs (i.e., increases to revenue requirement) and benefits (i.e., decreases to revenue requirement). The combined result is a net revenue requirement that is then embedded in rates. Since a forecasted net revenue requirement for SoCalGas AMI over the 2010 through 2017 timeframe was already approved in SoCalGas Advice Letter 4110,[7] a net revenue requirement is already embedded in SoCalGas rates. Accordingly, if the Commission authorizes operating expenses in this forecast period that are materially different than those assumed in SoCalGas' approved AMI net revenue requirement that is currently in rates, then the differences may need to be reconciled in an updated advice letter to provide that embedded AMI operating benefits are consistent with and no more or no less than what is authorized in this application.

The following sections of testimony focus on each O&M and capital funding request. Each presentation addresses the activities completed, historical spending, projected business challenges, and justification for the request. Section II is dedicated to O&M Non-Shared Services, Section III to O&M Shared Services, and Section IV to capital expenditures. Concluding remarks are presented in Section V, followed by my Witness Qualifications in Section VI.

In addition to this testimony, also refer to my workpapers, Exhibits SCG-04-WP (O&M) and SCG-04-CWP (capital) for additional information about the activities described herein.

[7] Approved on August 4, 2010, effective April 8, 2010.

II. NON-SHARED OPERATIONS AND MAINTENANCE COSTS

A. Introduction

Operations and maintenance activities are routinely performed on approximately 99,400 miles of gas distribution main and service pipeline and associated facilities in response to federal and state regulatory agency codes and standards,[8] customer and pipeline growth expectations, franchise obligations, and to sustain safe and reliable operation of the pipeline system. This work includes leakage surveys, leak repairs, maintenance on mains and services, application of corrosion control measures, valve maintenance, regulator station maintenance, monitoring meter accuracy, checking for odorant, and locating and marking buried pipes to avoid damage caused from digging by others. In addition, there is a variety of supporting work necessary to complete this field operations and maintenance work. Examples of support work include maintaining pipeline maps and related gas system location information, administering and implementing city permitting and traffic control requirements, and maintaining engineering models of system flows and pressures. Investment in these activities supports SoCalGas' commitment to mitigate risks associated with hazards to public and employee safety, infrastructure integrity, and system reliability.

The level of funding requested in this testimony will allow compliance with pipeline safety regulations and the continued safe and reliable operation of SoCalGas' gas distribution pipeline system. Furthermore, this request supports compliance with the requirement in SB 705 that "each gas corporation place safety of the public and gas corporation employees as the top priority."[9]

Spending to comply with federal DIMP regulations governing distribution pipeline integrity is addressed in the prepared direct testimony of Maria Martinez, Exhibit SCG-08.

Unique cost centers are used to record the cost of O&M activities performed within Gas Distribution operations. Collectively, approximately 160 cost centers are used in recording costs shown within this testimony. To facilitate analysis of historical spending and to complete an evaluation of projected expenditures, cost centers are aggregated into "workgroups" representing

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[8] *See*, *e.g.*, 49 CFR 192 (Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards); Cal. Gov. Code §§ 4216, *et seq*.; General Order 112-E; and General Order 58-A.

[9] Cal. Pub. Util. Code § 963(b)(3).

similar functions and/or having similar cost drivers. These 160 cost centers are thus aggregated into eleven workgroups, which are reviewed within this testimony under the following categories:

1. Field Operations and Maintenance;
2. Asset Management;
3. Operations Management and Training; and
4. Regional Public Affairs.

In preparing projections of the TY2016 requirements, SoCalGas Gas Distribution Operations reviewed historical spending levels, including units of work, and developed an assessment of future requirements and associated risks. This analysis entailed a review of the historical 2009 through 2013 spending and consideration of the underlying cost drivers. Depending on future expectations for the underlying cost drivers, a primary forecast methodology was selected. Selected methods include forecasting based on historical averages, simple linear trending of historical data, and 2013 adjusted recorded base year spending. In addition, work requirements that are incremental to levels of historical spending and necessary to maintain the safe and reliable operation of the distribution system and supporting work processes were identified. An analytical calculation was then performed to determine the funding requirement of these new or more-extensive work elements. The overall result is a forecast that has its foundation based on the historical representation, to which incremental expense requirements have been added.

In summary, Gas Distribution requests the Commission adopt a TY2016 forecast of O&M expense for non-shared services of $137,077,000, as summarized in Table FBA-03 below. This is an increase of $31,819,000 over the 2013 adjusted recorded base. This increase is driven by increased regulatory pressures, safety process enhancements, workforce technical skills training and qualification, customer and load growth, system expansion, infrastructure renewal, state and municipal agency construction requirements, and integration of new technology. Table FBA-03 below summarizes the total non-shared O&M forecasts for the listed cost categories.

TABLE FBA-03
Southern California Gas Company
Non-Shared O&M Summary of Costs

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
Categories of Management	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
B. Field Operations & Maintenance	83,715	106,290	22,575
C. Asset Management	7,549	10,827	3,278
D. Operations Management & Training	9,951	15,644	5,693
E. Regional Public Affairs	4,043	4,316	273
Total	**105,258**	**137,077**	**31,819**

The Commission should find this forecast reasonable and fully justified in that: 1) the activities support continued delivery of safe and reliable service; 2) activities are consistent with local, state, and federal regulations; 3) activities respond to operations, maintenance, and construction needs associated with projected growth demands of city, county, and state agencies; and 4) the forecast amounts are reasonable in light of historical spending and anticipated work increases.

B. Field Operations and Maintenance

TABLE FBA-04
Southern California Gas Company
Field Operations and Maintenance

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
1. Locate & Mark	11,042	12,449	1,407
2. Leak Survey	6,253	7,820	1,567
3. Measurement & Regulation	11,972	11,788	-184
4. Cathodic Protection	10,851	13,390	2,539
5. Main Maintenance	10,829	18,900	8,071
6. Service Maintenance	7,144	9,522	2,378
7. Field Support	18,537	24,895	6,358
8. Tools, Fittings & Materials	7,087	7,526	439
Total	**83,715**	**106,290**	**22,575**

Included in this section of my testimony are activities and associated O&M expenses to address the physical condition of the gas distribution system. As discussed above in Section I.B (Summary of Activities), gas distribution activities are performed from a regional organizational structure. Similar activities are completed at 52 operating bases located throughout the 20,000 square-mile service territory. The activities completed at these operating bases form the essence of the Field Operations and Maintenance category. These activities can be described as preventative, corrective, or supportive in nature. Preventative work is generally completed on a scheduled basis. It includes the activities and associated costs shown within the workgroups of Locate and Mark, Leak Survey, and Measurement and Regulation. Corrective work is generally reactive to a situation or facility condition. This includes the activities and associated costs shown in the workgroups of Cathodic Protection, Main Maintenance, and Service Maintenance. Finally, supportive elements are necessary to complete work assignments and include activities and associated costs discussed in the Field Support and Tools, Fittings and Materials workgroups**.**

1. Locate and Mark

Locate and Mark is a process mandated by 49 CFR 192 and California's "One Call" statute (Cal. Gov. Code § 4216, *et seq*.), which requires the owner of underground facilities to identify substructures at locations of planned excavations. Table FBA-05 below summarizes Gas Distribution O&M costs associated with Locate and Mark activities.

TABLE FBA-05
Southern California Gas Company
Field O&M – Locate and Mark

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
1. Locate & Mark	11,042	12,449	1,407

a. Description of Costs and Underlying Activities

The activities completed under this cost workgroup are preventative in nature and are required to avert damages caused by third-party excavators working near gas underground substructures. The work is primarily comprised of:

- Locating and marking SoCalGas' underground pipelines;

- Conducting job observations; and
- Performing depth checks.

Once a notification is received from Underground Service Alert (the Underground Service Alert One-Call Center), SoCalGas has two working days to respond and identify the location of SoCalGas pipelines within the identified parameter of a pending excavation project. SoCalGas' employees receive Locate and Mark work orders electronically on a Mobile Data Terminal (MDT) through a wireless connection or while docked at the operating base. The employee must travel to the project site and identify the location of SoCalGas' underground substructures utilizing an electronic pipe-locating device, substructure maps, and service history records. Color-coded markings are then placed over the substructures to visually identify the location of SoCalGas' underground facilities. Locate requests can range in scope from a construction project that entails a single excavation, to projects comprised of thousands of feet of construction requiring extensive effort to appropriately mark the location throughout the length of SoCalGas' underground pipelines. Details on the historical locate and mark work orders (tickets) can be found in supplemental workpaper SCG-FBA-O&M-SUP-008, located under Field O&M – Locate & Mark in Exhibit SCG-04-WP.

Conducting job observations of other entities excavating in close proximity to SoCalGas' pipelines is another important damage prevention activity included in this workgroup. Generally, this involves an employee inspecting job sites to notify excavators of the location of critical SoCalGas facilities. The State of California enacted new regulations in the fourth quarter of 2007 that mandate a preconstruction meeting with excavators requesting Locate and Mark support and require continuous monitoring of all excavations within ten feet of high-pressure pipelines.[10]

The third damage prevention activity included in this workgroup is referred to as "depth checks." This entails excavating over SoCalGas' underground pipelines in advance of specific construction projects to identify elevation data. This information is often required in advance of a municipal construction project to avoid conflicts with, and potential relocation of, SoCalGas' existing underground pipelines. If depth information is known, there are often ways to negotiate design changes to avoid costly relocation requirements.

[10] *See* Cal. Code Regs. tit. 8, § 1541(b)(1)(B) (2007).

These costs support the mitigation of risks associated with hazards to public and employee safety and to the reliability of SoCalGas' system. Properly locating and marking gas facilities, as well as performing job observations and depth checks, are activities completed to avert damage by third-party excavators that can interrupt gas service. Furthermore, the completion of this work provides important information to safeguard those working around gas facilities and to protect the integrity and reliability of the pipeline system.

b. Forecast Method

In developing the TY2016 forecast, historical expenditures and work units for 2009 through 2013 were evaluated. Locate and Mark activity is driven by general construction activity in public and private rights-of-way and customer growth, which generally fluctuate with economic conditions. Gas Distribution selected non-farm employment growth, as reported by IHS Global Insight, as a directional indicator for general economic conditions and potential economic growth, which generally drive construction activities. This IHS Global Insight employment forecast is shown in the workpapers of SoCalGas Customers witness Rose-Marie Payan, Exhibit SCG-30-WP. In general, IHS Global Insight forecasts that the non-farm employment growth rate is projected to increase in the Southern California area in the next few years. As economic conditions continue to improve, SoCalGas expects to see costs in this workgroup increase. For this reason, the Locate and Mark forecast is based on the linear trend observed during the last three years (2011 through 2013). Using a five-year average would not appropriately account for the increase in work anticipated over the forecast period, as construction activities continue to increase. The three-year (2011-2013) historical linear trend forecast results in a $1,407,000 increase from the 2013 adjusted recorded base in TY2016.

In order to perform the incremental work associated with this work category, SoCalGas is adding three incremental light duty trucks in 2014, five in 2015, and four in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

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.

2. Leak Survey

Recorded to this workgroup are the labor and non-labor expenses associated with federal pipeline safety regulation 49 CFR 192.723 (Distribution systems: Leakage surveys), which requires SoCalGas to survey its gas distribution system for leakage. Table FBA-06 below summarizes Gas Distribution O&M costs associated with Leak Survey activities.

TABLE FBA-06
Southern California Gas Company
Field O&M – Leak Survey

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
2. Leak Survey	6,253	7,820	1,567

a. Description of Costs and Underlying Activities

SoCalGas pipelines are routinely leak surveyed at intervals of one, three, or five years. The frequency of this survey is determined by the pipe material involved (i.e. plastic or steel), the operating pressure, whether or not the pipe is under cathodic protection, and the proximity of the pipe to various population densities. For example, annual surveys are scheduled in business districts, which are defined as a principal business area in a community where large numbers of people regularly congregate to engage in business activities, and near public service establishments, such as schools, churches, and hospitals. Three-year survey cycles are used for

all cathodically unprotected mains and services. Five-year survey cycles are typically used for plastic and cathodically protected steel mains and services installed in residential areas.

In addition to routine leak surveys, the Company performs special leak surveys, as needed, and on more frequent cycles than those discussed above (*e.g.,* two, three, or six months). Examples of this work include conducting leak surveys: ahead of street improvements to address pending leaks prior to street moratoriums; after the occurrence of any significant incident (*e.g.*, train derailment, explosion, earthquake, flooding, landslides, etc.) over or adjacent to high pressure pipelines or related facilities; when increasing the maximum allowable operating pressure of a pipeline; when routine survey requirements are not considered adequate because of pipe condition or limited opportunity for gas to vent safely; or when there is a need to monitor pipe condition for special situations, such as material evaluations.

During the survey, the field employee patrols above the identified location of SoCalGas' distribution subsurface main and service pipelines with a leak detector to identify, classify, and generate an immediate repair work order, when necessary. SoCalGas currently has approximately 99,400 miles of main and service pipeline that require leak survey.

This cost supports the safety and reliability of SoCalGas' system by performing the fundamental compliance and safety process of leak surveying pipelines to monitor for leakage in the pipeline system. Furthermore, this activity supports SoCalGas' commitment to mitigate risks associated with hazards to public and employee safety, infrastructure integrity, and system reliability.

b. Forecast Method

As SoCalGas continues to experience growth of its pipeline system, survey requirements will increase. For example, new pipe installed in the years 2009 through 2011 that is on a five-year survey cycle will increase survey footage requirements in years 2014 through 2016. Thus, the increase in leak survey footage and the associated increase in expenditures for this workgroup is the result of pipe installed in the SoCalGas system between the years 2009 and 2013, as well as changes in work practices. This understanding of the survey cycle, and the continuous growth in pipeline footage justifies using the five-year (2009 – 2013) historical linear trend forecast method for this workgroup. Furthermore, as shown in Table FBA-07 below, the historical leak survey footage has been increasing over this period, further evidencing growth in this work element.

TABLE FBA-07
Southern California Gas Company
Annual Distribution Pipe Leak Surveyed by Year

Year	2009	2010[11]	2011	2012	2013
Footage Surveyed	117,193,314	114,605,127	118,945,201	122,557,935	123,471,709
Annual Expense (Shown in Thousands of 2013 Dollars)	$4,107	$4,175	$4,799	$5,564	$6,253

Therefore, SoCalGas forecasts TY2016 requirements based on a five-year historical linear trend for the period 2009 to 2013. Using an average methodology would not capture the continued growth in the survey requirements and would underestimate a critical safety-related operations expense. Furthermore, this request supports SoCalGas' ability to meet the requirements spelled out in SB 705, by enhancing SoCalGas' capacity to "[p]rovide for effective patrol and inspection to detect leaks."[12] In total, the incremental expense necessary to fund Gas Distribution leak survey activities for the growing SoCalGas distribution system is $1,567,000 over the 2013 adjusted recorded base in TY2016.

In order to perform the incremental work associated with this work category, SoCalGas is adding five incremental light duty trucks in 2014, eight in 2015, and seven in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

c. Cost Drivers

Costs incurred in this workgroup are related to the amount of footage requiring survey. Survey requirements increase with every foot of new pipeline installed in the system. As pipe is added to the system to support new industrial, commercial, and residential developments, it must be leak-surveyed in the timeframe required by state and federal regulations. Furthermore, increased construction raises the need for special leak survey. SoCalGas has based its funding request on this anticipated growth.

In addition, SoCalGas is implementing process changes to enhance its leak survey activity. Some of these modifications will likely increase the overall amount of footage that will

[11] Note that 2010 was a transition year from a legacy computer tracking system to the new SAP system.
[12] Cal. Pub. Util. Code § 961(d)(4).

require leak survey and further support the use of a forecasting trend. These modifications include:

- The requirement that all high pressure supply lines (operating over 60 psig) are leak surveyed annually. In the past, high pressure lines that were not defined as transmission lines under Department of Transportation regulations followed the routine and special leak survey cycle standards also used for medium pressure pipelines.
- Business Districts[13] identified on leak survey maps will be automatically updated with a 100-foot buffer around the parcel (lot line), based on the following criteria: State Assessor land codes (93 universal codes); State of California licensed care provider (Nursing /Home for Aged); and Baker land base locations (churches, schools, hospital and other significant commercial locations). The GIS system will automatically generate business district leak survey requirements instead of only relying on the field employee to report these locations.
- Survey cycles will be updated automatically. Through this process, the GIS will select the correct survey cycle for an asset, based upon its pipe characteristics and operating environment. This change has the potential to reduce human error by automating some traditionally-manual processes that previously occurred in the office and in the field.
- Six leak survey cycles will be established based on frequency (five years, three years, one year, six months, three months, two months). This process change will combine several survey order types. Historically, there were four types of annual survey that generated orders each year and two types of five-year orders, which generated orders every five years. The process being replaced has the potential to send personnel to the same location four times in one year. Standardizing the order types will improve efficiency by sending a crew out once a year to perform annual survey in a given location for the respective survey cycle.

[13] Business Districts are defined as a principal business area in a community where large numbers of people regularly congregate to engage in business activities such as: purchasing, sales, manufacturing of commodities; or public service establishments such as schools, churches, and hospitals.

For the purpose of deriving the TY2016 forecast, it was assumed that these changes would be captured within the five-year (2009 through 2013) historical linear trend. Therefore, additional funding above the base forecast to capture the increased leak survey from the process changes described above was not requested.

3. Measurement and Regulation

Recorded to this workgroup are labor and non-labor expenses for maintaining and operating regulator stations, medium and large Meter Set Assemblies (MSAs), and associated components. Table FBA-08 below summarizes Gas Distribution O&M costs associated with Measurement and Regulation activities.

TABLE FBA-08
Southern California Gas Company
Field O&M – Measurement and Regulation

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
3. Measurement & Regulation	11,972	11,788	-184

a. Description of Costs and Underlying Activities

Measurement and Regulation activities focus primarily on maintaining and operating approximately 2,000 regulator stations and approximately 95,000 medium and large customer MSAs in the SoCalGas service territory. Regulator stations reduce the pressure of gas entering the distribution system from high-pressure pipelines to provide the lower pressures used on the distribution pipeline network. Medium and large customer MSAs require routine maintenance of the meters, regulators, and other components to meet customers' capacity requirements and to measure gas volume accurately.

Federal pipeline safety regulation 49 CFR 192.739(a) (Pressure limiting and regulating stations: Inspection and testing) requires annual inspection and maintenance of all regulator stations to maintain these devices in good mechanical condition. Pressure checks are done to verify that the station's pressure protection devices perform as designed. If a station does not perform properly, internal maintenance and inspections are conducted. This consists of disassembling the regulator devices and inspecting the internal components for worn or damaged parts. The regulator is cleaned and inspected for corrosion and any faulty parts are replaced. As

regulator stations age, their parts and equipment begin to wear, malfunction, and are hard to disassemble, increasing maintenance requirements.

State regulation CPUC General Order 58-A requires routine maintenance on medium and large MSAs. This General Order requires that meters, regulators, and other components be maintained, repaired, and tested periodically to meet customers' capacity requirements and to measure gas volume accurately. To maintain measurement accuracy, meters are subject to Planned Meter Changes or are periodically tested as prescribed in section 13 of General Order 58-A. If an Electronic Pressure Corrector is used for gas measurement, it is also subject to periodic inspection. An Electronic Pressure Corrector work order includes checks on calibration, configuration, battery condition, communication, and wiring. If the MSA is housed in a vault, the vault needs to be inspected, and repaired, if necessary, to protect the MSA.

Regulator stations are critical control elements in the gas distribution system. Failure of a regulator station could result in under or over-pressurization of the gas distribution system, resulting in reduced service to customers and/or jeopardizing public safety. Therefore, proactive maintenance of these facilities is a priority.

Furthermore, valves maintained within this workgroup have several important purposes including: fire valves at regulator stations to isolate the high and medium pressures systems; emergency valves to isolate segments of pipelines in case of pipe damage or for operational purposes; and isolation valves to segment portions of the system in the event of a widespread emergency, such as an earthquake. Expenses for the inspection and calibration of electronic pressure monitors used to measure and record distribution system pressures are also included.

The costs in this workgroup support the safety and reliability of SoCalGas' system, as well as compliance activities required by governmental regulations. Furthermore, the activities covered in this workgroup support SoCalGas' commitment to mitigate risks associated with hazards to public and employee safety, infrastructure integrity, and system reliability.

b. Forecast Method

In developing the TY2016 forecast, historical expenditures and work units for 2009 through 2013 were evaluated. Given the numerous Measurement and Regulation activities covered in this workgroup, and to factor in periods of high operations and maintenance work, as well as years with lower levels of work, SoCalGas chose five-year (2009 through 2013) average spending to forecast the base-level of spending for TY2016. This approach allows SoCalGas to

capture historical spending under a variety of conditions that reflect the historical fluctuation in labor and non-labor expenditures associated with this workgroup. The five-year average results in a decrease of $418,000 from the 2013 adjusted recorded base in TY2016.

Added to this base are incremental work elements not reflected in the base forecast that are necessary to adequately fund Measurement and Regulation activities in TY2016. These work elements are described below. The total incremental funding needed for this workgroup, including the base forecast and incremental increases, is $184,000 less than the 2013 adjusted recorded base in TY2016.

i. Incremental Valve Maintenance

In their joint Pipeline Safety Enhancement Plan (PSEP), first filed in August 2011 in Rulemaking 11-02-019 (the Pipeline Safety Rulemaking), SoCalGas and San Diego Gas & Electric Company (SDG&E) requested approval and recovery of the revenue requirements resulting from capital and O&M forecasts of the PSEP for years 2011 through 2015, to coincide with SoCalGas and SDG&E's anticipated next General Rate Case cycles. The PSEP included a valve enhancement plan, and the cost forecasts for the valve enhancement plan included incremental O&M costs to support the operation and maintenance of the enhanced valves and related infrastructure to be installed as part of the PSEP through 2015. It was contemplated that in subsequent years (2016 and beyond) O&M costs associated with facilities and equipment previously-installed as part of PSEP would be recovered in the utilities' TY2016 General Rate Case funding requests as part of their overall operation and maintenance of their gas infrastructure. Consistent with this approach, my testimony includes the TY2016 costs of operating and maintaining the enhanced valves and related infrastructure installed through 2015 as part of PSEP.[14]

For the Meter and Regulator department, these cost are associated with the incremental maintenance for: valve, actuators and related distribution system control components added under the PSEP Valve Plan to isolate and depressurize critical pipelines in the event of a rupture; maintenance of enhanced flow measurement and telemetry equipment at new pipeline locations;

[14] In D.14-06-007, the Commission approved the PSEP, but not recovery of the forecasted costs of implementing the PSEP. Instead, actual PSEP costs will be reviewed and approved through a reasonableness review application process. Through that application process, SoCalGas and SDG&E will seek recovery of actual incremental O&M costs associated with operating and maintaining the enhanced valves through 2015.

and new check valves and other enhancements to prevent the back-flow of gas into major pipeline isolation sections to be depressurized. The cost of maintaining radio system enhancements to support PSEP valve, meter and other asset operation and monitoring are also included.

This incremental safety-related work represents a TY2016 increase of $165,000 over the forecast base. Additional details may be found in supplemental workpaper SCG-FBA-O&M-SUP-002, located under Field O&M – Measurement & Regulation in Exhibit SCG-04-WP.

ii. Field Operator Qualification Training

Safety is rooted in all phases of Gas Distribution training. An integral component of overall workforce proficiency is the Operator Qualification program. SoCalGas is expanding its Operator Qualification program to better align with industry standards and feedback from the CPUC. This includes adding new qualification elements or tasks, developing qualification materials, establishing an electronic record-keeping process, and conducting training and qualification of impacted employees. The Operator Qualification program requirements are further discussed in the Operations Management and Training workgroup (Section II.D) later in this testimony. The expanded Operator Qualification program will add approximately 1,200 incremental training hours required to qualify Measurement and Regulation field employees in the new Operator Qualification elements. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-001, located under Field O&M – Measurement & Regulation in Exhibit SCG-04-WP. The incremental increase over the base forecast associated with this incremental work element is $69,000 in TY2016.

c. Cost Drivers

Work activities within the Measurement and Regulation workgroup are driven by regulatory requirements as well as the need to safeguard the safety and integrity of the pipeline system, thus mitigating risks associated with hazards to public and employee safety and system reliability. Costs drivers associated with this workgroup include the inspections that must be completed at each of the facilities maintained by the Measurement and Regulation team (regulation stations, valves, MSAs, pressure/volumetric correctors, and electronic pressure monitors); the follow up maintenance identified by these inspection results; the recurring routine, scheduled maintenance work; unscheduled maintenance work, for instance in the case of unexpected malfunction of a device; emergency support such as in the case of a system shut

down to respond to a damage, pressure incident, or major event as in the case of an earthquake; and support of general operations requirements for example test shut downs to determine system behavior under specific conditions. Some of these activities are driven by the age and type of equipment installed, with generally older or obsolete equipment requiring more maintenance. Other cost drivers of this workgroup include customer requests associated with measurement issues at MSAs.

4. Cathodic Protection

Without proper intervention, buried steel pipelines will revert back to their natural state as an iron oxide (i.e. corrode). Corrosion on pipelines increases the potential for leaks, and can reduce the useful life of the pipelines. In addition to the application of coating and electrical isolation, cathodic protection (CP) is one method for mitigating external corrosion on steel pipelines. Table FBA-09 below summarizes Gas Distribution O&M costs associated with CP activities.

TABLE FBA-09
Southern California Gas Company
Field O&M – Cathodic Protection

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
4. Cathodic Protection	10,851	13,390	2,539

a. Description of Costs and Underlying Activities

Cathodic Protection combats corrosion by imposing an electric current flow toward the surface of the pipeline, which keeps the pipeline negatively charged (cathodic) with respect to the surrounding soil. This results in reduced corrosion on the pipeline system. CP uses both magnesium anodes and rectifier stations to impose a negative charge on the pipeline. Additionally, test stations are installed to monitor the CP system and insulators are placed on the mains to isolate CP areas. This workgroup includes monitoring and evaluation activities for maintaining an effective CP system and the resulting identified field maintenance requirements.

Activities for the inspection and evaluation of the CP system on SoCalGas' steel distribution pipelines are undertaken to maintain the longevity and performance of SoCalGas' distribution steel pipeline system and are performed by system protection specialists responsible for maintaining compliance with 49 CFR 192.465 (External corrosion control: Monitoring).

Inspection and evaluation of the pipelines' CP system can include: checking rectifiers for proper operation, identifying the location of interface bonds, evaluating "short circuits," identifying locations for installation of anodes for continued pipe protection, and taking pipe-to-soil readings to evaluate electric current levels. Based on the results of these monitoring activities, replacement, upgrade, or alteration of CP system components may be planned.

Cathodic protection maintenance work is generally completed either due to the observed condition of the system or in reaction to third-party actions. Maintenance work is necessary to replace anodes as they become depleted and no longer provide the level of protection required for the pipeline. Anode depletion is accelerated by drought conditions, as dry soil does not allow the current to travel as far and protect as much pipe. In addition, CP maintenance work is often reactive to the activities of municipalities, other utilities, and construction firms.

Examples of maintenance activities performed within this workgroup include:

- Installing anodes;
- Clearing underground shorts created by two pipelines touching each other;
- Repairing or replacing broken wires to anodes or test stations;
- Raising test station lids as a result of the re-pavement of streets;
- Adding test points on pipelines;
- Installing insulators on mains and services; and
- Clearing interference with third-party CP systems.

This cost supports the safety and reliability of SoCalGas' system by performing the CP maintenance necessary to prevent corrosion and extend the life of the distribution pipelines.

b. Forecast Method

In developing the TY2016 forecast, historical expenditures and work units for 2009 through 2013 were evaluated. As discussed above, there are several factors that will continue to place pressure on the maintenance of the CP system. To capture the variation that can occur within this activity, and given the numerous CP activities covered in this workgroup, SoCalGas forecasts base expenses for this compliance workgroup at a five-year (2009 through 2013) average spending. The result is an increase of $46,000 in TY2016 from the 2013 adjusted recorded base.

In order to perform the incremental work associated with this work category, SoCalGas is adding three incremental light duty trucks in 2014. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

Added to this base are incremental work elements not reflected in the base forecast that are necessary to adequately fund CP activities in TY2016. These work elements are described below. The total incremental funding needed for this workgroup, including the base forecast and incremental increases, is $2,539,000 over the 2013 adjusted recorded base for TY2016.

i. Incremental Cathodic Protection System Enhancement

As discussed previously, corrosion on pipelines increases the potential for leaks, and can reduce the useful life of the pipelines. CP is one method for mitigating external corrosion on steel pipelines and thus, reduces the potential for leakage. With an aging infrastructure and the multiple variables that impact the life expectancy of CP system components (weather and soil conditions, system damages, electric current interference, customer actions, and pipe coating condition), their effectiveness diminishes over time, requiring additional and more focused attention. Diminished CP effectiveness could lead to increased corrosion, a more rapid deterioration of the steel pipeline and subsequently, increased leakage, thus leading to potential risks associated with public safety and infrastructure integrity. The relatively small incremental cost for CP has the potential to mitigate larger impacts to reliability of service and safety. As SoCalGas conducts inspections of the CP system, it evaluates the results and troubleshoots CP areas that are below the required protection threshold to determine causes and potential mitigation actions. Based on the results of these monitoring activities, follow-up maintenance action is often necessary. These maintenance activities include replacing, upgrading, or altering components of the CP system such as anodes, rectifiers, anode beds, bonds, test points, electric drops, anode wells, and insulators.

Over the last few years, the number of CP areas requiring follow up work has increased significantly. Factors contributing to the deterioration of the CP system are described below in the Cost Drivers section. To address this situation, SoCalGas has implemented an effort to remediate 1,161 CP areas (CP packages) that have chronic issues. Costs associated with this effort include both O&M and capital. This section covers the O&M impact, while capital costs are found in Section IV.I of this testimony (Cathodic Protection Capital). SoCalGas plans to work 193 incremental CP packages in 2014, 387 CP packages in 2015 and 581 CP packages in

2016. This will require a labor cost of $104,000 and a non-labor cost of $2,190,000 for TY2016. Labor costs are needed for the System Protection Specialists that will conduct troubleshooting of each area to determine specific remediation work needed. While non-labor will be utilized mainly for materials and contractor costs associated with the installation and replacement of the CP system components. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-004, located under Field O&M – Cathodic Protection in Exhibit SCG-04-WP. The funding needed to address this incremental requirement is $2,294,000 over the forecast base for TY2016.

In order to perform this incremental CP work, SoCalGas is adding one incremental light duty truck in 2015. The costs associated with this vehicle can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

ii. Field Operator Qualification Training

As previously noted, safety is rooted in all phases of gas distribution training. An integral component of overall workforce proficiency is the Operator Qualification program. SoCalGas is expanding its Operator Qualification program to better align with industry standards and feedback from the CPUC. The Operator Qualification program requirements are further discussed in the Operations Management and Training workgroup later in this testimony. The expanded Operator Qualification program will add approximately 3,400 incremental training hours required to qualify Cathodic Protection field employees in the new Operator Qualification elements. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-001, located under Field O&M – Cathodic Protection in Exhibit SCG-04-WP. The incremental increase over the base forecast associated with this work element is $199,000 to this workgroup in TY2016.

c. Cost Drivers

Work activities within the Cathodic Protection workgroup are driven by regulatory requirements as well as the need to safeguard the integrity of the pipeline system and minimize future corrosion-related leaks, thus mitigating risks associated with hazards to public safety. The basic cost drivers for this workgroup are the required compliance inspections and associated evaluations (troubleshooting), as well as planned and unplanned maintenance actions that must be completed each year for each CP area and isolated CP segment. These maintenance activities include replacing, upgrading, or altering components of the CP system such as anodes, rectifiers,

anode beds, bonds, test points, electric drops, anode wells, and insulators. Many of these activities are driven by the age of the system components, with generally older elements requiring more maintenance.

Furthermore, the typical life of anodes, a critical component of the CP system, can vary depending on a number of drivers, including, the weather, soil conditions, the pipeline length it is protecting, and the effectiveness of the pipe's coating. Anode depletion is accelerated by drought conditions, as dry soil does not allow the current to travel as far and protect as much pipe. In addition, some soils are more resistive than others, causing anodes to deplete at a higher rate.

Cathodic protection maintenance work is often reactive to activities of municipalities, other utilities, and construction firms as they complete projects of street reconstruction, widening, or resurfacing, or sewer and water line maintenance and replacement, as these activities can lead to CP component damage. In addition, pipes can come into contact with water lines or with third-party grounding systems that can drain current from the pipeline, thus reducing the level of protection and depleting anodes. Customers placing metal objects against the MSA riser can have the same effect as shorting out the CP current.

5. Main Maintenance

The main maintenance work in this workgroup is designed to meet federal (49 CFR 192) and state (CPUC General Order 112-E) pipeline safety regulations and to extend the life of distribution main pipelines and related infrastructure. Table FBA-10 below summarizes Gas Distribution O&M costs associated with Main Maintenance activities.

TABLE FBA-10
Southern California Gas Company
Field O&M – Main Maintenance

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
5. Main Maintenance	10,829	18,900	8,071

a. Description of Costs and Underlying Activities

Main maintenance work is generally corrective in nature and is required to keep the natural gas system operating safely and reliably. Main maintenance work is primarily comprised of the following five activities:

- Leak evaluation;
- Leak repairs;
- Franchise alterations;
- Compliance maintenance; and
- Miscellaneous main maintenance.

Main leak evaluation and repair work is generally completed to mitigate risks associated with hazards to public safety, and to address infrastructure condition, and material degradation. Main leaks in the gas distribution system are often identified through SoCalGas' leak surveys, by field service personnel while completing other field work assignments, and via customer calls. In responding, SoCalGas completes a process of identification and evaluation. Leaks are prioritized for ongoing field response based on a number of factors including location, concentration of gas, and potential hazard to the public and property. Federal and state pipeline safety regulations require operators to take immediate action to contain hazardous leaks (referred to as "Code 1" within SoCalGas) and to repair them promptly. Non-hazardous leaks are prioritized based on their potential to become hazardous and are repaired within 15 months or re-evaluated until their classification changes. Main leak repairs generally require excavating in public and private property to determine the exact location of the leak and make repairs. This work often involves setting up traffic control, cutting pavement or concrete, excavating, and repairing main pipe facilities; followed by backfilling the excavation, compacting the soil, and making permanent repairs to pavement and landscaping.

SoCalGas holds numerous franchise agreements with the municipalities in its 20,000 square-mile service territory. These agreements, which outline the terms under which SoCalGas utilizes public rights-of-way, normally require the relocation or alteration of SoCalGas facilities if they conflict with municipality projects. Some typical projects that impact SoCalGas facilities include street resurfacing, widening, or complete reconstruction. These projects can require maintenance activity by SoCalGas ranging from raising valve lids and casings after they are paved over, to completely relocating SoCalGas pipelines to facilitate street reconstruction. Other typical municipality projects include sewer and water pipeline maintenance, replacement, or new installation. These projects can also require work by SoCalGas to avoid a conflict with the municipality's proposed construction, which can range from altering the elevation of segments of SoCalGas pipelines in their present locations to relocating segments of pipeline or related

facilities completely. Franchise work is a municipality-driven requirement; therefore, the impact to SoCalGas can vary significantly, depending on available municipality funds to complete the projects.

Compliance maintenance work is driven by public safety and governmental regulation requirements. Main maintenance compliance activities include:

- Patrolling high pressure supply lines to observe surface conditions for indications of leaks, construction activity by others, and miscellaneous factors affecting safety and operation;
- Repairing and/or installing high pressure warning signs;
- Inspecting bridge crossings and spans for any signs of damage;
- Inspecting and maintaining valves to verify that they are operational; and
- Clearing rights-of-way of brush and debris to maintain accessibility to facilities.

The miscellaneous main maintenance category consists of the following activities:

- Repairing damages to SoCalGas pipelines;
- Raising or lowering SoCalGas valve casings;
- Repairing damaged protective coating on mains due to construction activity by other entities; and
- Repairing uneven paving related to SoCalGas construction.

The cost associated with main maintenance supports SoCalGas' commitment to mitigate risks associated with hazards to public safety, infrastructure integrity, and system reliability. Furthermore, this request supports SoCalGas' ability to achieve the objective set forth in SB 705 to "[p]rovide timely response to customer and employee reports of leaks and other hazardous conditions and emergency events."[15]

b. Forecast Method

In developing the TY2016 forecast, historical expenditures and work units for 2009 through 2013 were evaluated. Numerous main maintenance activities are covered in this workgroup, as well as a variety of factors that influence the level of spending on main maintenance in a given year. These factors include increasing government regulations, aging

[15] Cal. Pub. Util. Code § 961(d)(6).

infrastructure, public safety, municipality requirements, material degradation, infrastructure, and economic conditions. In addition to the labor and non-labor costs, the main maintenance workgroup contains credits collected from third parties to compensate for damages caused to the gas pipeline system during excavation activities. The Main Maintenance costs have experienced an upward trend in costs associated with multiple work drivers, as discussed in the Cost Drivers section below. SoCalGas does not see this trend reversing.

Regulatory/legislative pressures continue to increase, the infrastructure is getting older, and municipality work and general construction continues to increase. Therefore, a five-year (2009 through 2013) historical linear trend was used to forecast base expense for these workgroup components. Using a simple average forecasting method would not be appropriate for this work category, as it would not sufficiently fund critical compliance and maintenance work for the anticipated growing work requirements.

For the damage credits component of this workgroup, SoCalGas used a five-year (2009 through 2013) average to forecast future expense. This option is best suited for these activities, given the unpredictability of damages – both in terms of frequency and severity - and the timing of collecting funds from third parties. Furthermore, the collection of the damage credit can occur in a different year as the damage itself. Given this uncertainty and variability, a five-year average for damage credits is the best forecast option. The base forecast for this workgroup results in an increase of $6,056,000 in TY2016 from the 2013 adjusted recorded base. Additional details may be found in supplemental workpaper SCG-FBA-O&M-SUP-007, located under Field O&M – Main Maintenance in Exhibit SCG-04-WP.

In order to perform the incremental work associated with this work category, SoCalGas is adding five incremental crew trucks in 2014, three in 2015, and three in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

Added to this base is an incremental work element not reflected in the base forecast that is necessary to adequately fund main maintenance activities in TY2016. This work element is described below. The total incremental funding needed for this workgroup, including the base forecast and the incremental increase, is $8,071,000 over the 2013 adjusted recorded base for TY2016.

i. Leak Reduction Effort

Main line leak evaluation and repair work is completed to address public safety, infrastructure condition, and material degradation. As discussed previously, SoCalGas takes immediate action to contain hazardous leaks and to repair them promptly. Non-hazardous leaks are prioritized based on their potential to become hazardous and are repaired within 15 months or re-evaluated until their classification changes.

Over the years, SoCalGas has accumulated a backlog of non-hazardous leak indications. SoCalGas has proactively assessed its practice of maintaining a leakage backlog and is taking action to significantly reduce these leaks. Furthermore, after the San Bruno pipeline incident occurred in Northern California, customers and legislators expressed concern regarding SoCalGas' pending (non-hazardous) natural gas leaks. This is reflected in the numerous inquiries received from media outlets as well as in proposed legislative action, such as SB 1371, which requires the adoption of rules and procedures to reduce natural gas emissions, specifically from natural gas leaks.[16] SB 1371 is discussed in the prepared direct Environmental Services testimony of Jill Tracy, Exhibit SCG-17.

This leak reduction effort also supports SoCalGas' ability to meet the objective set forth in SB 705 to "[p]rovide timely response to customer and employee reports of leaks and other hazardous conditions and emergency events."[17]

As a result, in addition to continuing with its trend of historical leak repairs included in the base forecast, SoCalGas is taking action to significantly reduce its pending leaks starting in 2015. This effort will reduce the number of pending main leaks by approximately 800 in 2015 and 1,600 in 2016. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-003, located under Field O&M – Main Maintenance in Exhibit SCG-04-WP. The impact from this incremental work element on main maintenance is $2,015,000 over the base forecast in TY2016. A separate leak reduction effort, starting in 2014, is covered in Section IV.F (Service Replacements), of this testimony.

This effort will continue beyond 2016, as SoCalGas strives to eliminate the current backlog by the end of year 2018. This will also allow SoCalGas to potentially introduce new

[16] SB 1371– Natural Gas: Leakage Abatement (September 21, 2014).
[17] Cal. Pub. Util. Code § 961(d)(6).

leak survey technologies and work processes that could increase the rate at which leaks are found.

In order to perform this incremental main leak repair work, SoCalGas is adding four incremental crew trucks in 2015 and three in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

c. Cost Drivers

The work completed in this workgroup is driven by the requirement to meet federal and state pipeline safety regulations and the objective to protect the integrity of the pipeline system through activities that extend its life. These activities support SoCalGas' commitment to mitigate risks associated with hazards to public safety, infrastructure integrity, and system reliability. As outlined above, multiple factors influence the level of spending on main maintenance in a given year. These factors include:

- The level of compliance maintenance work required each year. This includes patrolling high pressure pipelines; repairing or installing pipeline signs (markers); inspecting bridge crossings and spans; inspecting and maintaining valves; and clearing rights-of-way.
- The number of leaks evaluated and repaired each year. This work is generally completed to address public safety, infrastructure condition, and material degradation risks. As discussed previously, leaks are found by employees conducting leak survey, and other field activities or by customers who call indicating a gas smell. In addition, the rate at which leaks are found can increase due to aging infrastructure or changes in work processes or technology.
- The level of repairs associated with damages to SoCalGas pipeline facilities by third parties. This cost is driven by the number and severity of the damages. For example damage to a service line is less costly than damage to a high pressure line or water entering the gas system, which may require multiple days of work and a large number of personnel to address. This work category has a credit for funds collected from the third parties that caused the damage. However, collecting funds for damages can be an extensive process that includes the third party accepting responsibility (or being compelled to accept responsibility) for the damage and the level at which costs will be refunded. Thus, collection of funds is highly variable and unpredictable. In

addition, there is damage to gas pipeline facilities that is not always traceable to a specific construction firm. Rather it is found as part of other field activities. This includes damage to pipeline protective coatings or deformation of the pipeline without causing an immediate leak. These repairs are also completed as part of this work category.

- The level of work completed by municipalities such as street resurfacing, widening or reconstruction; and sewer and water pipeline maintenance, replacement or new installations. Per its franchise agreements SoCalGas is required to complete associated maintenance activities, such as raising or lowering SoCalGas valve casings and lids; altering the elevation of segments of SoCalGas pipelines in their present locations; or relocating segments of pipeline or related facilities completely. The impact to SoCalGas can vary significantly, depending on available municipality funds, which may be driven by economic conditions.
- The level of construction activities performed by SoCalGas that require the repair of uneven paving related to its construction activities in private and public property.
- Government regulations can also impact this work category as a result of more stringent requirements. As previously discussed, SoCalGas has proactively assessed its practice of maintaining a leakage backlog and is taking action to significantly reduce these pending non-hazardous leaks.
- Other drivers include the cost for materials, paving, permitting, and special municipality construction requirements. As these cost pressures increase, they impact the overall cost for this activity.

6. Service Maintenance

The work in this workgroup is designed to meet federal (49 CFR 192) and state, (General Order 112-E) pipeline safety regulations and to extend the life of the distribution service pipeline system. Service maintenance work is generally corrective in nature and is required to keep the natural gas system operating safely and reliably. Table FBA-11 below summarizes Gas Distribution O&M costs associated with Service Maintenance activities.

TABLE FBA-11
Southern California Gas Company
Field O&M – Service Maintenance

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
6. Service Maintenance	7,144	9,522	2,378

a. Description of Costs and Underlying Activities

Service maintenance work is primarily comprised of the following four activities:

- Evaluation and repair of service leaks.
- Service alterations.
- Meter set assembly (MSA) alterations and meter guard replacements.
- Miscellaneous service and MSA maintenance.

Service leak evaluation and repair work is generally completed to mitigate risks associated with hazards to public safety, and to address infrastructure condition, and material degradation. Service leaks in the gas distribution system are often identified by Field Services personnel through SoCalGas' leak survey program, while completing other field work assignments, and via customer calls. In responding, SoCalGas completes a process of leak evaluation and identification. Leaks are prioritized for ongoing field response based on a number of factors including location, concentration of gas, and hazard to the public and property. Federal and state pipeline safety regulations require operators to take immediate action to contain hazardous leaks and to repair them promptly. Non-hazardous leaks are prioritized based on their potential to become hazardous and are repaired within 15 months or re-evaluated until their classification changes. Service leak repairs generally require excavating in public and private property to determine the exact location of the leak and make repairs. This work often involves pavement or concrete cutting, excavating, and repairing of service pipe facilities, followed by backfilling the excavation, compacting the soil, and making permanent repairs to pavement and landscaping. Leak evaluation and repair work is the primary cost driver within this workgroup.

SoCalGas is required to alter its gas service lines for various reasons including to respond to customer requests or correct unsafe conditions. Examples of correcting unsafe conditions include repairs due to earth movement, and conflicts with substructures. Customers also request

that their gas service lines be altered to accommodate property improvements. Such improvements to existing homes and businesses, which are often economy driven, impact the service alteration work account.

When service alteration work is needed, MSA work is often required as well. Changes to meter location or size are required to facilitate construction, customer gas usage changes, or other changes to customer property. This workgroup includes expenses for the associated changes to the MSA, as well as expenses to rebuild damaged MSAs, replace meter guards to protect MSAs susceptible to damage, and work to change, raise, or lower service valves.

Work captured in the miscellaneous service maintenance account includes the following activities:

- Repairing facilities damaged by outside sources or natural causes, such as fire or rain.
- Removing abandoned service pipe.
- Repairing or replacing curb valves or meter boxes.

The cost associated with service maintenance supports SoCalGas' commitment to mitigate risks associated with hazards to public safety, infrastructure integrity, and system reliability.

b. Forecast Method

In developing the TY2016 forecast, historical expenditures and work units for 2009 through 2013 were evaluated. There are numerous service maintenance activities covered in this workgroup as well as a variety of factors that influence the level of work and associated spending for the service maintenance workgroup, including government regulations, public safety, customer requests, municipality requirements, material failure, infrastructure condition, and economic conditions. Given the number and variety of drivers, and the influence each may have on service maintenance, a five-year (2009 through 2013) average spending was used to forecast the base level of funding needed for TY2016. Using a linear trend or base year forecasting method would not capture the variation over time that can result from these numerous influencing factors and therefore, may not adequately fund this activity into the future. The five-year average forecast results in an increase of $2,149,000 in TY2016 from the 2013 adjusted recorded base.

In order to perform the incremental work associated with this work category, SoCalGas is adding six incremental crew trucks in 2014. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

Added to this base is an incremental work element not reflected in the base forecast that is necessary to adequately fund service maintenance activities in TY2016. This work element is described below. The total incremental funding needed for this workgroup, including the base forecast and the incremental increase, is $2,378,000 over the 2013 adjusted recorded base for TY2016.

i. Leak Reduction Effort

As discussed in the Main Maintenance section (Section II.B.5) earlier in this Testimony, leak evaluation and repair work is completed to address public safety, infrastructure condition, and material failure. SoCalGas takes immediate action to contain hazardous leaks and to repair them promptly. Non-hazardous leaks are prioritized based on their potential to become hazardous and are repaired within 15 months or re-evaluated until their classification changes.

Over the years, SoCalGas has accumulated a backlog of non-hazardous leak indications. SoCalGas has proactively assessed its practice of maintaining a leakage backlog and is taking action to significantly reduce these leaks. Furthermore, after the San Bruno pipeline incident occurred in Northern California, customers and legislators expressed concern regarding SoCalGas' pending (non-hazardous) natural gas leaks. This is reflected in the numerous inquiries received from media outlets, as well as in proposed legislative action, such as SB 1371, which requires the adoption of rules and procedures to reduce natural gas emissions, specifically from natural gas leaks.[18] This bill is discussed in the prepared direct Environmental Services testimony of Jill Tracy, Exhibit SCG-17.

This leak reduction effort also supports SoCalGas' efforts to achieve the objective set forth in SB 705 to "[p]rovide timely response to customer and employee reports of leaks and other hazardous conditions and emergency events."[19]

As a result, in addition to continuing with historical leak repairs included in the base forecast, SoCalGas is taking action towards significantly reducing its pending leaks starting in 2015. This effort will reduce the number of pending service leaks by 289 in 2015 and 579 in

[18] SB 1371 – Natural Gas: Leakage Abatement (September 21, 2014).
[19] Cal. Pub. Util. Code § 961(d)(6).

2016. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-003, located under Field O&M – Service Maintenance in Exhibit SCG-04-WP. The impact on service maintenance is $229,000 over the forecast base in TY2016.

A separate leak reduction effort, starting in 2014, is covered in Section IV.F (Service Replacements), of this testimony.

This effort will continue beyond 2016, as SoCalGas strives to eliminate the current backlog by the end of year 2018. This will also allow SoCalGas to potentially introduce new leak survey technologies and work processes that could increase the rate at which leaks are found.

In order to perform this incremental service leak repair work, SoCalGas is adding one incremental crew truck in 2015. The costs associated with this vehicle can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

c. Cost Drivers

The work completed in this workgroup is driven by the requirement to meet federal and state pipeline safety regulations and the objective to protect the integrity of the pipeline system through activities that extend its life. These activities support SoCalGas' commitment to mitigate risks associated with hazards to public safety, infrastructure integrity, and system reliability. As outlined above, multiple factors influence the level of spending on service maintenance in a given year. These factors include:

- The level of leak evaluation and repair work is the primary cost driver within this workgroup. This work is generally completed to address public safety, infrastructure condition, and material failure risks. In addition, the rate at which leaks are found can increase due to aging infrastructure or changes in work processes or technology.
- The level of customer requests to have their gas service lines and MSAs altered to accommodate property improvements. Such improvements to existing homes and businesses are often economy driven. This also includes removing abandon service pipe.
- SoCalGas is required to alter its gas service lines and MSAs to correct unsafe conditions or changes in customer load usage. This also includes the replacement of meter guards; work to change, raise, or lower service valves; and repairing or replacing curb valves or meter boxes.

- The level of repairs on facilities damaged by third parties, outside sources or natural causes, such as fire or rain.
- Government regulations can also impact this work category as a result of more stringent requirements. As previously discussed, SoCalGas has proactively assessed its practice of maintaining a leakage backlog and is taking action to significantly reduce these leaks.
- Other drivers include the cost for materials, paving, permitting, and special municipality construction requirements. As these cost pressures increase, they impact the overall cost for this activity.

7. Field Support

Recorded to the Field Services workgroup are a variety of support services necessary to successfully complete daily Gas Distribution O&M activities. Table FBA-12 below summarizes Gas Distribution O&M costs associated with Field Support activities.

TABLE FBA-12
Southern California Gas Company
Field O&M – Field Support

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
7. Field Support	18,537	24,895	6,358

a. Description of Costs and Underlying Activities

A variety of support services necessary to successfully complete the daily O&M activities within Gas Distribution Operations are recorded to this workgroup. The primary components are:

- Field supervision;
- Clerical support;
- Dispatch Operations;
- Off-production time;
- Materials support; and
- Removal of abandoned mains.

Field supervisory positions are critical to providing daily management of frontline employees and inspecting contractors that work directly on the gas distribution system, as well as for interacting directly with customers, public agencies, and the general public. As described in Section I.B (Summary of Activities), SoCalGas' service territory is extensive, covering approximately 20,000 square miles stretching from Visalia in the north, to the Mexico border in the south and as far east as the California/Nevada border. Supervisors are responsible for providing daily work direction and inspecting contractor work at 52 operating bases throughout the service territory. These employees also have on-call responsibilities to respond to off-hour emergencies such as gas line breaks, damaged gas facilities, and gas leak investigations. They are in a leadership role and provide training, coaching, and mentoring to SoCalGas' frontline employees and third-party contractors. These supervisors encourage and counsel employees to work safely, follow Company procedures, deliver superior customer support, and build and maintain a safe and reliable natural gas delivery system.

Clerical support reconciles all maintenance projects and verifies that documents are maintained properly in SoCalGas' records. In addition, this workforce maintains the accurate retention of local construction permits, maintenance work orders, customer requests, and many other critical documents. They are also responsible for maintaining payroll for the field and office workforce.

Dispatch Operations employees work in coordination with field supervision, field employees, technical planning, third-party contractors, cities, and counties. They utilize a combination of information technology systems and manual processes to distribute work to SoCalGas and contractor field personnel. This coordination with other departments and agencies is critical for the completion of field operations and maintenance work.

Off-production time refers to the hours that are paid while field employees are not actively involved in field operations and maintenance activities. An example of such time is time spent attending skills training classes. Employees attend training because they are new to their job, require operator qualification, receive ongoing refresher training, are promoted to a position requiring additional technical skills, or need additional training for new equipment, new technology, or changes in Company policies or external regulations. Other labor hours recorded to off-production time include participation in activities such as meetings on safety, customer satisfaction, general communications, completion of audits of base operations, and stocking

trucks with tools and fittings. Off-production activities are necessary to maintain a proficient and effective field workforce and meet regulatory requirements.

Materials support includes expenses for miscellaneous equipment and services that provide essential administrative and logistic assistance to the activities within the Field Operations and Maintenance workgroups discussed in Section II.B, above. It encompasses such items as general office supplies, business forms, pagers, cell phones, trash collection, miscellaneous contract services, and employee expenses.

Removal of abandoned pipe generally occurs at the request of municipalities with construction projects in the vicinity. In general, when mains are replaced, the old main is abandoned in place. However, there has been an increase in customer and municipality requests for SoCalGas to remove previously-abandoned mains. The geneses for these removal requests are two-fold. The first is a physical conflict between the location of the abandoned pipe and the desire of an entity (typically a landowner or developer) to use the same space for a different purpose. The second reason for a removal request is driven by landowners who want to update the legal title on their land. When SoCalGas holds an easement for a line that has been abandoned, the Company is obligated to quit-claim the easement back to the landowner, upon request. Often these requests to remove abandoned pipe are made well after the capital main abandonment project is completed, which results in an increase in operating and maintenance expense.

This cost supports the safety and reliability of SoCalGas' system by providing necessary field support, supervision, and required training.

b. Forecast Method

In developing the TY2016 forecast, historical expenditures and work units for 2009 through 2013 were evaluated. There are numerous activities covered in this area as well as many factors that influence costs for this workgroup. Generally, the services provided within the Field Support workgroup are driven by the amount of field work to be completed, the need for contractor support, the complexity of jobs, the number of employees, and incremental operations, compliance, and safety requirements that impact the Gas Distribution workforce.

SoCalGas is experiencing an increase in regulatory pressures, such as additional CPUC audits, which result in more record-keeping and research activities. Furthermore, SoCalGas

anticipates an increase in supervisor time to comply with 49 CFR 192.615[20] and Senate Bill 44,[21] which require that SoCalGas maintain a liaison and meet with fire, police, and other public officials.

With the projected incremental work in Gas Distribution field O&M categories; there will be an increase in work activities within this workgroup, such as clerical, dispatch, training, and supervision. Furthermore, SoCalGas expects that employee training will increase due to additional Operator Qualification requirements and increased employee turnover.

As previously discussed, there has been an increase in requests to remove abandoned pipe long after the associated capital project closed, resulting in an O&M pressure that will continue to increase costs in this workgroup.

Given these diverse and growing influences, SoCalGas determined that a five-year (2009 through 2013) historical linear trend best reflects future requirements for this workgroup. The trend will capture the growth in work activities, which is anticipated to continue. Using an average forecasting method would under estimate the obvious increases that are occurring and will result in insufficient funding for this workgroup. This base forecast methodology results in a $3,192,000 increase over the 2013 adjusted recorded base in TY2016.

In order to perform the incremental work associated with this work category, SoCalGas is adding 15 incremental light duty trucks in 2014, seven in 2015, and six in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

Added to this base are incremental work elements not reflected in the base forecast that are necessary to adequately fund Field Support activities in TY2016. These work elements are described below. The total incremental funding needed for this workgroup, including the base forecast and incremental increases, is $6,358,000 over the 2013 adjusted recorded base for TY2016.

i. Administrative Advisors

SoCalGas is experiencing increased regulatory pressure to improve its compliance assurance practices. This is reflected in the additional CPUC audits and in new reporting requirements, such as those required under Resolution ALJ-274. Additional compliance

[20] 49 CFR 192.615 (Emergency Plans).
[21] *Codified at* Cal. Pub. Util. Code §§ 950, *et seq.* (October 7, 2011).

requirements have increased compliance monitoring activities for frontline supervisors. Therefore, Administrative Advisors are needed to support frontline Supervisors with compliance duties, such as review of completed work orders and leak survey maps for data completeness. The additional compliance support will allow local supervisors to better manage the balance between compliance paperwork requirements and crew support. Local Supervisors will be able to perform additional safety field inspections and provide improved coaching and counseling to field employees. These supervisors will also be required to perform additional fire and police department visits to comply with 49 CFR 192.615, which requires that pipeline operators maintain a liaison with fire, police, and other public agencies. Furthermore, California Public Utility Code section 956.5 (SB 44) requires operators to meet once a year with each local fire department where gas lines are located. SoCalGas plans to hire two Administrative Advisors in the year 2015, and an additional four the following year, for a total of six during TY2016. This will provide three Administrative Advisors for each of the two Gas Distribution Regions. The funding needed to address the incremental requirement is $618,000 over the forecast base for TY2016.

SoCalGas is adding two light duty trucks in 2015 and four in 2016 for these forecasted incremental employees. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

ii. Field Instructors

Safety is rooted in all phases of Gas Distribution training. Maintaining a skilled, qualified and dedicated workforce is critical to SoCalGas' success. SoCalGas is experiencing increased pressures associated with maintaining a highly trained and qualified workforce, such as increased turnover in workforce due primarily to retirements and employee movement as a result of promotions and transfers. This presents issues of knowledge transfer, skills development, and overall proficiency of the replacement workforce. Gas Distribution is taking appropriate measures to maintain this highly skilled workforce recognizing that safety and system reliability cannot be sacrificed during a time of employee transition. Furthermore, the implementation of new field technologies has increased the need for technical training and support for field employees. SoCalGas is adding four Field Instructors to assist new Distribution employees with on-the-job training, Mobile Data Terminal support, mentoring, guidance on new policies and procedures, construction and safety inspections, and other support activities. This on-the-job

training will supplement the formal training provided to field employees and will fill the need to transition the employee from training in a controlled environment to training in real work conditions. SoCalGas plans to hire two Field Instructors in the year 2015 and an additional two the following year for a total of four during TY2016. This will provide two Administrative Advisors to each of the two Gas Distribution Regions. The funding needed to address the incremental requirement is $412,000 over the forecast base for TY2016.

SoCalGas is adding two light duty trucks in 2015 and two more in 2016 for these forecasted incremental employees. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

iii. Field Operator Qualification Training

An integral component of overall workforce proficiency is the Operator Qualification program. SoCalGas is expanding its Operator Qualification program to better align with industry standards and feedback from the CPUC. This includes adding new qualification elements or tasks, developing qualification materials, establishing an electronic record-keeping process, and conducting training and qualification of impacted employees. Operator Qualification program requirements are further discussed in the Operations Management and Training workgroup (Section II.D) later in this testimony. The number of Operator Qualification covered tasks is increasing from 55 to 125 and will require the qualification of all impacted employees. The expanded Operator Qualification program will add approximately 36,100 incremental training hours required to qualify Gas Distribution field employees in the new Operator Qualification elements. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-001, located under Field O&M – Field Support in Exhibit SCG-04-WP. The incremental increase for this work element over the base forecast is $1,948,000 in TY2016.

iv. Electronic Leak Survey Tracker

SoCalGas is working on the implementation of an electronic leak survey handheld device that will allow employees to perform leak survey using GPS and GIS technology to record surveyed areas. This electronic handheld device has the potential to significantly decrease the number of paper maps used by field employees conducting leak survey. The deployment of this technology is expected to take place in the year 2016 and will require training for approximately 465 employees, who are currently trained to manually-perform leak survey. The incremental increase for this work element over the base forecast is $188,000 in TY2016.

c. Cost Drivers

Generally, the services provided within the Field Support workgroup are driven by the level of Distribution field work to be completed, the need for contractor support, complexity of jobs, and the number of employees. This cost supports the safety and reliability of SoCalGas' system by providing the necessary field support, supervision, and required training. The main cost drivers include:

- The level of general construction work. Field experience indicates that, as economic conditions improve, construction work increases, thus work levels tend to increase, resulting in the need for additional support services. The increase in work level is reflected in the additional pressures discussed in the O&M workgroups covered in this testimony.
- The amount of training and off-production work needed for employees. SoCalGas expects that employee training will increase due to additional Operator Qualification requirements. In addition, the rise in Employee turnover will increase costs as employees learn new jobs. Off-production time includes attending skills training classes; participation in activities such as meetings on safety, customer satisfaction, and general communications; completion of audits of base operations; and stocking trucks with materials, tools and fittings.
- The level of office materials, equipment and services needed to support personnel completing work described in the Field Operations and Maintenance workgroups discussed in this testimony. It encompasses such items as general office supplies, business forms, pagers, cell phones, trash collection, miscellaneous contract services, and employee expenses.
- Increase in regulatory pressures, such as additional CPUC audits and the requirement to increase supervisor visits to fire and police departments to comply with 49 CFR 192.615 and SB 44, which require that SoCalGas maintains a liaison with fire, police and other public agencies. This requires additional support, such as supervisors and administrative advisors.

8. Tools, Fittings, and Materials

Recorded to this workgroup is the purchase of small tools, small pipe fittings, miscellaneous pipeline materials, and miscellaneous installation materials used during construction and maintenance activities and those held in inventory as vehicle truck stock. These materials are necessary to obtaining complete and safe work results. Table FBA-13 below summarizes Gas Distribution O&M costs associated with Tools, Fittings, and Materials.

TABLE FBA-13
Southern California Gas Company
Field O&M – Tools, Fittings, and Materials

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
B. Field Operations & Maintenance	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
8. Tools, Fittings & Materials	7,087	7,526	439

a. Description of Costs and Underlying Activities

Included within each category of materials are items such as:

- Small tools – screw drivers, wrenches, etc.
- Small pipe fittings – couplings, ells, nipples, etc.
- Miscellaneous pipeline materials – bolts, stakes, pipe straps, traffic vests, etc.
- Miscellaneous installation materials – cold patch asphalt, pre mixed concrete, etc.
- Also recorded to this workgroup are expenses for the rental and laundering of uniforms.

The rate of consumption of these materials is highly influenced by construction and maintenance activity in other workgroups of this testimony. As the level of work and workforce increases, so does the need for additional tools, fittings, materials and uniforms. This cost supports the safety and reliability of SoCalGas' system by providing employees the necessary tools and materials required to perform field functions safely.

b. Forecast Method

Spending on Tools, Fittings, and Materials is driven by the increase in construction and maintenance work reflected in other workgroups of this testimony, as well as the increase in workforce needed to complete this work. Given the requirement to support an overall increase in construction and maintenance activities, as well as the Gas Distribution workforce, and an

assessment of historical expense in this workgroup, SoCalGas used a five-year (2009 through 2013) historical linear trend to forecast future needs for tools, fittings and materials. This five-year trend results in an increase of $439,000 over the 2013 adjusted recorded base in TY2016.

c. Cost Drivers

The rate of consumption of the materials covered in this workgroup is highly driven by the construction and maintenance activity discussed in other workgroups in this testimony, as well as by the level of field workforce that requires uniforms. Another driver is the cost at which SoCalGas is able to obtain the tools, fittings and materials used by its employees and contractors. As these cost pressures increase, they impact the overall cost for this activity.

C. Asset Management

Reviewed in this section of the testimony are activities and associated O&M expenses incurred in the evaluation of the condition of the distribution system. This includes maintaining many asset records, identification of corrective maintenance solutions, and coordinating with field personnel on completion and recording of operations and maintenance activities. Table FBA-14 below summarizes Gas Distribution O&M costs associated with Asset Management activities.

TABLE FBA-14
Southern California Gas Company
Asset Management

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
C. Asset Management	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
1. Asset Management	7,549	10,827	3,278
Total	**7,549**	**10,827**	**3,278**

1. Description of Costs and Underlying Activities

SoCalGas' technical office provides many of the technical and administrative services needed for the successful and timely completion of the O&M activities discussed in Section II.B (Field Operations and Maintenance) above. This workgroup records the labor and non-labor costs for services provided by the technical office. Activities performed by this planning office include items such as:

- Identifying construction design requirements;

- Evaluating pressure specifications;
- Conducting pipeline planning;
- Providing project drawings;
- Identifying material selection;
- Preparing work order estimates;
- Acquiring third-party contract services (*e.g.,* paving, traffic control plan, and operated equipment); and
- Obtaining permits for construction from city, county, state, and federal agencies.

The technical office also coordinates the region's emergency response efforts by managing the Gas Emergency Centers, which are located at each Planning and Engineering office. Gas Emergency Centers are region command centers that are activated during a significant event (*e.g.*, fire, earthquake, pipeline damage, customer outage) to support field operations with engineering, pipeline planning, mapping, logistics, and office resources that are vital in returning SoCalGas facilities back to normal operations.

This cost supports the safety and reliability of SoCalGas' system by evaluating the condition of the distribution pipeline system. This includes maintaining many asset records, identifying corrective maintenance solutions, coordinating with field personnel to complete necessary work and recording of operations and maintenance activities. This work also furthers SoCalGas' efforts to implement the directives of SB 705 to "…[i]dentify and minimize hazards and systemic risks in order to minimize accidents, explosion, fires, and dangerous conditions, and protect the public and the gas corporation workforce" and "[i]dentify the safety-related systems that will be deployed to minimize hazards, including adequate documentation of the commission-regulated gas pipeline facility history and capability."[22]

2. Forecast Method

Asset Management work is driven by the level of operations and maintenance activity in other workgroups discussed in this testimony. As documented below in Cost Drivers, multiple factors impact the level of activity in these workgroups, which, in turn, affect the services provided in the Asset Management work category.

[22] Cal. Pub. Util. Code § 961(d)(1-2).

As the level of maintenance work, general construction, municipality work and customer-generated activity increases, so will the support provided by the Technical Offices. Given these incremental activities and a review of historical costs and underlying cost drivers, SoCalGas determined that a five-year (2009 through 2013) historical linear trend best reflects future requirements for this workgroup. Using an average or base year forecasting method would not be appropriate for this workgroup, as it would not properly fund future work demands. This forecast results in a $2,598,000 increase over the 2013 adjusted recorded base in TY2016.

In order to perform the incremental work associated with this work category, SoCalGas is adding one incremental light duty truck in 2014 and a second in 2015. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

Added to this base are incremental work elements not reflected in the base forecast that are necessary to adequately fund Asset Management activities in TY2016. These work elements are described below. The total incremental funding needed for this workgroup, including the base forecast and incremental increases, is $3,278,000 over the 2013 adjusted recorded base in TY2016.

a. Compliance Technical Advisors

As government rules and regulations become more stringent, SoCalGas is challenged to continue to meet its compliance obligations. To meet continued compliance with the changing laws, regulations and rules, SoCalGas requests the addition of four Compliance Technical Advisors (one per each main technical office). These Compliance Technical Advisors will support daily compliance monitoring, record-keeping, reporting, and implementation of compliance programs. They will also deliver training to field personnel and local management needed to learn new or modified compliance requirements. These positions will be located in each of the four main technical offices with direct operational responsibility for working with local management to proactively address day-to-day compliance and maintenance issues. These include:

- Monitoring leak survey to confirm all maps are completed on time.
- Running reports to verify leak repair due dates are met.
- Reviewing bridge and span reports to validate follow-ups are completed.
- Following up with field personnel to resolve any compliance work order information discrepancies and to complete any missing work.

- Working with field personnel to review updates to compliance Gas Standards.
- Assisting with compliance reports and support for governmental audits.
- Reviewing compliance reports from a broad perspective to identify and correct potential out of compliance issues.

The funding for these four Compliance Technical Advisors is $412,000 over the forecast base for TY2016.

b. Administrative Control Clerk for Pipeline Records Management

Governmental agencies are placing greater emphasis on the record-keeping practices of pipeline operators. As the expectation of increased record-keeping and document quality control management increases, SoCalGas is required to take greater action to safeguard the integrity of construction and maintenance records and related paper files, while making them easily accessible to employees that reference them as part of their normal work activities, as well as to regulators and auditors. SoCalGas is therefore committed to establishing documentation practices that provide for the development and retention of reliable, traceable, and verifiable records on a going-forward basis. To adequately record work history and maintain these records, SoCalGas requests the addition of four Administrative Control Clerks (one per technical office). These Administrative Control Clerks will be responsible for daily record filing, keeping track of records being checked out to verify those documents are returned to archives, and reconciling and tracking high pressure project packages after new construction is completed. The funding needed to address this incremental requirement is $268,000 over the forecast base for TY2016.

3. Cost Drivers

As discussed above, Asset Management work is driven by the level of operations and maintenance activity in other workgroups covered in this testimony. As the level of maintenance work, general construction, municipality work and customer-generated activity increases, so will the support provided by Technical Offices personnel. Multiple factors impact activities in the Gas Distribution workgroups, which also affect the work in the Asset Management category.

- The increase in general construction and customer-generated activity requires additional planning time.

- Additional work in public rights-of-way requires the Technical Offices to perform more planning work on pipeline alterations.
- The increase in construction and maintenance work requires additional processing of paving and permitting orders.
- Improved economic conditions[23] also drive general construction work in private and public property. Therefore, as economic conditions improve an increase in work completed within the Asset Management workgroup is also anticipated.
- Government regulations can also impact this work category as a result of more stringent requirements. As previously discussed, since the San Bruno incident in Northern California, SoCalGas has experienced increased regulatory pressure to establish more strict compliance assurance practices. To address this pressure, within the Asset Management workgroup, SoCalGas will be establishing compliance technical advisors to more closely monitor and promptly address compliance work and administrative records control clerks to manage pipeline archives to safeguard data integrity.

D. Operations Management and Training

This section includes costs recorded to the Operations Management and Training workgroup. This workforce is a critical component of managing the integrity of the pipeline system to prevent and reduce risks, and is necessary to provide customers with safe and reliable service. This request advances SoCalGas' ability to maintain compliance with the requirement set forth in SB 705 to "[e]nsure an adequately sized, qualified, and properly trained gas corporation workforce."[24] Table FBA-15 below summarizes Gas Distribution O&M costs associated with Operations Management and Training.

[23] IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

[24] Cal. Pub. Util. Code § 961(d)(10).

TABLE FBA-15
Southern California Gas Company
Operations Management and Training

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
D. Operations Management & Training	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
1. Operations Management & Training	9,951	15,644	5,693
Total	**9,951**	**15,644**	**5,693**

1. Description of Costs and Underlying Activities

The activities completed within this workgroup are categorizes as Operations Leadership, Field Management, Operations Support, and Field Technical Skills Training.

Operations Leadership - Company leaders are responsible for setting the tone and direction of their organization. They provide a vision for the organization to succeed in meeting SoCalGas' objectives. Gas Distribution's goal is to continue to provide safe and reliable services for its customers at a reasonable cost. In order to succeed, this message must reach approximately 1,700 Gas Distribution employees located throughout SoCalGas' large and diverse service territory. Leadership must communicate and reinforce this goal and instill a passion for success through interactions, such as regular dialog with managers, periodic dialog sessions with frontline supervisors and employees, participation in employee seminars, ongoing refresher training, and one-on-one employee meetings.

Field Management - Field management is responsible for overall management of the workforce dedicated to the planning and completion of Gas Distribution pipeline maintenance and installation activities. Field management includes such tasks as:

- Implementing programs focused on meeting customer satisfaction and employee safety.
- Facilitating the acquisition and allocation of resources to complete work on time.
- Working with supervisors on scheduling conflicts.
- Reviewing compliance work for completeness.
- Providing consultation to pipeline contractors regarding job requirements and Company procedures.

- Providing general leadership toward reaching Company goals and/or individual performance management and improvements.

Operations Support - Operations support consists of a variety of general operational services necessary for Field Operations employees to complete their daily tasks. This support includes such activities as identifying, developing, implementing, monitoring, and enhancing Company policies, procedures, tariffs, technologies, and/or reports used by Gas Distribution. As SoCalGas' business needs or regulatory requirements change, 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 and reliable service to customers and maintain the integrity of the gas system.

Field Technical Skills Training - The Operations Field Technical Skills Training team provides Gas Distribution, Gas Transmission, and Gas Storage with the training services described below. These services are necessary to make certain the Company follows applicable 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.
- The Operator Qualification Program is maintained by the training team, which 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 to the program, as needed.
- Instructional design services provided by the training group 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.

These functions support the safety and reliability of SoCalGas' system by providing the proper level of operations leadership, field management, operations support, and field technical skills training.

2. Forecast Method

In projecting the future expense requirements for these functions, SoCalGas reviewed the 2009 through 2013 historical spending for this workgroup. In general, operations leadership, field management, operations support, and personnel training increase as levels of work and workforce increase; as new programs, processes and technologies are implemented; and as regulatory or compliance requirements change. The review of the historical costs in this work category shows a generally consistent upward trend. As a foundational forecast, SoCalGas used the 2013 adjusted recorded expense, which represents the base 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 Operations Management and Training activities in TY2016. These work elements are described below.

The total incremental funding for these incremental increases is $5,693,000 over the 2013 adjusted recorded base in TY2016.

a. Operator Qualification Program

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 is able to continue to deliver safe and reliable service to its customers and maintain the integrity of its pipeline infrastructure. SoCalGas is expanding its Operator Qualification program to better align with industry leading practices and recommendations by CPUC auditors, as well as 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."[25] This includes adding new qualification elements or tasks, developing qualification materials, establishing an electronic record-keeping process, and

[25] Cal. Pub. Util. Code § 961(c).

conducting training and qualification of impacted employees. The following three items describe these incremental activities.

i. Operator Qualification Program Enhancement in Training Services - Technical Specialists, Training Instructors, Administrators

In response to recommendations by Commission staff during a region operations audit conducted in February, 2013,[26] SoCalGas agreed to expand its Operator Qualification program to implement six additional welding and fusion elements or tasks for steel and plastic. Furthermore, as a result of feedback from the CPUC auditors at SDG&E's CPUC operations audit on July 16, 2013,[27] SoCalGas will add eight elements for employees who perform pressure control operations. Because SoCalGas and SDG&E implement one consistent Operator Qualification program, program enhancements are implemented across both companies. In addition, the Operator Qualification program will be expanded to better align with industry leading practices, which generally follow the American Society of Mechanical Engineers (ASME) B31Q standard.[28] Feedback from CPUC auditors during recent audits has indicated that they also follow these leading practices to audit Operator Qualification programs. Thus, SoCalGas will be increasing its overall number of Operator Qualification covered tasks from 55 to 125. Impacted employees will be required to demonstrate proficiency in each new covered task and the qualification process will need to be observed and documented by a qualified observer. The intervals in which employees will be re-evaluated will vary, depending on the task. Under the current program all tasks have a re-evaluation requirement of five years. Under the expanded program, however, re-evaluation will occur every three years for many of the Operator Qualification elements. Implementation of the new Operator Qualification program will require two Technical Specialists for program development, four Training Instructors to conduct employee training and qualification, one subject matter expert to assist in the development of program materials, and two Operator Qualification program administrators. The implementation of the revised Operator Qualification program will start in year 2015 and be completed in 2017. Additional details can be found in supplemental workpaper SCG-FBA-

[26] SoCalGas Operations Audit by CPUC Safety and Enforcement Division (February 18-22, 2013).
[27] SDG&E Operations Audit by CPUC Safety and Enforcement Division (July 16, 2013).
[28] ASME B31Q Edition 10 (September 30, 2010).

O&M-SUP-006, located under Operations Management & Training in Exhibit SCG-04-WP. The funding needed to address this incremental requirement is $1,080,000 over the forecast base for TY2016.

ii. Operator Qualification Program Enhancement in Training Services - Operations Training Administrator Clerks

As employees are trained and qualified on the new Operator Qualification elements, Training Services will be required to process and review more than one million additional documents per year. Training Services will need five incremental Administrative Control Clerks to process these records and to verify that all operators performing covered tasks are qualified. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-006, located under Operations Management & Training in Exhibit SCG-04-WP. Individual documentation is needed for each Operator Qualification covered task for both initial and subsequent qualification.

Currently there are 55 covered tasks, and each covered tasks consists of a written test and a performance test (110 tests total). The program will be expanding from 55 tasks to 125 tasks. Therefore, in the new program, there will be 250 tests. These tests are used to qualify the approximately 3,000 employees, in 35 job classifications that form part of SoCalGas' Operator Qualification program. The Operator Qualification rule requires that the individual's knowledge, skills, and abilities are demonstrated or tested for each task. The training and testing materials are developed in compliance with the applicable Company Gas Standards associated with each covered task.

The Operator Qualification Clerks will assist in verifying that all employees requiring operator qualifications receive the proper initial training and re-qualifications as needed. They will also add new employees in the operator qualification tracking system and will provide employee operator qualification status reports to field supervision. The funding needed to address this incremental requirement is $349,000 over the forecast base for TY2016.

iii. SAP Enhancement for Operator Qualifications

As discussed in the previous section, the expanded Operator Qualification program will significantly increase the number of employee qualification records. In addition to the five clerks described previously, a new electronic process will be required to process this large amount of records. Additional details can be found in supplemental workpaper SCG-FBA-O&M-SUP-006, located under Operations Management & Training in Exhibit SCG-04-WP. One of the alternatives to this electronic option is to expand the current manual data entry

process, which would add approximately 60 clerks. Given the large expense associated with adding this level of workforce, SoCalGas determined that this is not an acceptable option. Other electronic options SoCalGas reviewed are significantly more expensive. Therefore, SoCalGas will implement the least cost option for the new Operator Qualification records documentation electronic process, estimated at $363,000 and this approach will be fully implemented in TY2016.

b. Training Services

Safety is rooted in all phases of Gas Distribution training. It starts with the formalized training that employees receive when they begin their career, is emphasized on the job, 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 having held a technical or field job at some point in their careers. These instructors convey consistent safety messages and confirm 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 required to address incremental work activities, SoCalGas is experiencing increased turnover in workforce due to retirements and employee movement as a result of promotions and transfers. This presents issues of knowledge transfer, skills development, and overall proficiency of the new and replacement workforce. Gas Distribution 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 four incremental elements associated with improvement to the training program.

i. <u>Gas Distribution - High Pressure Technical Advisors</u>

SoCalGas will implement a high pressure training program composed of subject matter experts in the high pressure pipeline field. These Technical Advisors will be dedicated to develop new and refine existing training modules and deliver initial Operator Qualification technical training to Managers and Supervisors involved with high pressure pipeline construction. In addition, this team will deliver initial technical training to contract employees

who are supporting with tasks such as Welding Inspections and Pipeline Coating Inspections. This team will also incorporate new and expanded federal mandates into existing Company standards, address compliance concerns related to field construction of high pressure pipelines, modify policies and procedures as necessary, and reinforce these policy and procedure changes with technical training. These Technical Advisors will be the responsible document owners for the high pressure distribution field procedures. In addition, this team will provide on-demand field support in the area of policy and procedure interpretation, and provide recommendations on a case-by-case basis, giving consideration to any abnormal field conditions.

These Technical Advisors will also be responsible for providing high pressure training sessions throughout the year. One of these positions is funded by the Distribution Integrity Management Program through 2015 as part of a pilot, which has proven to be successful and will become part of routine operations by 2016. This activity is included in the 2014 and 2015 DIMP forecast in the prepared direct workpapers of Maria Martinez, Exhibit SCG-08-WP. The cost associated with the two Technical Advisors is a $206,000 increase to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

ii. Instructors for Formal Clerical Training

As discussed above, formal employee training is foundational to the development of employees. Furthermore, as SoCalGas continues to experience increased turnover, the need for this training has increased. An area where SoCalGas has identified a developing weakness that will have to be addressed is the training of Distribution Office employees, such as Leakage Clerks, Cathodic Protection Clerks and Work Order Control Clerks. In the past, these clerks' jobs included performing many manual tasks and their training was done on-the-job. With the implementation of new field technologies such as Click, GIS, and SAP, however, their work has changed from a manual process to a computerized one. This requires formal training materials and instruction, which will deliver specific and consistent information on the new electronic systems and work processes. The work these clerks perform directly impacts compliance and pipeline facility records management. Therefore having knowledgeable, highly-skilled clerks is critical to the safety and integrity of the gas system. In order to address this need Training Services will hire subject matter experts as instructors to develop and deliver formal courses for the office clerical workforce. This results in a $321,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

SoCalGas is adding two incremental vans for these instructors in 2014. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

iii. Technical Specialist for Modernization of Training Materials

As part of its formal training and in support of ongoing refresher training, SoCalGas maintains a large inventory of videos used as visual aids. Over time, these materials become obsolete as regulations, Gas Standards, field technologies and business practices change. Training Services will undertake an effort to update this large inventory of training materials. In order to accomplish this effort, three incremental Technical Specialists are needed to modernize training videos and instructional content. These upgrades and the continuous effort to keep training material up to date will enhance the training experience for field employees. Non-labor costs will also be incurred for necessary materials (cameras, lenses, lighting, and computer software) and employee expenses. A summary of Training Services modernization items can be found in supplemental workpaper SCG-FBA-O&M-SUP-005, located under Operations Management & Training in Exhibit SCG-04-WP. This results in an increase of $350,000 in expenses reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

iv. Classroom Technology

In an effort to continuously improve and modernize classroom technology with the objective of enhancing the employee training experience and knowledge acquisition, Training Services will upgrade the audio visual equipment in twelve classrooms. This will include material such as screens, mounting hardware, and cables, as well as installation costs. A summary of Training Services modernization items can be found in supplemental workpaper SCG-FBA-O&M-SUP-005, located under Operations Management & Training in Exhibit SCG-04-WP. This results in an increase of $84,000 in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

v. Situation City Enhancement – Metal Canopy

As part of its formal training program and Operator Qualification requirements, SoCalGas incorporates hands-on elements at its simulation training facility, Situation City. In an effort to continue to improve the efficacy of employee training, SoCalGas will be installing a

new metal canopy in Situation City where students can gather to receive safety and course matter instructions. A summary of Training Services modernization items can be found in supplemental workpaper SCG-FBA-O&M-SUP-005, located under Operations Management & Training in Exhibit SCG-04-WP. This results in a $10,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

c. Quality Assurance and Compliance Assurance

Maintaining a skilled, qualified, and dedicated workforce is critical to SoCalGas' success. It is through the efforts of these employees that SoCalGas is able to continue to deliver safe and reliable service to its customers and maintain its pipeline infrastructure. In support of this principle, SoCalGas is strengthening its Quality Assurance and Compliance Assurance functions. Furthermore, these efforts are responsive to regulatory requirements of SB 705, which states that a utility shall "[i]dentify and minimize hazards and systemic risks in order to minimize accidents, explosions, fires, and dangerous conditions, and protect the public and the gas corporation workforce"; "[p]rovide for effective patrol and inspection of the commission-regulated gas pipeline facility" and "[e]nsure an adequately sized, qualified, and properly trained gas corporation workforce."[29] Below are three incremental elements that support improvements to SoCalGas' quality and compliance assurance efforts.

i. <u>Gas Operations Pipeline Maintenance - Quality Assurance Program</u>

In the year 2012, SoCalGas implemented a leak survey Quality Assurance program pilot under the DIMP to determine if such an effort would have a positive effect on the overall leak survey quality and the skills development of employees. Since the implementation of the leak survey Quality Assurance effort, it has been observed that employees need additional support in the field after formal training to sharpen their skills. The Quality Assurance program allows SoCalGas to verify compliance, determine understanding of work and electronic system procedures, determine knowledge gaps, identify required updates to training materials and gas standards, and provide refresher training either on an individual basis or to groups of employees.

SoCalGas is expanding this pilot under the DIMP, to review work in other compliance areas, such as inspections on valves, bridges and spans, as well as cathodic protection, locate and

[29] Cal. Pub. Util. Code § 961(d)(1)(4)(10).

mark, and pipeline patrols. This pilot will be completed at end of 2015 and, given the compliance and employee training benefits identified to date, SoCalGas plans to expand it and incorporate it into routine operations staring in TY2016. This activity is included in the 2014 and 2015 DIMP forecast in the prepared direct workpapers of Maria Martinez, Exhibit SCG-08-WP. The Quality Assurance program will perform audits for leak survey, pipeline patrol, bridge and spans, valve inspections, and locate and mark. The new Quality Assurance Specialists will bring consistency across the entire Company with respect to how these audits are performed, the elements that are examined, and the follow-up corrective action that must be completed, documented, and verified. Additionally, this centralized audit function will be better equipped to identify trends, provide direct employee refresher training, and determine the effectiveness and adequacy of the procedures used in normal operations and maintenance activities and recommend modifications or enhancements to policies and procedures when deficiencies are found.

The new Quality Assurance program will add thirteen employees to perform all of the aforementioned audits system-wide. This request includes a Team Lead and twelve Quality Assurance Specialists. These Specialists will perform the suite of audits previously mentioned over a one-week period at each of the 52 District throughout SoCalGas. This approach will enable Quality Assurance audits to be completed bi-monthly at each District system-wide. This incremental activity results in a $1,339,000 incremental increase in expense reported to this workgroup in TY2016 over the 2013 adjusted recorded base.

SoCalGas is adding eight incremental light duty trucks for these Specialists in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

ii. Gas Operations Pipeline Maintenance - Cathodic Protection Technical Advisor

As previously discussed, without proper intervention, buried steel pipelines will revert back to their natural state as an iron oxide (i.e. corrode). Corrosion on pipelines increases the risk for leaks, and can reduce the useful life of pipelines. Due to long term deterioration of coating on older pipeline systems, CP systems are requiring additional analysis and improvements to maintain and improve corrosion control practices. The analysis and development of improvement projects requires additional technical and analytical expertise.

Furthermore, workforce turnover in cathodic protection field positions, will lead to a loss of expertise in certain areas of the Company. Employees with less time in the job, require more ongoing technical support with CP troubleshooting, understanding how to apply cathodic protection practices, and when to use each of the cathodic protection methods (magnesium anodes, rectifier protection, shallow well, deep well, bond, insulator, etc.).

In an effort to provide this needed support, SoCalGas will hire two Cathodic Protection Technical Advisors by 2016. This incremental work activity results in a $206,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

SoCalGas is adding one incremental light duty truck in 2015 and a second in 2016 for these two advisors. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

iii. Gas Operations Pipeline Maintenance - Compliance Assurance Technical Advisor

Over the last few years SoCalGas has implemented new field technologies to support operations processes. Since implementing SAP as the work management tool and Click as the work scheduling and order completion tool, SoCalGas now faces the challenge of analyzing recorded inspection and repair data to verify accuracy and completeness of compliance data. Formerly, the information related to inspection and leak repair orders was documented on paper and mostly reviewed prior to entry into the legacy systems. With the implementation of SAP and Click, data is recorded automatically as it is entered into the employee's MDT. Therefore, the critical task of data validation occurs once the information is already in the system of record.

An incremental Technical Advisor will be needed to extract information from SAP and create comprehensive data validation tools to identify missing or incorrect information. This position will work directly with region personnel (Supervisors, Compliance Technical Advisors, and Administrative Advisors) to retrieve the correct information and make the necessary changes in SAP. 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 the annual CPUC audits and will support region management during audits to respond to data requests.

This position, funded by the Distribution Integrity Management Program through 2015 under a pilot basis, is proving to be successful and will become part of routine operations by the

year 2016. This activity is included in the 2014 and 2015 DIMP forecast in the prepared direct workpapers of Maria Martinez, Exhibit SCG-08-WP. This incremental work activity results in a $103,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

d. Field Technology Support

As SoCalGas continues to implement new field technologies to improve operations, the organization must embrace the change. Support systems must be in place to monitor the integration of these tools within the field and overall management practices. SoCalGas forecasts incremental work elements associated with review of procedures and changes to work processes, development of reports and tools to monitor the effectiveness of operations, identification and implementation of business improvements, ongoing training of employees on system enhancements, and technical business support. The following three incremental elements address these needs.

i. <u>Gas Operations Pipeline Maintenance - Business Systems Advisors</u>

Since implementing SAP as Gas Operations' work management tool, SoCalGas is presented with an opportunity to integrate, analyze and provide a standardized reporting solution for the large amount of data gathered across all operations districts. SoCalGas is developing a Gas Distribution data warehouse (data repository) that will consolidate information from the work management systems and provide dashboards and reports for district, region, Company and executive views. This data warehouse will provide a reporting and analytical solution for SoCalGas Distribution Operations to deliver gas distribution key performance indicators, metrics, and operational reports. The objective of these performance and productivity metrics is to more effectively and consistently manage Gas Distribution field operations across all areas by identifying variances, trends, and continuous process improvements.

This reporting tool will allow managers and frontline supervisors to quickly obtain large amounts of information from SAP. Gas Operations Pipeline Maintenance Staff will add two Business Systems Advisors to develop, test, and implement this reporting tool. These Advisors will train Region employees in the use of the reporting tool and will also provide reports and develop ad hoc queries for Distribution Operations to help more effectively manage its business. This incremental activity results in a $206,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

ii. Gas Operations Pipeline Maintenance - Technical Advisor

This incremental element accounts for a Technical Advisor II who returned to Gas Operations Pipeline Maintenance Staff by the end of the first quarter of 2013. Therefore, the full impact of his salary is not reflected in the base forecast. This Advisor provides process support to ClickSchedule end users in the Area Resource Scheduling Organization, and Distribution Field Operations.[30] This incremental element results in a $26,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

iii. Gas Operations Construction Planning and Design - Process Advisors

SoCalGas anticipates completing deployment of its SAP Construction, Planning, and Design module by the end of 2014. Post implementation, four operations planning resources will be required to drive consistent job processing, assist in system navigation and provide on-going refresher training. These positions will also support all facets of the construction planning process, including: construction project estimates and planning; construction package execution and closure; as-built and mapping updates; gas policy and procedure development; reporting requirements; and developing business requirements for enhancements to SAP, ClickMobile, or the Construction, Planning, and Design -related Graphical Work Design module. As these positions are also involved in capital planning work, a 50/50 split is being used. This incremental element results in a $210,000 increase in expense reported to this workgroup in TY2016, as compared to the 2013 adjusted recorded base.

iv. Gas Operations Enterprise Systems Solutions - Business Systems Analysts and Manager

After completion of Operational Excellence 20/20 Program projects and implementation of SAP Plant Maintenance (SAP-PM) as the work management system, ClickSchedule as the dispatching and scheduling application, and ClickMobile as the field work completion tool for Maintenance and Inspection, Measurement and Regulation, and Construction, Planning, and Design functions, SoCalGas is required to provide live help desk support to over 1,200 employees using these applications in the field and Area Resource Scheduling Organization.

[30] ClickSchedule is the system used by Gas Distribution to schedule and dispatch work to field employees.

Regulatory, business and work practice changes will drive system enhancements of these automated tools as identified by users and process owners, requiring detailed analysis, planning and implementation over the next several years. Furthermore, the above Work Management, Scheduling and Mobile applications are highly integrated with other information systems and hence, require substantial Quality Assurance support upon execution of system enhancements to verify all systems are working properly.

To address these business needs, including support to the users added by the deployment of Construction, Planning, and Design, SoCalGas Enterprise Systems Solutions will need to add seven Business System Analysts and one Project Manager by the year 2016. These incremental resources will also manage change requests and perform Software Quality Assurance tests upon execution of system upgrades. Addition of these resources will result in an increase of $840,000 in expenses reported to this workgroup in TY2016 over the 2013 adjusted recorded base.

3. Cost Drivers

The Operations Management and Training section is driven by costs in four major areas: operations leadership, field management, operations support, and personnel training. In general, costs in these areas increase as levels of work and workforce increase, new programs, processes and technologies are implemented; and regulatory or compliance requirements change. As such, the work environment within Operations Management and Training is increasingly influenced by, and evolving with multiple drivers:

- Government regulations can impact this work category as a result of more stringent requirements. As previously discussed, since the San Bruno incident in Northern California, SoCalGas has experienced increased regulatory pressure to establish enhanced compliance assurance practices. This drives costs associated with the Quality Assurance program and additional compliance technical advisors.
- The need to maintain a trained and qualified workforce. SoCalGas is taking proactive action to address employee training and qualification through the expansion of its Operator Qualification program, additional instructors and subject matter experts, modernization of its audio visual aids, and improvements to its training facility.
- The need to support new field technologies and to facilitate the integration of these tools within the field and overall business practices. This will drive costs associated

with increased help desk support, technical business support and identification and implementation of system enhancements.

- 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.
- Increased turnover in workforce presents issues of knowledge transfer, skills development, and overall proficiency of the replacement workforce. This drives costs related to Training, Operator Qualification, Technical Support, and Quality Assurance.
- 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.

E. Regional Public Affairs

Regional Public Affairs' (RPA) primary focus is supporting field operations through its work with regional and local governments on issues regarding permitting, proposed regulations, franchises, and emergency preparedness and response. Table FBA-16 below summarizes O&M costs associated with RPA activities in support of Gas Distribution.

TABLE FBA-16
Southern California Gas Company
Regional Public Affairs

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars			
E. Regional Public Affairs	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
1. Regional Public Affairs	4,043	4,316	273
Total	**4,043**	**4,316**	**273**

1. Description of Costs and Underlying Activities

As noted above, RPA's primary focus is supporting field operations through its work with regional and local governments on issues regarding permitting, proposed regulations, franchises and emergency preparedness and response. RPA also informs county and city

officials about SoCalGas issues that could impact customers. To a significantly lesser degree, RPA is also a point of contact in the communities SoCalGas serves, educating stakeholders about SoCalGas construction activities, customer programs and service offerings, responding to customer and media inquiries, and resolving customer complaints. These activities are crucial to mitigating operational costs that would otherwise put upward pressure on customer rates.

RPA is involved in these activities because other departments within SoCalGas do not specifically address operational issues or the information needs of elected officials and community groups. RPA has the relevant knowledge, experience and established relationships to communicate directly and efficiently with local governments and community groups.

SoCalGas expects that, as the level of construction, repair and maintenance activities increases over the rate case period, the need for increased interaction with regional and local governments, as well as local communities, to facilitate these activities will increase accordingly.

Regional Public Affairs Organization

The Regional Public Affairs Director is responsible for supervising the four Regional Affairs Managers to affirm that regional staff is consistently supporting operations, while addressing the concerns and issues of local elected officials and community organizations, as well as their respective constituents, across SoCalGas' service regions. The Regional Public Affairs Director is further responsible for providing leadership and policy guidance to the Strategy Manager and Franchise and Fees Manager.

The Regional Affairs Managers oversee the Public Affairs Managers in four geographic regions. Each of these regions is managed by one Regional Affairs Manager. The Regional Affairs Managers provide leadership and policy guidance to their direct reports.

The Public Affairs Managers serve as the primary SoCalGas representatives to the 223 municipalities within twelve counties of Southern California. In addition, within a large city, there are often multiple communities with unique political, economic, and demographic characteristics. For example, within the City of Los Angeles, Hollywood and San Pedro are distinct communities. This holds true for unincorporated communities within a given county, such as East Los Angeles and Rowland Heights in Los Angeles County. Public Affairs Managers engage with these cities and communities so that Field Operations can complete necessary work in a timely and cost-effective manner. There are also two Governmental Affairs

Managers who serve as the primary liaison between SoCalGas and the County and City of Los Angeles on operational issues.

The Strategy Manager primarily prepares strategies, action plans and informational materials for the RPA managers' use in working with public agencies on issues such as operational activities, natural gas price increases, energy efficiency, utility services and safety, proposed fee increases and ordinance changes.

The Franchise and Fees Manager is primarily responsible for timely negotiation of franchise agreements with municipalities within SoCalGas' service territory and for securing cost effective outcomes for both customers and the Company. The Franchise and Fees Manager also provides support to the Public Affairs Managers and engages in negotiations with local governments to protect the Company's franchise rights when local governments propose significant permit fee increases or permit conditions that potentially increase operating costs and/or create a precedent that may adversely impact customers.

RPA possesses in-depth and unique knowledge about the local governments and communities for which it is responsible. Working closely with Distribution Operations and other business units at SoCalGas, RPA develops solutions to a broad range of issues experienced in the service territory. Following is an overview of key RPA activities:

<u>Supporting Operations by Working with Governments</u>

In order to achieve SoCalGas' goal of maintaining a safe and reliable system at a reasonable cost, RPA works with local governments on issues including proposed regulations, permitting, distribution and transmission construction, maintenance and relocation activities, and emergency preparedness.

RPA promotes local regulatory uniformity throughout SoCalGas' service territory on matters affecting distribution operations by engaging in education, conflict resolution, and issue clarification with governments where existing or proposed local ordinances or regulations may conflict with state laws, regulations, or franchise agreements, or impose unnecessary costs on SoCalGas operations and customers. This is a major focus for RPA as cash-strapped local governments are increasingly proposing new ordinances, enacting new fees or raising existing ones, modifying general plans or zoning rules, and modifying traffic control requirements.

RPA also coordinates and resolves local government permitting requirements by helping to obtain unique and difficult-to-negotiate locally-mandated permits that enable operations to

construct, maintain, replace or relocate facilities in a timely, cost-efficient manner, thereby maintaining SoCalGas' high level of reliability and reasonable rates.

In addition to supporting operations by working with governments, RPA coordinates SoCalGas' operational activities with other utilities by participating in inter-utility coordinating committees. Meeting regularly with electric, cable and telephone utilities to coordinate activities in public rights-of-way, RPA helps minimize street-cut activities, which decreases the inconvenience of street closures, increases public safety and reduces operational costs.

RPA plays a critical role in coordinating emergency planning and response activities between SoCalGas and cities and counties in SoCalGas' service territory. RPA serves as a member of the Los Angeles, Orange and San Bernardino County Emergency Operations Centers, as well as the Los Angeles City Emergency Operations Center. RPA participates in Emergency Operations Center drills and is required to report to the centers during an emergency. RPA is on call for this duty 24 hours a day, seven days a week. RPA similarly performs a vital function in SoCalGas' internal Emergency Operations Centers. In the event of an emergency that could impact the pipeline system, designated RPA personnel are deployed to SoCalGas' central Emergency Operations Center and regional Gas Emergency Centers to provide support to operations and to city and county Emergency Operations Centers. In addition, RPA hosts a number of first responder workshops each year, bringing together fire and police personnel for briefings on SoCalGas' pipeline system, system safety and system security issues. These activities supports SoCalGas' compliance with SB 44, which states that "[o]wners or operators of intrastate transmission and distribution lines shall establish and maintain liaison with appropriate fire, police, and other public officials."[31]

RPA also provides elected officials with information – both proactively and in response to inquiries – about pending operational and regulatory matters that could impact customers, planned or proposed rate changes, utility safety, and utility programs and services. By informing elected officials, RPA enables them to share critical information with their constituents, thereby allowing those constituents to realize the full benefits of SoCalGas' service.

[31] Natural Gas Pipeline Safety Act of 2011, *codified at* Cal. Pub. Util. Code § 956(c)(3).

Supporting Operations by Working with Communities

RPA provides information about pending SoCalGas operational matters, rates and program offerings, responds to customer and local media inquiries, and resolves customer complaints.

RPA advises community groups, chambers of commerce and businesses about pending operational and regulatory matters that could affect customers, planned or proposed rate changes, utility safety, energy efficiency and conservation, and customer assistance programs. When stakeholders are well-informed about SoCalGas' activities, services and programs, they can realize the full benefit of utility services. Furthermore, these stakeholders can share this critical information with their constituents, so they too are prepared and informed.

Although SoCalGas' Media and Employee Communications department has primary responsibility for interacting with news media, RPA's presence in the field and knowledge of local issues sometimes puts RPA personnel on the frontline as the Company's spokesperson when a media representative is not immediately available and newsworthy events occur. In this capacity, RPA presents Company positions, answers media inquiries and provides important information to customers and customer groups.

RPA is further responsible for responding to customer concerns that have escalated to public officials or that involve community groups. Each year, RPA must resolve billing and service complaints, big and small.

This cost supports the Company's goals of maintaining a safe and reliable system at a reasonable cost. As previously stated, RPA's primary focus is supporting field operations through its work with regional and local governments on issues regarding proposed regulations, permitting, franchises and emergency planning and response. These activities help SoCalGas achieve its goal of maintaining a safe and reliable system at a reasonable cost. In the absence of RPA's work with local governments, Field Operations could experience increased operating costs and work delays that may put upward pressure on customer rates and also impact SoCalGas' ability to provide safe and reliable service.

2. Forecast Method

The staffing level at the end of the 2013 base year represents the ongoing requirements necessary to provide a base level of support to Gas Distribution. Therefore, the 2013 adjusted recorded labor plus expenses related to the vacancies experienced earlier in the year are

necessary to maintain current operations. The type of service provided by employees within the Regional Public Affairs workgroup fluctuates from year to year. For this reason, a five-year (2009 through 2013) historical average of the recorded non-labor expenditures was determined to be most representative of ongoing non-labor requirements. Using a five-year average as the foundation for the non-labor forecast results in an increase of $39,000 over the 2013 adjusted recorded base.

Added to this base are incremental work elements not reflected in the base forecast that are necessary to adequately fund Regional Public Affairs activities in TY2016. These work elements are described below. The total incremental funding needed for this workgroup is $273,000 over the 2013 adjusted recorded base in TY2016.

a. Regional Public Affairs Vacancies in Base Year

During the 2013 base year, RPA experienced labor vacancies that resulted in lower-than-forecast labor and non-labor spending. Vacancies were due to retirements, employees taking positions in other workgroups and time required to back-fill vacated positions with qualified employees. These vacancies were equivalent to approximately one Public Affairs Manager. The funding needed to address the incremental requirement is $100,000 over the forecast base for TY2016.

b. Regional Public Affairs Manager

As the level of construction, repair and maintenance activities increases over the forecast period, the need for increased interaction with regional and local governments, as well as local communities, to facilitate these activities will increase accordingly. An incremental Public Affairs Manager position will be needed to support the increase in these activities and to help mitigate operational costs. The funding needed for one incremental Public Affairs Manager position is $110,000 over the forecast base for TY2016.

c. Regional Public Affairs Intern

In anticipation of future replacement needs due to retirements and/or other related position changes; the need for increased communication with regional and local governments, as well as local communities, to facilitate field operations; and the need to cost-effectively supplement the workforce, RPA is proposing to hire an intern. The intern would be responsible for: conducting research and developing outreach materials on pending SoCalGas operational matters, rates and program offerings; making materials accessible to the RPA workgroup; and,

assisting RPA with outreach planning and logistics. Through this process, the intern would be exposed to various aspects of operations and coached and mentored by veteran employees as a pathway to a cost-effective, full-time position at SoCalGas. The funding needed for one incremental Public Affairs intern is $24,000 over the forecast base for TY2016.

3. Cost Drivers

The level of construction, repair and maintenance activities drives costs for this workgroup. RPA's focus is facilitating these activities in a timely and cost-effective manner so SoCalGas can maintain safe and reliable service for its customers at a reasonable cost. As the level of these activities increases over the rate case period, the need for increased interaction with regional and local governments to facilitate these activities will increase accordingly.

Since operational activities impact the communities SoCalGas serves, an increase in these activities will similarly require increased RPA interaction with community groups, chambers of commerce, businesses, local media, and individual customers about operational matters. RPA is not only providing stakeholders with information about project details, timelines and community impacts. Increasingly, RPA finds itself addressing heightened stakeholder concerns about environmental impacts related to SoCalGas' operations. In a post-San Bruno environment, these stakeholders, as well as emergency responders, also have heightened natural gas safety concerns that RPA must address.

Further driving costs for this workgroup are the actions of local governments as they propose new and often more stringent and costly operating conditions, such as engineered traffic control plans, additional paving requirements and restricted working hours. Local governments are also drawing out franchise negotiations, hoping to secure concessions from SoCalGas. When local governments attempt to impose conditions that increase operating costs, RPA must increasingly engage with local governments to help mitigate these costs. Consequently, SoCalGas expects to see costs in this workgroup increase.

III. SHARED OPERATIONS AND MAINTENANCE COSTS

A. Introduction

The majority of expense requirements in direct support of SoCalGas' Gas Distribution operations are discussed within the Non-Shared Services portion of this testimony. However, there are a few activities for which expenditures are incurred on behalf of both SoCalGas and SDG&E, and therefore, these expenses are considered Shared Services. These activities fall under the workgroup Operations Leadership and Support. These activities are necessary for the Company to provide customers with safe and reliable service.

Table FBA-17 summarizes the total shared O&M forecasts for the listed cost categories.

TABLE FBA-17
Southern California Gas Company
Shared O&M Summary of Costs

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars Incurred Costs (100% Level)			
Categories of Management	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
B. Operations Leadership & Support	3,409	7,909	4,500
Total Shared Services (Incurred)	**3,409**	7,909	**4,500**

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. See Exhibit SCG-04-WP. The dollar amounts allocated to affiliates are presented in the Shared Services and Shared Assets Billing Policies and Process testimony of Mark Diancin, Exhibit SCG-25.

B. Operations Leadership and Support

1. Description of Costs and Underlying Activities

This section includes costs recorded to the category Operations Leadership and Support. Similar to the O&M Non-Shared Services workgroup, Operations Management and Training (Section II.D), the activities completed within this category are related to operations leadership, operations support, and field training, all of which are necessary for SoCalGas' ability to provide

customers with safe and reliable service. Table FBA-18 summarizes the costs for the Operations Leadership and Support category.

TABLE FBA-18
Southern California Gas Company
Operations Leadership and Support

GAS DISTRIBUTION			
Shown in Thousands of 2013 Dollars Incurred Costs (100% Level)			
B. Operations Leadership & Support	**2013 Adjusted-Recorded**	**TY2016 Estimated**	**Change**
1. Enterprise Systems Solutions Production Support	912	912	0
2. Field Services Leadership & Operations Assessment	383	4,883	4,500
3. Field Technologies	355	355	0
4. Gas Operations Services	279	279	0
5. Operator Qualification	278	278	0
6. Distribution Field Services	774	774	0
7. Maintenance Process	428	428	0
Incurred Costs Total	**3,409**	7,909	**4,500**

The personnel covered under this workgroup are tasked with appropriately considering risk when providing service to Gas Distribution personnel, including in the leadership decisions of short and long term objectives, development of appropriate gas standards and field training programs, development of appropriate employee qualification programs, and efficient support of field technologies and equipment.

While the categories in this area are similar to the Operations Management and Training workgroup discussed in Section II.D above, the specific activities are different, and the costs and forecast are separate. A description of the activities that fall under each cost center reflected here is provided below as well as in the O&M Shared Services workpapers, Exhibit SCG-04-WP.

Enterprise Systems Solutions Production Support

Recorded to this cost center are the labor, employee expenses, and non-labor materials and services required to provide support to users of enterprise computer applications that are utilized by the Field Operations technicians and staff in Gas Operations. The Enterprise Systems Solutions department provides technical assistance through live Help Desk support from 6:00

AM to 6:00 PM Monday through Friday, monitors and resolves systems interfaces, configures and maintains testing and training environments, receives and analyzes change requests, coordinates software Quality Assurance, coordinates and prioritizes activities with the Information Technology organization, and deploys software changes to production.

Field Services Leadership

Recorded to this cost center are the salary and employee non-labor expenses for the Vice President and his or her assistant for the Field Operations organization. Also charged are one-time expenses that benefit the entire organization.

Field Technologies

Recorded to this cost center are the labor, employee expense, and non-labor materials and services required to research and evaluate new tools and technology that enhance or replace existing processes or tools and provide benefits in the form of improved safety. This team helps mitigate risks associated with potential failure of field technologies or the use of obsolete equipment. Field Technologies supports Field Operations by conducting tool and equipment instruction and training to help clients become proficient in the use of new and existing tools and equipment.

Gas Operations Services

Recorded to this cost center are the salaries for the Gas Operations Services Director and the Administrative Associate who support this organization. Also recorded to this cost center are the associated employee expenses and miscellaneous supplies and materials.

Operator Qualification

Recorded to this cost center are the labor, employee expense, and non-labor materials and services required to manage the Company's Operator Qualification program and the compliance of employees who perform Operator Qualification covered tasks. This team helps to mitigate the risks associated with personnel that otherwise would not have the appropriate level of qualification to safely complete work on gas pipelines. The department provides technical assistance and support, conducts audits, provides guidance and assistance in the development of new and refresher training, provides technical support for issues and concerns arising from rule interpretations, provides assistance prior to and during CPUC audits, performs audits on pipeline contractors to verify compliance with the Operator Qualification rules, and manages the process to confirm that all impacted employees are evaluated within the required time frame.

Distribution Field Services

SoCalGas recognizes that an important risk mitigation measure is developing, maintaining and communicating high quality written standards that employees can follow to safely complete work on the gas system. Recorded to this cost center are the labor and associated non-labor expenses required to manage the maintenance of existing Company gas standards and the authoring of new standards. Distribution Field Services updates gas standards with the applicable industry standards and regulatory mandates, and performs compliance reviews per a predetermined schedule. Also recorded to this cost center is the labor and associated non-labor expenses required to manage the administration of the Company's Supervisor Resource site, a one-stop-shop intranet site which provides on-demand reference tools and documents used by supervisors. Another area recorded to this cost center is the labor and associated non-labor expenses required for the administration of various alliance pipeline contractors. Staff members act as liaisons to the contractors, and are responsible to communicate and address issues.

Maintenance Process

Recorded to this cost center are the labor and employee expense related to business processes supporting gas maintenance and inspection activities. Included is ownership of associated gas standards, which are reviewed and modified, as necessary, according to changing regulations or CPUC Audit results. This department develops and modifies electronic forms supporting requirements from Pipeline Integrity and Compliance Assurance, including design, testing, and targeted end-user training for successful release into production. Field business processes are reviewed, modified, and implemented as data collection requirements change. Training updates are communicated to incorporate new or modified processes into the training program. Process improvements are identified for the Area Resource Scheduling Organization. Communication with the Area Resource Scheduling Organization includes answering complex questions, defining new requirements, and solving scheduling issues. District-specific Quality Assurance audits are performed.

2. Forecast Method

In projecting the future expense requirements for these functions, SoCalGas reviewed the 2009 through 2013 historical spending for this entire workgroup. The 2013 adjusted recorded expense represents the base level of leadership, management, support, training personnel, and

services necessary to maintain current operations. Several of the cost centers in this workgroup were created after 2009; therefore, they do not have a full five years of historical data. For this reason, a historical average or linear trend forecasting methodology would not adequately reflect ongoing funding requirements. As described above these functions support the mitigation of several risks by providing services such as proper gas standards, training documentation, employee qualification, technology support, and appropriate levels of leadership and supervision.

The allocation methodology and calculation for each cost center can be found in the O&M Shared Services workpapers, Exhibit SCG-04-WP.

Added to this base is an incremental work element not reflected in the base forecast that is necessary to adequately fund activities in TY2016. This work element is described below. The total incremental funding needed for this incremental increase is $4,500,000 over the 2013 adjusted recorded base for TY2016.

a. Gas Distribution Monitoring and Control Program Assessment and Blueprint Development

SoCalGas and SDG&E have a long history of providing safe and reliable service to customers. As we continue to enhance pipeline systems and business processes to improve asset knowledge, better monitor and control gas distribution pipeline infrastructure, and more quickly respond to emergencies, SoCalGas and SDG&E will incur incremental costs for the implementation of a Gas Distribution Monitoring and Control Program.

SoCalGas and SDG&E propose to design and develop a comprehensive Gas Distribution Monitoring and Control Management Program to significantly enhance their capability to remotely monitor and control their gas distribution system, providing the ability to more quickly and effectively respond to emergencies. The overall objective of this program is to enhance public and employee safety and system reliability. Furthermore, this effort is in compliance with the requirements of Public Utilities Code Sections 961 and 963, which were enacted by SB 705. Section 961 requires pipeline operators to provide "[e]quipment and personnel procedures to limit the damage from accidents," "[t]imely response to reports of leaks, hazardous conditions, and emergency events," and "[p]repare for and respond to earthquakes and other major events."[32]

The forecast described in this section is to conduct an assessment and develop a program blueprint to determine the extent to which SoCalGas and SDG&E should implement remote

[32] Cal. Pub. Util. Code § 961(d)(5,6,8)

monitoring and control of gas distribution infrastructure. The program's blueprint will also recommend projects and work processes as well as the priority and timing of the work. Furthermore, the assessment will include an analysis of industry best practices, including field and control room technologies. The following section provides information on the work SoCalGas and SDG&E are currently doing or plan to implement during the forecast period in support of infrastructure monitoring and emergency response.

i. Description of Current Gas Distribution Monitoring and Control Activities

SoCalGas and SDG&E operate and maintain gas distribution systems that comprise 114,000 miles of gas main and service pipeline, as well as approximately 4,100 miles of distribution high pressure pipeline, referred to at the utilities as "supply lines." This system is interconnected with approximately 2,400 regulator stations and numerous valves. Over the last few years, SoCalGas and SDG&E have invested in technologies that improve the visibility of pipeline data and employee location in the field to more effectively respond to emergencies. Some of these capabilities are discussed below.

SoCal Gas plans to complete the replacement of mechanical charts by the end of 2016 with electronic pressure monitors. These facilities send alarms to the Dispatch Center when pressure parameters are outside the set points, and these alarms are then forwarded to technical and engineering personnel in the impacted area. Furthermore, Technical/Engineering personnel can proactively query each unit to determine near real time pressure at that point of the system. These units are commonly used during pipeline emergencies. Electronic pressure monitor installations are covered in Section IV.M (Measurement and Regulation Devices) of this testimony and Section III.I (Code Compliance) in my SDG&E Gas Distribution testimony, Exhibit SDG&E-04.

Through implementation of their approved Pipeline Safety Enhancement Plan (PSEP),[33] SoCalGas and SDG&E will install valves, actuators, and related distribution system control components to isolate and depressurize critical pipelines in the event of a rupture; enhanced flow measurement and telemetry equipment at new pipeline locations; and new check valves and

[33] The PSEP was reviewed by the Commission in A.11-11-002 and approved in D.14-06-007. Actual PSEP costs will be reviewed and approved through a reasonableness review application process. Through that application process, SoCalGas and SDG&E will seek recovery of actual incremental O&M costs associated with operating and maintaining the enhanced valves through 2015.

other enhancements to prevent the back-flow of gas into major pipeline isolation sections to be depressurized. This work will be completed on vital high pressure distribution lines that are defined as transmission lines under Department of Transportation regulations[34] and are part of the PSEP requirements. The post-PSEP installation maintenance costs for these facilities are included in the O&M Section II.B.3 (Measurement and Regulation) of this testimony, and Section II.B.9 (Measurement and Regulation) in my SDG&E Gas Distribution testimony, Exhibit SDG&E-04. The associated Gas Control and SCADA costs are found in the testimonies of John Dagg, Exhibits SCG-05 and SDG&E-05.

SoCalGas and SDG&E have a small number of gas distribution pipeline telemetry points included in the current SCADA system that are monitored and controlled by Transmission Gas Control. Visibility of this information has been driven by the need to support the control of the Transmission system. This activity is covered in the Gas Transmission testimonies of witness, John Dagg, Exhibits SCG-05 and SDG&E-05.

The Customer Service and Gas Distribution gas dispatching and work scheduling Departments are currently co-located at five offices throughout the service territories, with the Chatsworth and Mission offices having 24/7 operations. Distribution Dispatch is normally in operation Monday through Friday from approximately 6 am to 4 pm. This activity is covered in the Gas Distribution testimonies of Frank Ayala, Exhibits SCG-04 and SDG&E-04, and Customer Services testimonies of Sara Franke, Exhibits SCG-10 and SDG&E-13.

The Distribution System Engineering Support group provides assistance to Gas Distribution region engineering groups with technical, data, and policy support, as well as manages the Company's multi-year program to replace all mechanical pressure recorders with electronic recorders and enhance associated processes. During the forecast period, this team will be expanded to provide support to Gas Distribution with: analysis of incoming operating pressure data from all electronic pressure monitoring devices; development of reports; and leveraging new technology such as ability to utilize mobile (smart) devices to query electronic pressure monitor data. This activity is covered in the Gas Engineering testimony of Raymond Stanford, Exhibit SCG-07.

[34] These are high-pressure distribution lines that are defined as transmission lines under the federal code.

The Geographic Information System provides the ability to query asset and service history data, including the number of customers impacted during an emergency; providing the technical/engineering personnel responding to the emergency with critical information used to formulate outage mitigation plans and, if needed, service restoration plans. This activity is covered in the Gas Engineering testimonies of Raymond Stanford, Exhibits SCG-07 and SDG&E-06.

SoCalGas provided MDTs to Gas Distribution field personnel, as part of its Operational Excellence 20/20 Program starting in 2010.[35] These units provide some capacity to view the location of employees in the field, which can be beneficial during an emergency when crews must be dispatched to the location of a pipeline incident.

The activities described above support SoCalGas' goal of continuing to improve the visibility of pipeline facilities, system data, and employees in the field to more effectively respond to emergencies and improve asset knowledge.

ii. Description of Incremental Activities

As SoCalGas and SDG&E continue to enhance pipeline systems and business processes, the utilities will leverage the work functions and technology currently in place to enhance their ability to more efficiency respond to emergencies and increase access to pipeline system knowledge. To this end, SoCalGas and SDG&E will establish a team of internal and external resources to conduct an assessment and develop a program blueprint to determine the extent to which SoCalGas and SDG&E should implement remote monitoring and control of their gas distribution infrastructure. The program's blueprint will also recommend projects and work processes as well as the priority and timing of the work. Furthermore, the assessment will include an analysis of industry best practices, including field and control room technologies.

The incremental cost to complete this effort is $4,500,000 in the year 2016, over the base year forecast. Additional details may be found in supplemental workpaper SCG-FBA-USS-SUP-006, located under the O&M Shared Services workpaper Field Services Leadership & Operations Assessment, Exhibit SCG-04-WP. The major components of this effort will consist of the following activities:

[35] The Operational Excellence 20/20 Program is a field technology effort that provided MDTs to field employees and implemented associated maintenance and inspection technology to track work orders electronically.

Benchmarking

SoCalGas and SDG&E will undertake an effort to benchmark against the industry to determine best practices for gas distribution remote monitoring and control; associated business processes; use of monitoring and control technology in both the field and control room; and data collection processes. Furthermore, through this effort, SoCalGas and SDG&E will better align with the requirement in SB 705 that pipeline operators establish a safety plan that is "consistent with best practices in the gas industry."[36] SoCalGas and SDG&E will enlist the support of a consultant with expertise in this field to conduct the benchmarking effort, and provide an assessment with findings, conclusions and recommendations.

Remote Infrastructure Monitoring and Control Plan

As described above, SoCalGas and SDG&E currently conduct some monitoring and control of their gas distribution system. Furthermore, the PSEP will install controls at some valves as discussed in Section II.B.3 (Measurement and Regulation) of this testimony. In addition, the Utilities have a strong gas control function for their Transmission system as described in the testimonies of John Dagg, Exhibits SCG-05 and SDG&E-05.

As SoCalGas and SDG&E continue to look for opportunities to enhance their gas distribution pipeline systems, the utilities will develop a plan to determine which facilities should be remotely controlled and/or monitored; the priority in which this work should occur; and the timing for each project. The results from the benchmarking effort described above will be used to support this plan. Furthermore, this effort will help SoCalGas and SDG&E determine the level of additional work needed to address the major hazards the CPUC listed in a recent publication.[37] Examples of activities this plan must contemplate to develop an implementation blueprint include:

- Development of a plan for the installation of electronic pressure monitors as the replacement of mechanical charts reaches completion. An example of this decision process is to determine if electronic pressure monitors should be installed at all regulator stations.

[36] Cal. Pub. Util. Code § 961(c).

[37] CPUC Risk Assessment Unit Hazard Database Project Report on Status and Initial Recommendations (March 14, 2012).

- Development of a plan for the installation of controls at pipeline valves, as appropriate for the pipeline function and in accordance with code requirements, such as DOT 49 CFR 192, parts 179, 181 and 935. Automatic valve controls allow pipeline operators to further enhance response time to isolate a pipeline following a rupture caused by earthquakes, landslides, third party impacts, or other significant events. SoCalGas and SDG&E operate a large number of valves. The valve installation plan will need to provide a blueprint and selection criteria for addressing installation of controls at critical valves such as:
    - In-line supply line valves
    - Regulator station inlet valves
    - Fire control valves
- Development of a field workforce plan for ongoing operations and maintenance of the new monitoring and control field equipment.

<u>Gas Distribution Control Center Plan</u>

A part of their Gas Distribution Monitoring and Control Plan, SoCalGas and SDG&E will develop a plan for the future of their gas distribution control functions. Utilizing information from the benchmarking effort described above, as well as support from industry experts, SoCalGas and SDG&E will develop a blueprint covering items such as the following:

- Plan for the development and implementation of a Gas Distribution Control Center. This plan will assess items such as the level of integration between this new control center and the current Transmission Control Center, the dispatch function, and the Gas Emergency Centers; as well as the degree of physical and virtual integration.
- Plan for a centralized Control Center to utilize the integrated dispatch of personnel, gas system analysis technical support, and monitored information (electronic pressure monitors and SCADA) to provide centralized and efficient emergency response on a 24/7 basis.
- Plan for upgrading the SCADA system to incorporate the additional real-time operating data-telemetry communication sites throughout the distribution pipeline system. This will include recommendation of the type of communications needed for the new sites.

- Workforce plan for the personnel needed to staff the Control Center, and to maintain and operate the SCADA system.
- Plan describing the requirement for building space, equipment and technology needed for the additional personnel and facilities.
- Plan for the ongoing operations and maintenance of the new systems, facilities and equipment.

Enhancement of Current Business Processes Plan

As SoCalGas and SDG&E develop a blueprint for the remote monitoring and control infrastructure, it will also be necessary to include the requirements for the development of standards, work procedures, and training that reflect business process changes. This will include activities such as:

- Development of training materials to reflect changes to work processes
- Updating of gas standards and work processes
- Updating of emergency procedures to better integrate the control, dispatch, and emergency response functions
- Development of a plan to provide centralized Technical/Engineering personnel for 24/7 support of emergency shutdown procedures at the Gas Distribution Control Center.

Implementation and Ongoing Support Team

As SoCalGas and SDG&E implement their Gas Distribution System Monitoring and Control strategy, it will be necessary to hire personnel to manage the implementation of the associated projects, as well as for developing and communicating key performance and safety metrics, which are included in this request.

3. Cost Drivers

The cost drivers behind this forecast include: changes to industry leading practices and standards; level of work and workforce that require leadership and support; changes in construction and maintenance methods; regulatory, legislative and compliance requirements; changes in training and operator qualification requirements; implementation of new programs, processes, and technologies; workforce turnover; the need to maintain data integrity and leverage new information depositories; and the need to continuously assess and mitigate operations risks.

IV. CAPITAL

A. Introduction

The driving philosophy behind SoCalGas' capital investments is to provide safe, reliable delivery of natural gas to customers at a reasonable cost. This commitment requires that SoCalGas invests in its infrastructure and support services to mitigate risks associated with the safety of the public and employees, service reliability, and gas system integrity. SoCalGas installs new pipeline mains, service lines, and MSAs to meet the needs of the growing population in the service territory. To maintain system reliability and safety, SoCalGas makes a variety of other capital improvements including pressure betterment projects to improve areas of low pressure, pipeline renewals to replace deteriorated pipelines or obsolete equipment, installations and replacements of cathodic protection systems, and the purchase of electronic monitoring devices for pressure tracking and monitoring. Other improvements include pipeline relocations to accommodate public infrastructure improvements, such as street and highway widening, and relocations caused by the construction of new water, sewer, and electric facilities. To accomplish these activities, SoCalGas continuously monitors the condition of approximately 99,400 miles of main and service pipelines. By using technology and the professional judgment of experienced, skilled, and well-trained employees, SoCalGas utilizes capital in a prudent, responsible manner, consistent with local, state, and federal codes and regulations.

In preparing the forecast for capital expenditures, SoCalGas Gas Distribution Operations reviewed historical spending levels, including work units, and developed an assessment of future requirements, and associated risks. This analysis entailed a review of the historical 2009 through 2013 spending and consideration of the underlying cost drivers to determine if a historical pattern of spending should be expected to continue into the future, considering the mitigation of associated risks. Gas Distribution also evaluated future work requirements that are incremental to levels of historical spending and necessary to maintain the safe and reliable operations of the distribution system while mitigating risks. Thus, the forecasting methodologies varied depending on the type of activity being analyzed and the expectations of future system needs. These methods included forecasts of future spending based on: historical averages; historical growth and estimated future growth; identified projects or materials; and a combination of project-specific justification and analysis of historic spending. Thus, SoCalGas' Gas Distribution capital expenditure forecasts are rooted in a historical review of spending adjusted,

where appropriate, for elements of new work or changes in operating conditions and risk mitigation which would not have been reflected in the past spending patterns. As such, this forecast addresses actions that must be taken to manage risks associated with the safety of the public and employees, service reliability, and gas system integrity.

To continue to provide safe and reliable service, while mitigating associated risks, Gas Distribution requests the Commission adopt its forecast for capital expenditures of $274,426,000, $271,848,000, and $273,616,000 in 2014, 2015, and 2016, respectively. Table FBA-19 provides a summary of the total capital costs for the forecast years.

TABLE FBA-19
Southern California Gas Company
Capital Expenditures Summary of Costs

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
Categories of Management	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
B. New Business	19,847	24,190	28,636	32,493
C. Pressure Betterments	12,385	27,561	23,445	16,009
D. Supply Line Replacements	2,746	4,267	4,267	4,267
E. Main Replacements	44,496	47,233	47,233	47,233
F. Service Replacements	17,491	22,217	15,899	15,109
G. Main & Service Abandonments	4,073	3,582	3,582	3,582
H. Regulator Stations	7,250	5,554	5,554	5,554
I. Cathodic Protection Capital	3,884	8,048	9,169	9,169
J. Pipeline Relocations - Freeway	10,301	10,301	10,301	10,301
K. Pipeline Relocations - Franchise	16,567	18,472	20,128	21,783
L. Other Distribution Capital Projects & Meter Guards	4,509	3,867	3,867	3,867
M. Measurement & Regulation Devices	28,019	37,231	38,190	40,063
N. Capital Tools	2,366	8,169	8,129	10,964
O. Field Capital Support	44,230	53,734	53,448	53,222
Total	**218,164**	**274,426**	**271,848**	**273,616**

The following sections provide, by activity, a description of the specific work to be completed, the benefits of such work, the forecast methodology, expected expenditures, and cost drivers. These expenditures are necessary to maintain regulatory compliance and the continued safe and reliable delivery of natural gas.

In addition to this testimony, also refer to my capital workpapers, Exhibit SCG-04-CWP for additional information on the projects described herein.

B. New Business

This work category provides for changes and additions to the existing gas distribution system to connect new residential, commercial and industrial customers. These costs for New Business are summarized below in Table FBA-20.

TABLE FBA-20
Southern California Gas Company
New Business

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
B. New Business	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. New Business Construction	24,733	29,713	34,159	38,016
2. New Business Trench Reimbursements	726	887	887	887
3. New Business Forfeitures	-5,612	-6,410	-6,410	-6,410
Total	**19,847**	**24,190**	**28,636**	**32,493**

1. Description of Costs and Underlying Activities

The forecast for New Business for 2014, 2015, and 2016 are $24,190,000, $28,636,000, and $32,493,000, respectively. These forecasted capital expenditures support the Company's goals of providing a safe and reliable gas distribution system and in response to its obligation to serve the growing customer base, thus mitigating the risk of reduced service reliability. This includes installations of gas mains and services, MSAs, and the associated regulator stations necessary to provide service to the customer.

The materials cost of meters and regulators are addressed under the Measurement and Regulation Units work category.

2. Forecast Method

a. New Business Construction

The base forecast for New Business expenditures was developed using the projected new meter sets added to the gas distribution system multiplied by the cost per meter set. The cost per meter set is reflective of the mix of work that is anticipated to construct new main extensions and associated service laterals. These activities account for the use of contractor services, third-party

services, municipal permit fees, and the proportionate use of plastic and steel materials. SoCalGas chose the latest three-year (2011 through 2013) recorded history to forecast the cost per meter set as it reflects the start of a positive growth rate that provides a more accurate representation of the upward trending of new meter set installations, which is expected to continue in the forecast years. The resulting base forecast for 2014, 2015, and 2016 is $29,713,000, $34,159,000, and $38,016,000, respectively. Refer to supplemental workpaper SCG-FBA-CAP-SUP-001, in Exhibit SCG-04-CWP, for additional details. Table FBA-21 below shows the quantity of new meter sets SoCalGas installed in the period 2009 through 2013 and the new meter installation forecast for the years 2014 to 2016.

TABLE FBA-21
Southern California Gas Company
New Business Meter Installation History and Forecast

Year	2009	2010	2011	2012	2013	2014F	2015F	2016F
Number of New Meter Set Installations	31,828	26,585	18,764	21,898	26,787	35,089	40,339	44,894

For additional details on the forecast of customer meter sets, refer to the workpapers of SoCalGas Customers witness Rose-Marie Payan, Exhibit SCG-30-WP.

In order to perform the incremental work associated with the new business growth forecasted in this area, SoCalGas is adding 16 incremental crew trucks in 2014, nine in 2015, and nine in 2016. The costs associated with these vehicles may be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

b. New Business Trench Reimbursements

In accordance with CPUC Rules 20 and 21, new customers who provide their own trench receive reimbursement for this contribution. The estimate of expenditures in this budget category includes reimbursement costs based on the five-year (2009 through 2013) average historical cost. The forecast includes reimbursement costs of $887,000 for each of the years 2014, 2015, and 2016. SoCalGas chose a five-year average methodology due to the generally unpredictable nature of customers' decisions to provide their own trenches. Although new business is projected to continue on an upward growth rate, the recorded cost for this work category does not reveal an historical pattern that can suggest the use of an alternative methodology. For example, recorded expenditures in this work category for year 2011 were at

approximately the same level as year 2013, however, year 2011 recorded 40% less new business construction activity than in year 2013. The variations observed on the recorded history further support SoCalGas' decision to use the five-year average methodology.

c. New Business Forfeitures

New Business forfeitures reimburse SoCalGas for the cost of unused and/or underutilized facilities constructed at the request of a new business customer. They represent residual portions of Customer Advances for Construction as described under Rule 20 – Gas Main Extensions and Rule 21 – Gas Service Extensions.

Forfeiture amounts are dependent on customer gas throughput levels incurred over a three to ten year period after commencement of service. Due to the high volume of activity and the inherent complexity of tracking each customer's construction job and the associated throughput over a period of time, SoCalGas forecasted Forfeitures based on the historical five-year (2009 through 2013) average in nominal dollars and entered the forecast as non-standard escalation. This methodology allows SoCalGas to capture years of high, as well as years with low, forfeiture activity. SoCalGas is forecasting forfeiture credits of $6,410,000 for each of the years 2014, 2015, and 2016. See supplemental workpaper SCG-FBA-CAP-SUP-002 in Exhibit SCG-04-CWP for calculation details.

3. Cost Drivers

New Business work is driven by the volume and type of new construction required to provide service to new residential, commercial, and industrial customers, thus mitigating the risk of reduced service reliability and complying with the Company's obligation to serve. As described above, this includes the installation of new mains and services as well as header pipe (larger-diameter, medium-pressure pipe that can carry gas longer distances) to bring gas to new developments. In some cases it is also necessary to build high pressure supply lines and associated regulator stations.

It is SoCalGas' experience that new construction increases as the economy improves. Since SoCalGas is forecasting substantial new business growth in the next several years, it is reasonably anticipated that demand for construction resources and material will increase. The underlying cost drivers for this capital category relate to Company labor, contractor services, third-party services, paving services, and materials such as pipe and fittings. All or a

combination of these construction elements are necessary for performing New Business facility installations.

C. Pressure Betterment

This work category records expenditures for Gas Distribution pressure betterment projects performed on a continuing basis to maintain system reliability and service to all customers. Table FBA-22 below summarizes the expenditures forecast for the Pressure Betterment work category.

TABLE FBA-22
Southern California Gas Company
Pressure Betterment

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
C. Pressure Betterments	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Pressure Betterments - Routine	9,153	12,389	12,389	12,389
2. Pressure Betterments - Non-Routine	3,232	15,172	11,056	3,620
Total	**12,385**	**27,561**	**23,445**	**16,009**

1. Description of Costs and Underlying Activities

Pressure Betterment projects are performed in areas where there is insufficient capacity or pressure to meet load growth. This work category supports the risk mitigation associated with system reliability. The forecast for Pressure Betterment for 2014, 2015, and 2016 is $27,561,000, $23,445,000, and $16,009,000, respectively.

Pressure Betterment projects are necessary to maintain reliable service to existing customers as new load is added to the gas distribution system. Once a pipeline system is designed and installed, the available capacity remains relatively fixed. However, as load increases over time due to population expansion and increased population density, as well as businesses coming online with added load, the existing pipeline pressure decreases, which reduces the available gas flow capacity for customers. If the diminishing pressure is not addressed, gas service to customers could be interrupted.

To determine which areas need pressure betterments, growth information is gathered from customers, builders, and city, county, and state agencies. In addition, SoCalGas collects data from pressure gauges and electronic pressure recorders. This information is used to model system flow and identify capacity constraints. Based on analysis of these constraints, local

region engineers identify specific pressure betterment projects and the estimated timing in which the projects will need to be constructed. These projects typically involve installing new mains, and when necessary, installing regulator stations or uprating existing mains to higher pressures.

Pressure Betterment capital expenditures support the Company's goals of providing safe, reliable service to customers, thus mitigating the risk of adverse impacts to system reliability. This work category addresses critical areas of the distribution pipeline network that are most susceptible to pressure drops to alleviate the potential risk of loss of service to customers.

2. Forecast Method

Pipeline Pressure Betterment requirements are identified during the year, as part of the regular course of maintenance activities and system testing and evaluation. Due to operating conditions and construction needs, many of these jobs can be integrated into ongoing capital construction activities as routine work. Some identified work elements can require additional planning and/or construction considerations, taking more time and cost to complete. These non-routine projects are incremental to the routine Pressure Betterment requirements. This work category is therefore separated into two workgroups—Routine and Non-Routine—to more accurately forecast future needs.

a. Routine Pressure Betterment Installations

SoCalGas' gas infrastructure is a large dynamic system of pipelines exposed to continual changes in customer load demand, which makes it difficult to identify and estimate specific routine betterment projects more than a year into the future. Therefore, the latest load and growth information is used. Although SoCalGas has identified approximately $15 million in routine pressure betterment projects starting in 2014, SoCalGas recognizes that the timing to complete each project can be unpredictable due to the need for detailed planning requirements, acquiring required permits, and coordination and scheduling of resources. Furthermore, as described previously, the specific projects that will be constructed each year are difficult to predict more than a year in advance. Therefore, SoCalGas estimates expenditures for the years 2014 through 2016 based on the historical five-year (2009 through 2013) average of recorded routine Pressure Betterment expenditures. Other forecast methods considered include the five-year historical trend and base year, however, these methods would not provide sufficient funds to cover the costs required to construct known and anticipated projects and therefore, would place the reliability of the system at risk. The five-year average more accurately captures yearly

variations in system Pressure Betterment requirements. The resulting base forecast is $12,389,000 for each of the years 2014 through 2016.

b. Non-Routine Pressure Betterment Projects

Added to this base are known incremental projects that are above the routine work and not reflected in the base forecast, which are necessary to adequately fund Pressure Betterment in 2014, 2015, and 2016. These known incremental projects are described below.

In order to perform these incremental projects, SoCalGas is adding one crew truck in 2014. The costs associated with this vehicle can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

i. South Bay Cities Pressure Betterment

The South Bay Cities Pressure Betterment is a cluster of supply line segments that will be replaced with larger-diameter pipeline to address pressure and reliability concerns in this region. The supply line replacements will be completed as part of the Company's PSEP, and therefore, those costs are not included within this application. The costs included in this testimony are only for the difference in cost to acquire larger-diameter pipe instead of replacing the existing lines with in-kind sized pipe, as required to satisfy the safety-enhancing objectives of the PSEP project.

This effort will upsize the pipe diameter of three supply line segments by replacing approximately 16,400 feet of 16-inch with 24-inch diameter pipe, and replace an additional 31,680 feet of 16-inch with 20-inch diameter pipe. This project, as a whole, will provide pressure betterment to customers in the South Bay Cities and South Los Angeles.

The three impacted segments are the following:

Supply line 37-07 – upsizing the existing 16-inch pipe with 24-inch diameter pipe will increase gas flow capacity into the South Los Angeles area and will adequately handle the daily cyclical load demand from this heavily-populated urban area.

Supply line 37-18 – upsizing the existing 16-inch pipe with 20-inch diameter pipe will increase gas flow capacity into the supply line network that sustains load demand for the South Bay cities and other neighboring easterly cities. Specifically, this supply line will deliver increased gas flow from the most northerly point of the supply line system known as the Southern Loop.

Supply line 30-18 – upsizing the existing 16-inch pipe with 20-inch diameter pipe will increase gas flow capacity into the supply line network that sustains load demand for the neighboring easterly cities of the South Bay cities. This supply line will complement supply line 37-18 by delivering increased gas flow from the most easterly point of the Southern Loop system.

Collectively, the Pressure Betterment work for these supply lines will adequately handle load growth demand and mitigate loss of service risk. Engineering load survey models indicate that without this pressure betterment, customers in the impacted areas are at risk due to the inability of the existing system to support full load in the event of an extreme winter condition.[38] The funding requested in this area is specifically for the cost difference to purchase the larger-diameter pipe, which will be installed in an already-qualified supply line replacement project. SoCalGas plans to complete this larger-diameter pipe replacement in lieu of a like-kind pipeline replacement.

This project's cost is forecast to be $4,241,000 in 2014 and $1,971,000 in 2015. Details may be found in supplemental workpaper SCG-FBA-CAP-SUP-003.1 in Exhibit SCG-04-CWP.

ii. Arvin Pressure Betterment

The Arvin Pressure Betterment will address a pressure and reliability risk in the Arvin / Lamont area of Kern County. The existing supply line is at near capacity and given known information regarding incremental load being added to the system by various customers, it will surpass the limit of the supply line's capacity. This project will consist of installing approximately 137,000 feet of 12-inch diameter high-pressure main to increase the capacity of the current system. This project will also result in the abandonment of approximately 22,300 feet of supply line 38-959. Another portion of supply line 38-959, approximately 22,900 feet, will be converted to medium pressure. This project will also provide for the supply line 38-335 system to be lowered to medium pressure.

This project's cost is forecasted to be $10,931,000 in 2014 and $5,465,000 in 2015. Details may be found in supplemental workpaper SCG-FBA-CAP-SUP-003.2 in Exhibit SCG-04-CWP.

iii. Orange County Pressure Betterment

[38] "Extreme winter condition" refers to a design standard used by flow models to determine the capacity level at which pipeline systems should be designed based on winter weather data.

The Orange County Pressure Betterment will address a pressure and reliability risk in Orange County. The project will consist of the installation of approximately 10,000 feet of 16-inch diameter high pressure pipeline to connect the existing supply line 35-06 with supply line 35-07.

This project will accomplish the following:

a) The system pressure will increase by approximately 45 psig in extreme winter conditions.
b) It will operate as a backbone to supply line 42-46, supply line 35-06 and supply line 35-07 by creating a looped system.
c) It will add reliability to the system, which serves a large population, including various customers with high-pressure delivery requirements.

The existing system is operating at capacity at winter load conditions, thus creating a system reliability risk. Losing feed from any of these non-looped supply lines will cause over 67,000 outages spread over a 26-square mile area impacting customers in the Garden Grove, Anaheim, and Santa Ana areas.

This project's cost is forecast to be $3,620,000 per year in 2015 and 2016. Details may be found in supplemental workpaper SCG-FBA-CAP-SUP-003.3 in Exhibit SCG-04-CWP.

3. Cost Drivers

The main drivers for pressure betterment projects are the growth in gas load as a result of new customers and the increased gas usage of existing customers. This work supports the Company's need to mitigate system reliability risk and to comply with the Company's obligation to serve. After years of customer growth, many systems operate close to their maximum capacity and additional gas load will create system constraints, increasing reliability and customer outrage risk.

As previously discussed a driver of new customer growth is economic conditions. Therefore, as the economy continues to improve over the forecast period, so will the need for Pressure Betterment improvements. [39]

[39] IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials cost. All or a combination of these construction elements are necessary for performing facility installations for pressure betterment.

D. Supply Line Replacements

The Supply Line Replacements work category includes expenditures to replace high-pressure distribution pipelines, referred to as "supply lines" at SoCalGas. The forecasted costs for this work category are summarized in Table FBA-23 below.

TABLE FBA-23
Southern California Gas Company
Supply Line Replacements

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
D. Supply Line Replacements	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Supply Line Replacements	2,746	4,267	4,267	4,267
Total	**2,746**	**4,267**	**4,267**	**4,267**

1. Description of Costs and Underlying Activities

The distribution supply line system is comprised of approximately 3,750 miles of pipeline constructed between the early 1920s and present date, which range in diameter from two to 30 inches. These supply lines normally operate at pressures higher than 60 psig. Gas pressure from these lines is regulated to 60 psig or less, through district regulator stations to service the distribution medium pressure system.

The condition of SoCalGas' supply line system is typically assessed through O&M activities (i.e. depth check excavations, leakage survey, and damage repairs). When deteriorated conditions are found to exist on a supply line, an engineering evaluation of the pipeline is conducted to determine the requirement for either a replacement or abandonment or localized repair. Supply line replacement decisions are based on several factors, including pipe condition, leakage history, operating history, construction methods, system demands, proximity to known potential geological hazards, and consequence of potential failure. In some cases, replacement criteria are based primarily on age of pipe and population density, due to potential risk to public safety. In other cases, the supply line replacement may address a pipeline with a lower risk to

public safety, but more so, the benefit comes from maintaining service continuity (i.e. reliability of service) to customers in geographically-isolated areas.

The supply lines capital expenditures forecast supports the mitigation of safety and loss of service risks thereby supporting the Company's goals of maintaining system integrity and reliability.

2. Forecast Method

In developing the supply line replacements forecast, historical expenditures for 2009 through 2013 were evaluated. Although SoCalGas has identified approximately $12.7 million in supply line replacement projects starting in years 2014 and 2015, SoCalGas recognizes that the timing to complete each supply line replacement project is difficult to predict due to the need for: review of operating conditions, detailed planning requirements, acquisition of required permits, risk assessment, and coordination and scheduling of resources. Therefore, SoCalGas estimated the expenditures for the years 2014 through 2016 based on the historical average of recorded expenditures of the years 2009 through 2013. Based on the number of variables involved in these larger-scale projects, this average is most representative of future work requirements and expected expenditures, as it captures typical fluctuations in supply line project costs from year to year. The resulting forecast is $4,267,000 per year in 2014, 2015, and 2016.

3. Cost Drivers

The main driver for supply line replacements is the need to correct a pipeline condition that could pose a safety risk. The potential loss of service also presents a reliability risk that drives mitigation costs. Another driver may be the age of the pipeline and location in relation to population density, where a failure presents a greater potential risk to public safety. In addition, supply line replacements can be driven by the need to maintain service continuity to customers in geographically isolated areas. The factors involved in a supply line replacement decision, to mitigate safety and reliability risks, include pipe condition, leakage history, operating history, construction methods, system demands, proximity to known potential geological hazards, and consequence of potential failure.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials cost. All or a combination of these construction elements are necessary for performing pipeline installations for supply line replacement work.

E. Main Replacements

Expenditures recorded to this work category are for routine capital pipeline replacements critical to sustained operational reliability and mitigate risks associated with public safety. Table FBA-24 below summarizes forecast Main Replacement expenditures for the forecast period.

TABLE FBA-24
Southern California Gas Company
Main Replacements

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
E. Main Replacements	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Main Replacements	44,496	47,233	47,233	47,233
Total	**44,496**	**47,233**	**47,233**	**47,233**

1. Description of Costs and Underlying Activities

SoCalGas' distribution pipeline system consists of approximately 50,400 miles of steel and plastic main supporting the delivery of gas to more than 5.8 million customers. Activities in the Main Replacements work category include:

- The installation of new mains to replace existing mains;
- Service line replacements associated with main replacements;
- Existing service line "tie-overs" to newly-installed replacement main;
- Meter set re-builds associated with newly-installed replacement main; and
- Main replacements completed in advance of public infrastructure improvement projects.

These replacements are often due to leakage that impacts the integrity of the pipe, an anticipated increase in leakage maintenance expenses, the relative cost to install and/or maintain cathodic protection, or the deterioration of pipe material, pipe wrap, or coating. Other criteria taken into consideration are whether the steel pipe meets cathodic protection mandates, or the main is found to have active corrosion. In addition, the pipeline may be deemed unsafe or unfit for service due to manufacturing or other defects. Based on information collected during various O&M activities and field observations, technical staff identifies and prioritizes pipeline segments requiring replacement.

These forecasted capital expenditures support the Company's goals of maintaining the integrity and reliability of the natural gas system, thus mitigating risks associated with public safety and infrastructure integrity.

Additional main replacement funding required in response to the federal DIMP regulations governing distribution pipeline integrity, is addressed in the prepared direct testimony of Maria Martinez, Exhibit SCG-08.

2. Forecast Method

In developing the main replacements forecast, historical expenditures and work units for 2009 through 2013 were evaluated. SoCalGas replaced an average of 55 miles of pipe per year under this work category during the period 2009 through 2013. As discussed above, the main drivers for pipeline replacement are leakage and corrosion. In general, older pipelines and pipe without cathodic protection tend to have higher levels of leakage. As of the end of 2013, SoCalGas had approximately 2,800 miles of pre-1940 main and approximately 3,200 miles of bare cathodically-unprotected main. Although, these pipe categories are not the only pipelines where replacements occur, they highlight the need to continue to focus on pipeline replacements. SoCalGas forecasts continuing main replacements at the five-year (2009 through 2013) historical average to mitigate potential risks associated with pipeline integrity, system reliability, and public safety. This approach also allows SoCalGas to capture historical spending under a variety of conditions that reflect fluctuations in labor and non-labor expenditures associated with this work category. Furthermore, the timing of individual projects is based on a number of factors including the need for review of operating conditions, detailed planning requirements, acquisition of required permits, and coordination and scheduling of resources. This forecast methodology best represents the cyclical volume of work qualified on an annual basis, depending on the condition of the pipe as observed during maintenance activities, and captures the various challenges encountered during the construction of main replacements. The resulting forecast is $47,233,000 per year in 2014, 2015, and 2016.

In order to perform the incremental work associated with this work category, SoCalGas is adding five incremental crew trucks in 2014. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

3. Cost Drivers

The main driver for main replacement is leakage that can impact the integrity of the pipe. Other drivers include: compliance with cathodic protection requirements; the deterioration of pipe material, pipe wrap, or coating; if the main is found to have active corrosion; if the pipeline is deemed unsafe or unfit for service due to manufacturing or other defects; construction methods originally used; and location relative to places of gathering. This work supports the Company's commitment to mitigate the risks associated with public safety, system reliability, and infrastructure integrity.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials cost. All or a combination of these construction elements are necessary for performing pipeline installations for main replacement work.

F. Service Replacements

The work represented in the Service Replacements category includes expenditures associated with routine replacement of isolated distribution service pipelines to maintain system reliability and to safely deliver gas to the customer, thus mitigating the risks associated with loss of service and public safety. The capital costs associated with this work category are summarized in Table FBA-25.

TABLE FBA-25
Southern California Gas Company
Service Replacements

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
F. Service Replacements	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Service Replacements	17,491	22,217	15,899	15,109
Total	**17,491**	**22,217**	**15,899**	**15,109**

1. Description of Costs and Underlying Activities

Complementary to SoCalGas' main replacement activities are capital improvements associated with service replacements. Service replacement costs completed as part of main pipeline projects are captured in the Main Replacements budget category.

SoCalGas has approximately 49,000 miles of service pipe. This figure consists of 18,200 miles of steel, and 30,800 miles of plastic service lines. Forty six percent of steel services are protected by cathodic protection. Most service replacement projects are driven by leakage and pipe corrosion. Furthermore, of the leaks found in steel services, a significant number is found on pipe that is not under cathodic protection. Some services are considered "stranded steel," which are typically the result of a steel service not being replaced along with the steel main that it was originally tied to. To correct these leaks, it is sometimes more prudent to replace the entire service rather than repair the leak and install and maintain cathodic protection on the existing service.

The forecast for Service Replacements for 2014, 2015, and 2016 is $22,217,000, $15,899,000, and $15,109,000, respectively. This forecast supports the Company's commitment to mitigate the risks associated with public safety, system reliability, and infrastructure integrity.

2. Forecast Method

In developing the service replacements forecast, historical expenditures and work units for 2009 through 2013 were evaluated. SoCalGas replaced an average of 5,600 service lines per year under this work category during the period 2009 through 2013. As discussed above, the main drivers for service line replacement are leakage and corrosion. In general, older pipelines and pipe without cathodic protection tend to have higher levels of leakage. As of the end of 2013, SoCalGas had approximately 49,300 pre-1940 service lines and approximately 876,300 service lines without cathodic protection. Although, these service line categories are not the only pipelines where replacements occur, they highlight the need to continue to focus on service replacements. In addition, since the level of spending for routine service replacements is highly dependent on the condition of the pipe, as observed during maintenance activities, SoCalGas forecasts continuing service line replacements at the five-year (2009 through 2013) historical average to mitigate potential risks associated with pipeline integrity, system reliability and public safety.

This forecast methodology best represent the cyclical volume of routine work qualified on an annual basis and captures the various challenges encountered during the construction of service replacements. Furthermore, the timing of individual projects is based on a number of factors, including the need for review of operating conditions, detailed planning requirements, acquisition of required permits, and coordination and scheduling of resources. Consideration is

also given to customer needs, as a service replacement will often require a temporary shut-off of gas service, which could have a negative effect on certain customers if service is interrupted. Equally important, it is sometimes necessary to excavate on private property in order to install the new service line, and thus, permission needs to be secured from the landowner before work commences.

Other forecast methods considered included the five-year (2009 through 2013) trend and the 2013 base year. Both of these options result in a higher base forecast than the five-year average. Given the variability observed in the historical expenses for this work category, however, SoCalGas chose the more conservative five-year average approach. This forecast does not include any increases due to future implementation of new, more-sensitive, leak survey technology. If more services require replacement than forecasted, SoCalGas will prioritize other capital work to fund these service replacements. The five-year average results in a base forecast of $15,109,000 per year in 2014 through 2016.

Added to this base is an incremental work element not reflected in the base forecast that is necessary to adequately fund Service Replacements in 2014, 2015, and 2016. This work element is described below.

a. Replacement of Leaking Services

In 2014 and 2015, SoCalGas will proactively replace a larger number of services in a system-wide effort to more aggressively mitigate leaking services. This effort will involve addressing approximately 1,800 leaks on steel service lines. SoCalGas plans to execute this project during a two-year period, years 2014 through 2015. This project will complement SoCalGas' larger effort to work down the leakage backlog.

As discussed in Section II.B.5 (Main Maintenance) of this testimony, this leak reduction effort is also in alignment with SB 1371, which requires the adoption of rules and procedures to reduce natural gas emissions, specifically from natural gas leaks.[40] This bill is discussed in the prepared direct Environmental Services testimony of Jill Tracy, Exhibit SCG-17.

[40] SB 1371– Natural gas: leakage abatement (September 21, 2014).

Furthermore, this request supports SoCalGas' ability to meet the requirements set forth in SB 705 by enhancing SoCalGas' ability to "[p]rovide timely response to customer and employee reports of leaks and other hazardous conditions and emergency events."[41]

The service replacement project's cost is forecasted to be $7,108,000 in 2014 and $790,000 in 2015. See supplemental workpaper SCG-FBA-CAP-SUP-004 in Exhibit SCG-04-CWP for calculation details.

3. Cost Drivers

The main driver for service replacement is leakage and pipe corrosion that can impact the integrity of the pipeline system. Other drivers include: compliance with cathodic protection requirements; the deterioration of pipe material, pipe wrap, or coating; if the service pipe is found to have active corrosion; and if the pipeline is deemed unsafe or unfit for service due to manufacturing or other defects. This work supports the Company's commitment to mitigate the risks associated with public safety, system reliability, and infrastructure integrity.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials such as pipe and fittings. All or a combination of these construction elements are necessary for performing pipeline installations for service line replacement work.

G. Main and Service Abandonments

This work category includes expenditures associated with the abandonment of distribution pipeline mains and services, without the installation of a replacement pipeline. Capital costs associated with the Main and Service Abandonments work category are summarized in Table FBA-26 below.

[41] Cal. Pub. Util. Code § 961(d)(6).

TABLE FBA-26
Southern California Gas Company
Main and Service Abandonments

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
G. Main & Service Abandonments	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Main & Service Abandonments	4,073	3,582	3,582	3,582
Total	**4,073**	**3,582**	**3,582**	**3,582**

1. Description of Costs and Underlying Activities

Abandonment of mains and services occur primarily when pipeline is no longer needed for current system operations and is not expected to be needed in the future. The activities contained in Main and Service Abandonments are especially necessary to eliminate the risk that may result from a hazardous condition due to the potential for third-party damage, and to eliminate unnecessary continued maintenance activities, thus mitigating a public safety risk. Main abandonments are typically driven by city and state requests involving the vacating and demolition of public property, at which point there is no opportunity for replacement. Service lines are deactivated upon cancellation of gas service due to building demolition, or when temporary service is terminated. When a service line becomes inactive, it is evaluated to determine if it will be left in place or if abandonment is required. If it is not abandoned, it is re-evaluated at least every five years to verify that a safe condition remains. A service line is left in place when it appears the service may be used again without alteration.

Service lines are normally abandoned when:

- There is likelihood of leakage or damage;
- The last or only structure on the property has been, or will be, removed or demolished and the service will not serve a new structure;
- A service branch extends into private property served by another service, and it does not appear it will be reused;
- The source of supply is being replaced, relocated, or abandoned and no immediate reuse is foreseen; or
- A temporary service becomes inactive.

These forecasted capital expenditures support the Company's goals of maintaining the safety, integrity and reliability of the pipeline system, thus mitigating risks associated with public safety and infrastructure integrity.

2. Forecast Method

The level of spending in this routine abandonment category is highly dependent on the demand for demolition and grading on private and public property. This work is often driven by economic conditions and, as the economy continues to improve over the forecast period,[42] so will the need for main and service abandonments. Furthermore, the timing of individual projects is based on a number of factors including the need for review of operating conditions, detailed planning requirements, acquisition of required permits, and coordination and scheduling of resources. Due to the unscheduled and unpredictable nature of this work, SoCalGas used the historical five-year (2009 through 2013) average to forecast the expenditures for this work category.

Other forecast methods considered included the five-year (2009 through 2013) trend and the 2013 base year. Both of these options result in a higher base forecast than the five-year average. Given the degree of variability observed in the historical expenses for this work category, however, SoCalGas chose the more conservative five-year average approach. The selected forecast approach allows SoCalGas to capture historical spending under a variety of conditions that reflect the historical fluctuation in expenditures associated with this work category. The five-year historical average results in a base forecast of $3,582,000 per year in years 2014 through 2016.

3. Cost Drivers

Main abandonments are typically driven by city and state requests involving the vacating and demolition of public property, at which point there is no opportunity for replacement, as well as by customers through the cancellation of gas service due to building demolition, or when temporary service is terminated. It has been SoCalGas' observation that the level of work public and private parties complete is often driven by economic conditions and as the economy continues to improve over the forecast period, so will the need for main and service abandonments.

[42] IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

Pipelines are abandoned for several reasons, including when they are no longer needed for current system operations and are not expected to be needed in the future or to eliminate the risk that may result from a hazardous condition due to the potential for third-party damage, and to eliminate unnecessary continued maintenance activities. This work supports the Company's commitment to mitigate the risks associated with public safety and infrastructure integrity.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials, such as pipe and fittings. All or a combination of these construction elements are necessary for performing pipeline retirements for mains and services.

H. Regulator Stations

Represented in this work category are expenditures for the upgrade, relocation, and replacement of regulator stations. Capital cost estimates associated with the Regulator Stations workgroup are summarized in Table FBA-27 below.

TABLE FBA-27
Southern California Gas Company
Regulator Stations

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
H. Regulator Stations	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Regulator Stations	7,250	5,554	5,554	5,554
Total	**7,250**	**5,554**	**5,554**	**5,554**

1. Description of Costs and Underlying Activities

Regulator Stations are installed to reduce the pressure of gas entering the distribution system from high-pressure pipelines to provide the lower pressures used on the distribution pipeline network, which provides steady reliable operating conditions to the customer. As such, regulator stations are key pieces of control equipment on the SoCalGas pipeline network that support the mitigation of risks associated with public safety, system reliability, and infrastructure integrity. Regulator stations not only serve to control gas pressure but also as a line of defense against over-pressurization. Many modern stations are designed with dual-run feeds to maintain continued operation of the station in the event of a failure within either of the two runs.

Regulator stations consist of pipes, electronics, valves, and regulators, which are installed in either below-ground vaults or above-ground fenced facilities, and in some instances, inside specially-built housing.

As part of maintenance activities, the field workforce inspects and records the condition of each station. These inspection evaluation elements are used to prioritize station replacement work. For example, single-vault regulator stations may contain equipment that is no longer available in the industry. In such circumstance, replacement becomes necessary due to equipment obsolescence. Additionally, more modern two-vault stations may require replacement due to system reinforcement or growth. SoCalGas operates and maintains approximately 2,000 regulator stations, of which, on average, 26 stations are replaced or added to the system each year. The average life expectancy of a regulator station is approximately 35 years. While SoCalGas' operating and maintenance practices allow stations to exceed their useful lives, it is prudent to continue to replace these aged facilities prior to failure. Failure of a regulator station could result in over-pressurization of the gas distribution system, which may compromise the integrity of medium pressure pipelines and/or jeopardize public safety.

Stations identified for replacements contain one or more of the following risk factors and are prioritized accordingly: design obsolescence, active corrosion, deteriorating vaults or equipment, exposure to flooding, hazardous traffic conditions, or ergonomically unsafe. SoCalGas proactively targets these stations for replacement before operation and safety issues arise.

These forecasted capital expenditures support the Company's goals of maintaining the safety, reliability and integrity of the system, thus mitigating risks associated with public safety, system reliability, and infrastructure integrity.

2. Forecast Method

In developing the Regulator Station forecast, historical expenditures and units of work for 2009 through 2013 were evaluated. As indicated previously, SoCalGas has approximately 2,000 regulator stations system-wide, with an average age of 29 years. The estimated average life expectancy of a regulator station is 35 years. While SoCalGas has approximately a third of its regulator stations with components that exceed 35 years, prudent operating and maintenance practices have allowed these stations to remain in service. Given that these facilities have a

finite service life and are critical pieces of control equipment, however, it is prudent to continue to replace these facilities prior to failure.

Since the level of spending in this routine replacement category is highly dependent on the condition of the regulator station, as observed during maintenance and inspection activities, SoCalGas used the historical five-year (2009 through 2013) average to forecast expenditures, which covers the replacement of approximately 26 stations per year. This forecast methodology best represent the cyclical volume of routine work completed on an annual basis and captures the various challenges encountered during the construction of regulator station replacements, which require a higher degree of detailed planning. Adding to the design complexity is the challenge of finding a suitable installation location in a public or private right-of-way for the installation of the two six-foot by six-foot underground vaults normally required for a standard design.

SoCalGas is committed to the safety of its employees, and for this reason, the Company has steered away from placing these stations in the streets where technicians are exposed to traffic hazards. It is SoCalGas' preference to place new stations on sidewalks and/or parkways, where annual maintenance and inspections can be conducted under safer conditions. Furthermore, the timing of individual projects is based on a number of factors, including the need for review of operating conditions, detailed planning requirements, acquisition of required permits, and coordination and scheduling of resources.

Other forecast methods considered included the five-year (2009 through 2013) linear trend and the 2013 base year. Both of these options result in a higher base forecast than the five-year average. Given the degree of variability observed in the historical expenses for this work category, however, SoCalGas chose the more conservative five-year average approach. Thus, the selected forecast approach allows SoCalGas to capture historical spending under a variety of conditions that reflect the historical fluctuation in expenditures associated with this work category. The five-year historical average results in a base forecast of $5,554,000 per year in 2014 through 2016.

3. Cost Drivers

Work activities within the Regulator Stations work category are driven by regulatory requirements as well as the need to safeguard the safety and integrity of the pipeline system and mitigate risks associated with public and employee safety, system reliability, and infrastructure integrity. Regulator station replacements are driven by several factors including: the condition of

the station, such as equipment obsolesce; the need to support system reinforcement or growth; and the need to address aging infrastructure, such as stations that have known maintenance, reliability, or design obsolescence issues.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials such as controls, electronics, valves, pipe, and fittings. All or a combination of these construction elements are necessary for performing regulator station replacements.

I. Cathodic Protection Capital

The Cathodic Protection Capital work category includes expenditures associated with new installation and replacement of CP systems and equipment. The capital forecast associated with this workgroup is summarized in Table FBA-28 below.

TABLE FBA-28
Southern California Gas Company
Cathodic Protection Capital

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
I. Cathodic Protection Capital	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Cathodic Protection Capital	3,884	8,048	9,169	9,169
Total	**3,884**	**8,048**	**9,169**	**9,169**

1. Description of Costs and Underlying Activities

As noted previously, buried steel pipelines will revert back to their natural state as an iron oxide (corrode) without proper intervention. Corrosion on pipelines increases the risk for leaks, and may reduce the useful life of the pipelines. In addition to the application of coating and electrical isolation, CP is a method for mitigating external corrosion on steel pipelines. CP combats corrosion by imposing an electric current flow toward the surface of the pipeline, which means keeping the pipeline negatively charged (cathodic) with respect to the surrounding soil. This results in reduced corrosion on the pipeline system. Examples include impressed current stations, deep well anode beds, magnesium anode systems, and CP instrumentation and monitoring equipment.

49 CFR 192, Subpart I, and General Order 112-E set forth the regulatory standards that govern pipeline corrosion control.

SoCalGas utilizes both impressed current and magnesium anode (galvanic) systems to provide CP to existing pipelines. Impressed current systems utilize a rectifier for the generation of the direct current. Both systems utilize sacrificial anodes as a primary component in the system. Anodes are installed in wells drilled into the surrounding soil by third-party drilling contractors. Each protected pipe segment requires multiple anodes, collectively referred to as an "anode bed." The number of anodes needed to achieve the desired level of protection and the average life of the anode bed can vary based on pipeline length, coating effectiveness, soil conditions and interference that may occur on the system.

The forecast for Cathodic Protection capital for 2014, 2015, and 2016 are $8,048,000, $9,169,000, and $9,169,000, respectively. These forecasted capital expenditures support the Company's goal of preserving the integrity of steel pipelines by protecting them from external corrosion, thus supporting the mitigation of risks associated with public safety, system reliability, and infrastructure integrity. These projects comply with federal and state pipeline safety regulations and provide for required cathodic protection of Company facilities.

2. Forecast Method

SoCalGas has approximately 18,600 miles of steel main and approximately 751,000 steel services that are cathodically protected. Expenditures in this work category are associated with new installation and replacement of major CP components and equipment to maintain the integrity of the CP system on these mains and services.

Expenditures for this capital work category vary from year to year due to a variety of risk factors that impact the effectiveness and productivity of a cathodic protection system such as, infrastructure age, rate of anode depletion, soil moisture and type, electric current interference system damages, customer actions, and pipe coating effectiveness. As the system continues to age and deteriorate, the need to replace major CP system components will increase. In order to maintain a cathodically-protected area, it is often necessary to convert magnesium anode-protected areas into impressed-current areas, which although potentially more expensive to construct, are better able to deliver more current to the pipeline system. This is normally done for magnesium anode areas with chronic maintenance issues.

SoCalGas selected the five-year (2009 through 2013) historical average for its forecast as this allows the Company to capture spending under a variety of conditions and account for the multiple factors impacting CP work. Other forecast methods considered included the five-year

(2009 through 2013) linear trend and the 2013 base year. The 2013 base year option results in a higher base forecast than the five-year average, while the five-year trend would not provide sufficient funding to address the routine work anticipated for this work category, thus placing the integrity of the CP and pipeline systems at risk. The five-year average base forecast is $3,792,000 per year for 2014, 2015, and 2016.

Added to this base is an incremental work element not reflected in the base forecast that is necessary to adequately fund Cathodic Protection capital in 2014, 2015, and 2016. This work element is described below.

a. Incremental Cathodic Protection System Enhancements

SoCalGas has been experiencing an increase in the number of CP areas that require additional action to maintain the necessary output to appropriately protect the steel piping system. This is attributed to a number of factors that impact the effectiveness of a CP system, including: the degradation of the external pipe coating that naturally occurs over time; the reduction in output of a considerable number of magnesium anode beds as these age (anode beds have a life expectancy of around 10 to 12 years); continuing dry weather – lack of moisture in the soil tends to accelerate the depletion of magnesium anodes; and interference, such as when pipes come into contact with water lines or with third-party grounding systems, which can drain current from the pipeline, thus reducing the level of protection and depleting anodes. As a result, there is a need to replace an increasing number of depleting magnesium anode beds. As previously discussed, maintaining effective CP systems is one of the ways in which SoCalGas maximizes the useful life of underground steel gas facilities, which helps to mitigate the risk of corrosion and consequently gas leaks that can impact public safety.

This incremental effort will focus on the assessment of the current cathodic protection systems (CP areas) with the goal of strategically combining multiple smaller areas into larger areas wherever possible and practical. These larger areas will be protected by impressed current systems rather than galvanic (magnesium anode) systems. Potential advantages of impressed current compared to galvanic include:

- Fewer anode locations, because impressed current systems can adequately protect larger areas from one location;
- Simplification of trouble shooting through the use of interruption and application of a signal to the system;

- Longer durations between replacements of anode beds;
- Remote monitoring capabilities to help assess system performance;
- Ability to adjust output as conditions change, rather than multiple installations and replacements of additional galvanic anodes; and
- Increased ability to demonstrate compliance through gathering of current and voltage data in addition to pipe-to-soil measurements.

The forecast for this project is forecast to be $4,256,000 in 2014 and $5,377,000 per year in 2015 and 2016. Documentation of the labor and non-labor costs for this incremental work is included in the supplemental capital workpaper SCG-FBA-CAP-SUP-005 in Exhibit SCG-04-CWP.

In order to perform this incremental CP work, SoCalGas is adding two incremental crew trucks in 2014 and two more in 2015. The costs associated with these vehicles may be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

3. Cost Drivers

As previously discussed, the primary drivers for Cathodic Protection work is compliance with DOT Regulation 49 CFR 192, Subpart I, and General Order 112-E, which set forth the standards for corrosion control as well as the need to safeguard the integrity of the pipeline system and mitigation of risks associated with public safety, system reliability, and infrastructure integrity.

The age of the CP system component is also an important cost driver for this work category. As system components age, their effectiveness decreases, driving the need for additional replacement work. Another work driver is the rate at which anodes deplete, which is impacted by a number of factors, including soil moisture and type, electric current interference, customer actions, and pipe coating effectiveness. An additional driver is the rate at which magnesium anode-protected areas are converted into impressed current areas, which although potentially more expensive to construct, are better able to deliver more current to the pipeline system.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials. This includes: the additions of new rectifier (impressed current) sites along with associated anode installations

including the necessary CP instrumentation and remote monitoring equipment; anode bed well replacements for existing rectifier systems; as well as installation and replacement of larger surface bed magnesium anode systems. All or a combination of these construction elements are necessary for cathodic protection projects.

J. Pipeline Relocations – Freeway

The work in the Pipeline Relocations – Freeway category includes expenditures associated with relocating or altering SoCalGas facilities in response to external requests, as specified under the provisions of utility agreements with state and local agencies. The capital forecast for the Pipeline Relocations – Freeway work category is summarized in Table FBA-29 below.

TABLE FBA-29
Southern California Gas Company
Pipeline Relocations – Freeway

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
J. Pipeline Relocations - Freeway	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Pipeline Relocations - Freeway	10,301	10,301	10,301	10,301
Total	**10,301**	**10,301**	**10,301**	**10,301**

1. Description of Costs and Underlying Activities

Freeway work in SoCalGas is driven by requests from governing agencies, such as the California Department of Transportation (CalTrans). These agencies submit requests for SoCalGas to relocate pipe and related facilities that, if maintained in their current location, would interfere with planned construction or reconstruction of freeways. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response to these external requests, as specified under the provisions of utility agreements with these agencies.

Gas facility projects and work initiated to accommodate freeway enhancements include altering pipeline crossing over and under a freeway bridge span, any gas facility interfering with construction within the agency's right-of-way, or any gas facility in the general vicinity that interferes with the freeway project construction. Freeway relocation projects include all sizes of distribution pipeline work, supply line alterations, service alterations, and MSA alterations

performed due to existing SoCalGas facilities interfering with freeway construction. The exact timing and number of freeway pipeline projects is driven by the schedules and budgets of outside agencies. Therefore, expenditures in this category are dependent on the number, extent, and timing of these requests, which are largely outside of SoCalGas' control. When projects do occur, however, SoCalGas must promptly complete its portion of the work to minimize schedule delays for the agency.

These forecasted capital expenditures support the Company's requirement to comply with the provisions of third-party agreements.

2. Forecast Method

Freeway pipeline projects are driven by the level of funds available to transportation agencies, primarily to CalTrans. In developing the forecast for this work category, SoCalGas reviewed historical (2009 through 2013) expenditures as well as available data on future projects. As demonstrated by the increase in work in 2012 and 2013, and consistent with information known on transportation projects, SoCalGas expects future levels of expenditures to be closer to, or potentially exceed, the 2013 adjusted recorded base level. As economic conditions improve[43] and the demand on the overall public infrastructure continues to grow, SoCalGas anticipates that more projects will be added.

Although, SoCalGas' capital project tracking systems shows approximately $19 million in Pipeline Relocations - Freeway projects in progress, SoCalGas recognizes that the timing to complete each supply line replacement project is difficult to predict, due to the need for review of operating conditions, detailed planning requirements, acquisition of required permits, risk assessment, and coordination and scheduling of resources. Therefore, expenditures for this work category were forecasted using the 2013 historical expenditures as the base. Using the 2013 base year captures the latest magnitude of freeway construction activity experienced, which is expected to continue into the forecast years (2014 through 2016), in part due to CalTrans' continued commitment to sponsor improvement projects and grants through the Transportation Investment Generating Economic Recovery program, which is helping fund large public projects throughout SoCalGas' service territory, including the State Route 91 Corridor Improvement project.

[43] IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

Other forecast methods considered include the five-year (2009 through 2013) linear trend and five-year (2009 through 2013) average. The trend option results in a higher forecast than the 2013 base year forecast in a work category that is dependent on external party construction schedules where project delays are common, while the historical five-year average would not provide sufficient funding to complete anticipated level of freeway projects required by Caltrans, cities, counties, and the state. SoCalGas therefore chose the 2013 base forecast, as it is most reflective of currently-available information for this work category and of future needs. The resulting forecast is $10,301,000 for each year 2014 through 2016.

3. Cost Drivers

As previously discussed, Pipeline Relocations - Freeway work is driven by the volume and type of construction required in response to requests of external agencies, such as Caltrans. These agencies submit requests for SoCalGas to relocate pipe that would, if maintained in its current location, interfere with planned construction or reconstruction of freeways. The work in this category includes expenditures associated with SoCalGas' requirement to comply with the provisions of its agreements with third-parties, including CalTrans. The degree of complexity of each relocation request varies and the outside agency's construction schedules often change, directly impacting SoCalGas' cost.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials, such as pipe and fittings. All or a combination of these construction elements are necessary for performing freeway relocation projects for mains, services, and associated facilities.

K. Pipeline Relocations – Franchise

The work in the Pipeline Relocations - Franchise category includes expenditures associated with relocating or altering SoCalGas facilities in response to external requests, as specified under the provisions of SoCalGas' franchise agreements with city and county agencies. The capital forecast for this workgroup is summarized in Table FBA-30 below.

TABLE FBA-30
Southern California Gas Company
Pipeline Relocations – Franchise

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
K. Pipeline Relocations - Franchise	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Pipeline Relocations - Franchise	16,567	18,472	20,128	21,783
Total	**16,567**	**18,472**	**20,128**	**21,783**

1. Description of Costs and Underlying Activities

Pipeline Relocations - Franchise work is driven by external agencies, such as cities, counties, or the state. These agencies submit requests for SoCalGas to relocate pipe that would, if maintained in its current location, interfere with the construction or reconstruction of roads or railway systems. The work in this category includes expenditures associated with relocating or altering SoCalGas facilities in response to these external requests, as specified under the provisions of SoCalGas' franchise agreements with city and county agencies. Some examples of the type of municipality work that drives SoCalGas franchise pipe relocations include street widening, resurfacing, or repairs, storm drain work, and municipality water and sewer work.

It is difficult to predict an accurate timeline for when franchise projects will be executed, since SoCalGas does not have control over the construction schedules. When projects do come up, however, SoCalGas must promptly complete its portion of the work to minimize schedule delays for the municipality or agency.

These forecasted capital expenditures support the Company's requirement to comply with the provisions of its franchise agreements.

2. Forecast Method

Franchise pipeline replacements are driven by the level of construction activity from municipalities, who are generally responding to a need for upgrading an aging infrastructure or expansion requirements. This work is normally driven by the availability of funds for municipalities. Long term forecasting of franchisee work is difficult, given the changes in governmental project funding, the large number of governmental jurisdictions involved and limited long-term information on upcoming specific projects. However, in SoCalGas' observation, municipality work generally fluctuates with economic conditions. Gas Distribution has chosen non-farm employment growth, as reported by IHS Global Insight, as a directional

indicator for general economic conditions and potential economic growth. This IHS Global Insight employment forecast is shown in the SoCalGas Customers workpapers of witness Rose-Marie Payan, Exhibit SCG-30-WP. In general, IHS Global Insight forecasts that the non-farm employment growth rate in Southern California is projected to increase in the next few years.

Population growth and density also drive municipality work. As an area's population grows or expands, there is a need for street widening and increased street maintenance. It also affects the demand on a municipality's water and sewer systems, which often generates projects to increase system capacity. This type of external work affects the number of requests SoCalGas receives to alter or relocate its pipelines. Based on anticipated growth in new business in the upcoming years, SoCalGas expects to see an increase in franchise requests. In addition, as a municipality's infrastructure ages, there is an increase in the level of maintenance or replacement activity necessary for the aging streets and water pipes. This activity generates additional requests for SoCalGas pipe relocations and alterations.

In projecting the future requirements for this activity, SoCalGas reviewed the 2009 through 2013 historical spending for this work category. Historical costs show an upward trend. As economic conditions continue to recover and municipalities continue to improve their infrastructure, SoCalGas expects to see non-labor costs in this workgroup increase. Thus, to reflect the anticipated increase in pipeline replacements related to franchise work, SoCalGas projects non-labor expenses for this workgroup will follow the five-year (2009 through 2013) historical linear trend. This is supported by SoCalGas' approximately $31 million in franchise capital projects currently in progress. Labor costs are a relatively small percentage of the overall expense for this work category and are expected to remain constant at the 2013 level, as this reflects the most recent experience. The resulting forecast for 2014, 2015, and 2016 is $18,472,000, $20,128,000, and $21,783,000, respectively.

3. Cost Drivers

As discussed above, franchise work is driven by the volume and type of construction work required in response to requests from external agencies, such as cities and counties. These agencies submit requests for SoCalGas to relocate pipe that would, if maintained in its current location, interfere with the construction or reconstruction of roads or railway systems. Some examples of the type of municipality work that drives SoCalGas franchise pipe relocations

include street widening, resurfacing, or repairs, storm drain work, and municipality water and sewer work.

Population growth and density also drive municipality work. As an area's population grows or expands, there is a need for street widening, increased street maintenance, and increased capacity of the water and sewer systems. Based on anticipated growth in new business in the upcoming years, SoCalGas expects to see an increase in franchise requests. Another driver is the age of the municipality's infrastructure. Generally, as infrastructure ages, there is an increase in the level of replacement activity.

The degree of complexity of each relocation request varies and the outside agency's construction schedules often change, directly impacting SoCalGas' construction cost.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials such as pipe and fittings. All or a combination of these construction elements are necessary for performing franchise relocation projects for mains, services, and associated facilities.

L. Other Distribution Capital Projects and Meter Guards

The Other Distribution Capital Projects and Meter Guards work category covers the expenditures for capital adjustments to SoCalGas facilities not specifically included in the other categories of work and also includes meter guard installations. The capital forecast for this work category is summarized in Table FBA-31 below.

TABLE FBA-31
Southern California Gas Company
Other Distribution Capital Projects and Meter Guards

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
L. Other Distribution Capital Projects & Meter Guards	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Other Distribution Capital Projects	4,123	3,042	3,042	3,042
2. Meter Guards	386	825	825	825
Total	**4,509**	**3,867**	**3,867**	**3,867**

As discussed below, this work category covers expenditures for capital adjustments to SoCalGas Distribution facilities not specifically included in the other Gas Distribution work

categories and also includes meter guard installations. The total forecast for Other Distribution Capital Projects and Meter Guards is $3,867,000 per year for 2014 through 2016.

1. Other Distribution Capital Projects

This work category covers the expenditures for capital relocations of SoCalGas facilities not specifically included in any of the other capital categories of work. The capital forecast for the Other Distribution Capital Projects work category is summarized in Table FBA-32 below.

TABLE FBA-32
Southern California Gas Company
Other Distribution Capital Projects

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
L. Other Distribution Capital Projects & Meter Guards	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Other Distribution Capital Projects	4,123	3,042	3,042	3,042

a. Description of Costs and Underlying Activities

The Other Distribution Capital Projects work category covers construction projects not covered under franchise agreements, not related to freeway work, and not covered in other capital budget categories. Examples of these "other" projects include, but are not limited to:

- Replacement, alteration, or abandonment of appurtenances to mains, such as valves and vaults, drips, traps, roads, and fences, due to condition, in order to maintain the reliable operation of the distribution system;
- Raising, lowering, or relocating mains due to interference with external party construction;
- Changes to SoCalGas facilities at customer request. This could include items such as alteration or relocation of mains or MSAs, installation of a customer's exclusively-used main, or moving or relocating regulator stations; and
- Changes to SoCalGas facilities in accordance with right-of-way agreements, encroachment permits, and railroad crossing lease agreements.

This activity is generally unpredictable, due to its nature, as the vast majority of the costs are driven by property owners requesting SoCalGas to move its facilities from their property.

When projects do occur, SoCalGas must promptly complete its portion of the work to minimize schedule delays for the landowner or agency.

These forecasted capital expenditures support the Company's efforts to meet the obligation to clear gas facilities from obstructing external party construction improvements and/or expansions.

b. Forecast Method

The level of spending in this work category is highly driven by the volume of external construction activity. Given the generally unpredictable nature of this activity, SoCalGas used the historical five-year (2009 through 2013) average to forecast the labor expenditures. This forecast methodology best represents the cyclical volume of work completed on an annual basis and captures the various challenges encountered during construction, which tend to require a higher level of coordination with external parties. Projects in this work category are heavily dependent on the schedules and permitting constraints of third parties. The parties that generate this type of work for SoCalGas range in size from small clients to large corporations, which trigger a varying degree of scope of work for each construction job.

Other forecast methods considered included the five-year trend (2009 through 2013) and the 2013 base year. Both of these options result in a higher base forecast than the five-year (2009 through 2013) average. Given the degree of variability observed in the historical expenses for this work category, however, SoCalGas chose the more conservative five-year average approach. This is supported by SoCalGas' approximately $12 million in Other Distribution Capital Projects currently in progress or anticipated in the near future. Thus, the selected forecast approach allows SoCalGas to capture historical spending under a variety of conditions that reflect the historical fluctuations in expenditures associated with this work category. The five-year) average results in a base forecast of $3,042,000 per year in 2014, 2015, and 2016.

c. Cost Drivers

Costs in the Other Distribution Capital Projects work category are primarily driven by the volume and type of construction required to address the needs of property owners requesting SoCalGas to move facilities from their property. The degree of complexity of each relocation request varies, and often, the customers' construction schedules are unpredictable, direct impacts SoCalGas' costs. It is SoCalGas observation that customers' work is generally driven by

economic conditions. As economic conditions improve[44], this category of work has the potential to increase.

Another cost driver in this work category is construction work performed to protect the integrity of the pipeline when it is not feasible to relocate it. An example of this work is the installation of protective casing where an existing pipeline is found to be at a shallow depth and therefore more susceptible to third-party damage.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials such as pipe and fittings. All or a combination of these construction elements are necessary for performing relocation projects for mains, services, and associated facilities in the Other Distribution Capital Projects work category.

2. Meter Guards

The Gas Distribution Meter Guards work category covers capital expenditures for the installation of meter guards (barriers) to protect MSAs from vehicular traffic. The capital forecast for the Meter Guards work category is summarized in Table FBA-33 below.

TABLE FBA-33
Southern California Gas Company
Meter Guards

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
L. Other Distribution Capital Projects & Meter Guards	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
2. Meter Guards	386	825	825	825

a. Description of Costs and Underlying Activities

Meter Guards are routinely installed to protect the MSAs at existing customer locations from vehicular traffic, in accordance with General Order 112 E and with 49 CFR 192.353(a). The meter guards are installed at targeted sites where the MSA location and/or design warrant consideration of traffic patterns and exposure to other potential sources of impact damage.

The installation of meter guards creates a more secure environment at the MSA location, which, in addition to increasing public safety, results in increased longevity and performance of

[44] IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

the MSA equipment. SoCalGas has specific engineered standard designs to protect its MSAs: a light duty meter guard designed to protect MSAs at single residential properties; a medium duty meter guard designed to protect MSAs at multi-residential, light commercial and light industrial properties; a heavy duty meter guard designed to protect MSAs exposed to heavy commercial and industrial traffic, or where poor soil conditions exist, or involve other situations requiring additional protection. Furthermore, increased building density creates additional conflicts with vehicular traffic impeding on MSA locations. Current trends in architecture, to maximize saleable square footage, has resulted in less room for MSAs, increasing the demand forecast for meter guards to protect these less-amenable MSA locations.

These forecasted capital expenditures support the Company's goals of installing meter guards to mitigate risks associated with hazards to public safety and to the reliability and integrity of pipeline infrastructure. They serve as a first line of defense against vehicular impact in a service territory where, in many areas, parking is a premium and space for MSA installations is limited.

b. Forecast Method

In developing this forecast, historical expenditures for 2009 through 2013 were evaluated. To factor in periods of high levels of work, as well as years with lower volumes of work, SoCalGas chose a five-year average spending for the period 2009 through 2013 to forecast expenditures for meter guard installations. This approach allows SoCalGas to capture historical spending under a variety of conditions that reflect the historical fluctuations in labor and non-labor expenditures associated with this workgroup. Using a five-year (2009 through 2013) linear trend or base year (2013) forecasting method would not be appropriate for this work category as it would not provide sufficient funding for the level of work anticipated in the future. The five-year average results in a base forecast of $825,000 per year in 2014, 2015, and 2016.

In order to perform the incremental work associated with this work category, SoCalGas is adding two incremental crew trucks in 2014. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

c. Cost Drivers

SoCalGas installs meter guards in response to the need to protect its gas distribution assets and to promote public safety as well as to comply with state and federal regulations. Meter guard installation work is driven by conditions surrounding the location of an existing

meter set assembly. Meter guards are installed to protect the MSA when it is apparent that activity on the property creates or encourages a potentially hazardous environment to the MSA. This work supports the Company's commitment to mitigate the risks associated with public safety, system reliability, and infrastructure integrity.

The underlying cost drivers for this capital work category relate to Company labor, contractor services, third-party services, paving services, and materials. All or a combination of these construction elements are necessary for performing meter guard installations.

M. Measurement and Regulation Devices

The Measurement and Regulation Devices work category includes expenditures for the purchase of gas meters, regulators, electronic gas pressure and temperature correction equipment, and electronic pressure monitors. The capital forecast for this work category is summarized in Table FBA-34 below.

TABLE FBA-34
Southern California Gas Company
Measurement and Regulation Devices

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
M. Measurement & Regulation Devices	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Meters	18,987	26,399	26,925	27,610
2. Regulators	6,826	8,537	8,712	10,337
3. Gas Energy Measurement Systems	1,145	1,367	1,443	1,508
4. Electronic Pressure Monitors	1,061	928	1,110	608
Total	**28,019**	**37,231**	**38,190**	**40,063**

The forecast for Measurement and Regulation Devices for 2014, 2015, and 2016 are $37,231,000, $38,190,000, and $40,063,000, respectively. These expenditures are necessary to safeguard public safety, comply with applicable rules and regulations governing gas metering (General Orders 58-A and 112-E) and meet SoCalGas' obligation to accurately measure gas consumption and to serve new customers.

1. Meters

The expenditures included in the Meters work category are for materials, warehouse handling, technical evaluations, and quality assurance for the purchase of small meters, typical of

residential and small business applications, and larger meters, typical of non-residential applications. The capital forecast for this work category is summarized in Table FBA-35 below.

TABLE FBA-35
Southern California Gas Company
Meters

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
M. Measurement & Regulation Devices	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Meters	18,987	26,399	26,925	27,610

a. Description of Costs and Underlying Activities

Meters are purchased for two primary purposes: new business installations and meter replacements. These purchases and the subsequent installations enable accurate billing, reliability, and continued safe and reliable service to customers. Meter types purchased within this budget code include diaphragm, rotary, turbine, and ultrasonic. The associated installation expenses are covered in other applicable work categories (*e.g.,* New Business, Measurement and Regulation).

New business meters are purchased for installation at new customer premises. Meter purchases in this category are consistent with installations discussed in Section IV.B (New Business). For additional details on the forecast of customer meter sets, refer to the workpapers of SoCalGas Customers witness Rose-Marie Payan, Exhibit SCG-30-WP.

Meters are also purchased for replacements resulting from Company or customer-identified problems due to meter accuracy, age, operation, or on a pre-determined replacement cycle, based on meter capacity, size, and meter class performance. Commercial and industrial meter sets are replaced by the Distribution Measurement and Regulation Department, whereas the replacements of small meter sets, typically installed at residential and small commercial sites, are performed by the Distribution Field Operations and Customer Services Field Departments. Customer Services Field labor costs associated with SoCalGas' planned small meter replacement program are covered in the prepared direct testimony of Sara Franke, Exhibit SCG-10.

These forecasted capital expenditures support new customer demand and meter replacements due to obsolescence, damages or reaching of life expectancy. Since the meter is

the device that measures the customer's gas consumption, it is critical that meters are functioning to specification and recording accurate information.

These forecasted capital expenditures support the Company's obligation to serve and the commitment to effectively respond to new customer demand and to provide safe and reliable service at reasonable cost.

b. Forecast Method

A zero-based forecasting methodology was used to forecast the expenditures of this capital work category. This methodology was based on the projected number of new meter sets and the forecasted replacement meter sets. Additional details for the projected new meter sets can be found in the workpapers of SoCalGas' Customers witness Rose-Marie Payan, Exhibit SCG-30-WP. The details of the number of forecasted replacement meter sets can be found in the accompanying supplemental workpaper (SCG-FBA-CAP-SUP-009 in Exhibit SCG-04-CWP). This unit forecast was multiplied by the weighted average cost per meter type, based on historical meter purchases. The zero-based calculation yields the most accurate forecast for this capital category, as it incorporates the projected customer growth and forecasted meter replacements, while utilizing the historical proportional cost per meter type. See supplemental workpaper SCG-FBA-CAP-SUP-009 for the unit forecast and calculation details. The capital funding required for meter purchases in years 2014, 2015, and 2016 is $26,399,000, $26,925,000, and $27,610,000, respectively.

c. Cost Drivers

The underlying cost drivers for this capital work category relate to the purchase of sufficient meters to meet the projected new business meter requirements and the meter replacement forecast. Although contractual unit prices stay relatively fixed over the contract period, there are small fluctuations in price due to varying shipping and handling costs. New business meters are purchased for installation at new customer premises, including residential, commercial, and industrial sites. Meter purchases in this category are consistent with installations discussed in Section IV.B (New Business). Meters purchased for replacements are in response to Company or customer-identified problems due to meter accuracy, age, or operation, or on a pre-determined replacement cycle based on meter capacity, size, and meter class performance.

2. Regulators

The expenditures included in the Regulators capital work category are for the purchase of new installation and replacement regulator materials and technical evaluations. Associated installation expenses are covered in other applicable work categories (*e.g.,* New Business, Measurement and Regulation). The capital forecast for the Regulators work category is summarized in Table FBA-36 below.

TABLE FBA-36
Southern California Gas Company
Regulators

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
M. Measurement & Regulation Devices	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
2. Regulators	6,826	8,537	8,712	10,337

a. Description of Costs and Underlying Activities

Gas regulators are used by SoCalGas to reduce the pressure of gas entering the distribution system from high-pressure pipelines to provide the lower pressures used on the distribution pipeline network and further reduce pressure at the customer's meter set. As such, they are the principal protective devices to secure employee and public safety and to protect physical assets in alignment with CPUC/DOT regulations. They also support accurate billing for most customers, where delivery pressure is employed to compute corrected gas volumes delivered to customers.

While new installations are driven by new meter set activities and new regulator stations; replacements are driven by customer or Company-identified problems, condition, and obsolescence of this equipment. The installation of regulators at commercial and industrial sites is normally performed by the Distribution Measurement and Regulation Department, whereas the installation of regulators at residential and small commercial sites is normally performed by the Distribution Field Operations and Customer Service Departments.

These forecasted capital expenditures support the Company's goal to provide safe and reliable service at reasonable cost.

b. Forecast Method

In an effort to secure meters and regulators at a reasonable cost, SoCalGas conducted a competitive bidding process for gas metering and regulating equipment. Due to the quantity of equipment purchased for SoCalGas' business needs, a contract was negotiated through December 31, 2015. The methodology used to calculate the required funding for regulator purchases was based on a weighted average of the regulator contract prices multiplied by the new business installation and replacement requirements. To determine the number of regulators needed, SoCalGas used as a basis the historical five-year (2009 through 2013) ratio between purchased meters to purchased regulators. Multiplying the regulator-to-meter ratio with the projected number of forecasted meter purchases yielded the projected number of regulator purchases for each of the forecast years. The labor expenditure was then calculated by taking the projected number of regulators multiplied by the historical 2013 average labor cost per regulator.

In addition to this routine work, SoCalGas plans to replace approximately 10,030 regulators in curb meter sets, in year 2016, as part of a proactive replacement effort. This effort will replace an incremental number of regulators susceptible to corrosion or that have exceeded their life expectancy of approximately 30 years, with more resilient cast iron regulators. These tougher new regulators will support SoCalGas' commitment to proactively take action to mitigate leakage, thus reducing associated public safety risks. This incremental regulator purchase expenditure is included in the 2016 forecast. See supplemental workpaper SCG-FBA-CAP-SUP-010 in Exhibit SCG-04-CWP for calculation details.

The associated labor expenses for installation of these curb regulators are covered in the prepared direct testimony of Sara Franke, Exhibit SCG-10. These regulators will be replaced as part of curb meter replacements. Curb meter and regulator replacements generally embody a more complex and time-consuming process than above-ground regulators, as employees working on these facilities must remove curb lids, work below ground level, remove water, dirt or debris that may have accumulated in or around the curb box, normally replace more parts and fittings due to higher corrosion incidence, and generally require reconstruction of the MSA more frequently when visiting the site.

In summary, the capital funding required for the Regulators work category is forecasted to be $8,537,000, $8,712,000, and $10,337,000 in the years 2014, 2015, and 2016, respectively.

c. Cost Drivers

The underlying cost drivers for this capital work category relate to the purchase of sufficient regulators to meet projected new business installations and regulator replacements at existing MSAs. Although contractual unit prices for the regulators stay relatively fixed during the contract period, there are small fluctuations in price due to varying shipping and handling costs. Regulators purchased for new business meters sets are in response to installation at new customer premises, including residential, commercial and industrial sites. Regulator purchased for replacements are in response to Company or customer-identified problems, such as technical defects, condition, age, or obsolescence, or on a pre-determined replacement cycle based on regulator capacity, type, or regulator class performance.

3. Gas Energy Measurement Systems

The capital expenditures included in the Gas Energy Measurement Systems (GEMS) work category are for the purchase of GEMS devices, other associated material, warehouse handling, technical evaluations, quality assurance, and costs for the initial installation of the GEMS devices. The capital forecast for the Gas Energy Measurement Systems work category is summarized in Table FBA-37 below.

TABLE FBA-37
Southern California Gas Company
Gas Energy Measurement Systems

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
M. Measurement & Regulation Devices	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
3. Gas Energy Measurement Systems	1,145	1,367	1,443	1,508

a. Description of Costs and Underlying Activities

In accordance with General Order 58-A, and to enable accurate accounting and billing, GEMS instruments are used by SoCalGas as electronic pressure and temperature correctors to compute and accumulate corrected volume from the mechanical output of positive displacement and turbine gas meters. They also have the ability to provide gas volume corrections based on real-time temperature measurement, provide audit trail capabilities, and some models provide remote communication capabilities. These devices are configured to fit the requirements of each GEMS field site.

These devices contain proper pressure and temperature transducers, as well as casing size and mounting configuration. The types of GEMS included in this category are: Electronic Correctors, little GEMS, big GEMS, and new generation GEMS. SoCalGas purchases these devices to support new business installations and to provide for required instrument replacements. These units are necessary for larger, industrial customers that require non-standard delivery pressures and require compensation for varying gas temperature effect on measurement.

These forecasted capital expenditures support the Company's goals of providing accurate measurement and billing to customers and protecting the integrity of the natural gas infrastructure.

b. Forecast Method

A zero-based forecasting methodology was used to forecast the expenditures of this capital work category. This methodology incorporates the new business growth factor to project new GEMS installations using 2013 recorded new installations as a basis. GEMS replacements were projected by using the 2013 recorded replacement count, plus five additional replacements in each forecast year. These five additional replacements per year are to represent the installation of new generation gas analyzers, which are more economical when compared to older models. These new generation GEMS are used to support service to large industrial customers, such as petroleum refineries and utility electrical generation plants.

In general, gas measurement instruments are routinely replaced due to age, failed components, or damaged devices. It is necessary to replace these devices before they fail to avoid customer measurement errors and related increases in O&M expenses. In preparing the forecast for the new installations and the replacement units discussed above, the annual costs were based on the 2013 average cost per unit for each device type, multiplied by the number of units forecasted, with exception to the five projected new generation GEMS, which were estimated based on historical unit purchases, plus estimated cost of installation. See supplemental workpaper SCG-FBA-CAP-SUP-011 in Exhibit SCG-04-CWP for calculation details. The resulting capital forecast for GEMS for 2014, 2015, and 2016 is $1,367,000, $1,443,000, and $1,508,000, respectively.

c. Cost Drivers

Gas Energy Measurement Systems work is driven by the volume of new and existing industrial customers that require higher than standard delivery gas pressure. Customers that operate with non-standard delivery pressures are required to have a GEMS volumetric corrector that accounts for temperature effects on gas measurement. These GEMS devices are essential to obtaining accurate gas consumption measurement for billing purposes, and thus are installed at the time a new qualifying industrial customer's service is initiated, and are also replaced when a malfunction is detected on an existing GEMS device.

The underlying cost drivers for this capital work category relate to the purchase of GEMS devices to meet the projected number of new installations and the projected replacement count. Although contractual unit prices for the GEMS devices stay relatively fixed, there are small fluctuations in price due to varying shipping and handling costs. It is SoCalGas' experience that new customer-driven installations increase as the economy improves. Units purchased for replacements are in response to Company or customer-identified problems, such as technical defects, operation, condition, age, or obsolescence.

4. Electronic Pressure Monitors

Costs included in the Electric Pressure Monitors category are for the purchase of electronic pressure monitors and associated labor cost for equipment configuration and initial installation. The capital forecast for the Electronic Pressure Monitors work category is summarized in Table FBA-38 below.

TABLE FBA-38
Southern California Gas Company
Electronic Pressure Monitors

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
M. Measurement & Regulation Devices	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
4. Electronic Pressure Monitors	1,061	928	1,110	608

a. Description of Costs and Underlying Activities

Electronic pressure monitors are used by SoCalGas to remotely monitor distribution pipeline pressures in support of gas system capacity analysis, and for alarming of over or under-pressure events. The primary purposes of the electronic pressure monitor network are system

safety and compliance with 49 CFR 192.741 (Pressure limiting and regulating stations: Telemetering or recording gauges). The legacy analog mechanical pressure recording chart equipment used at many of SoCalGas' regulator stations and system terminal points require someone to drive to the location of the equipment once a month to retrieve the circular paper charts. Since these paper chart devices do not transmit the pressure data to a remote operator, real-time information is not readily available to help better manage and respond to pipeline overpressure or under-pressure events. Also, when failure in mechanical pressure recording chart equipment occurs, such as a recording pen failure that results in no data being recorded, the problem is not noticed or fixed until the next scheduled chart collection. Furthermore, due to the declining number of suppliers of mechanical pressure recording chart equipment, locating replacement parts and supplies is difficult. The situation is likely to worsen, as the market for the mechanical pressure charts continues to diminish.

SoCalGas currently has approximately 500 of these mechanical chart devices in operation. Understanding the business risks associated with the continued use of older obsolete equipment, the Company has undertaken a program to systematically replace these mechanical devices. In addition, since SoCalGas has been using electronic pressure monitors for over a decade, it is reasonable to expect replacement cost, as wear-and-tear begins to impact the performance of the aged electronic pressure monitors. As mentioned earlier, these devices continuously monitor operating gas pressures, and their alarming capabilities support public safety throughout the service territory. These devices also support compliance with 49 CFR 192.741.

These forecasted capital expenditures support the Company's commitment to mitigate risk associated with public safety, reliability and system integrity.

b. Forecast Method

A zero-based forecasting methodology was used to forecast the expenditures of this capital work category. The number of new electronic pressure monitor installations includes the remaining count of mechanical gauge replacements, as well as new electronic pressure monitor installations for zones where system pressure is under-monitored. This zero-based approach also includes electronic pressure monitor replacements, based on a projected failure factor applied to the electronic pressure monitor population for each forecast year. The combined new installations and replacements provide the total number of units required under this capital work

category. See supplemental workpaper SCG-FBA-CAP-SUP-012 in Exhibit SCG-04-CWP for calculation details. The resulting forecast for electronic pressure monitors for 2014, 2015, and 2016 are $928,000, $1,110,000, and $608,000, respectively.

c. Cost Drivers

The main drivers for electronic pressure monitor installations is the need to replace the obsolete mechanical pressure recording devices to enable SoCalGas to remain in compliance with 49 CFR 192.741 as well as to address sites where system pressure is under-monitored. Another cost driver is the need to replace existing electronic pressure monitors due to electronic component malfunctions.

The underlying cost drivers for this capital work category relate to the purchase of electronic pressure monitor devices to meet the projected number of new installations and replacements as well as the associated installation labor and non-labor costs.

N. Capital Tools

The Capital Tools work category includes capital expenditures associated with the purchase of tools and equipment used by Gas Distribution field personnel for the inspection, maintenance and repair of gas pipeline systems. The capital forecast for the Capital Tools work category is summarized in Table FBA-39 below.

TABLE FBA-39
Southern California Gas Company
Capital Tools

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
N. Capital Tools	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Capital Tools & Equipment - Routine	2,383	2,710	3,115	3,519
2. Capital Tools - Non-Routine	-17	3,133	2,688	5,700
3. Capital Tools - Mobile Data Terminal Replacements	0	2,326	2,326	1,745
Total	**2,366**	**8,169**	**8,129**	**10,964**

1. Description of Costs and Underlying Activities

The main driver of this category include the need to replace existing tools that are damaged, broken, outdated technologically, or have outlived their useful lives. In addition,

SoCalGas invests in new tools that provide innovative ways of completing the maintenance and repair of its facilities in order to lessen customer disruptions, improve pipeline facility documentation, improve gas system safety, and improve employee safety.

The forecast for Capital Tools for 2014, 2015, and 2016 is $8,169,000, $8,129,000, and $10,964,000, respectively.

2. Forecast Method

For forecasting purposes, this workgroup was separated into two categories: a) Routine Tool Purchases, which include tools and equipment for new employees and replacements of damaged, broken and obsolete tools and equipment; and b) Non-Routine Tools, which include significant system-wide replacements and implementation of new technology, as detailed in the following sections.

a. Routine Tool Purchases

Routine tool purchase requirements are identified during the year, as part of the regular course of maintenance and construction activities. SoCalGas expects routine tool purchases to continue on an increasing trend as existing tools and equipment reach their useful life expectancies and the level of construction and maintenance activities increases, adding to the number of new employees that must be equipped with tools and equipment. Some tools are exposed to rigorous use. Due to safety risks, such tools must be replaced before breaking. Otherwise, they could potentially cause injury to an employee. Work increases further add to the number of new employees that must be equipped with tools and equipment. In addition, increases in other capital and O&M work categories increase the need for personnel and therefore, the tools they use to perform their job. SoCalGas evaluates field tools and equipment based on safety, functionality, cost and quality. Costs are minimized by encouraging sharing between employees and crews, and by repairing tools when it is safe to do so.

A five-year (2009 through 2013) linear trend forecasting methodology was used to forecast the expenditures of routine tool purchases. The three-year recorded expenditures indicate that there has been an increase in expenditures every year starting in 2011 through 2013, as reflected in the historical figures. Although use of the three-year trend would result in a higher forecast, SoCalGas chose the more conservative five-year historical linear trend for routine tool expenditures. A five-year (2009 through 2013) average would not provide sufficient funding for this category of work, based on the historical trend and anticipated work and

workforce requirements. The resulting base forecast for 2014, 2015, and 2016 is $2,710,000, $3,115,000, and $3,519,000, respectively.

Added to this work category are incremental elements not reflected in the routine base forecast that are necessary to adequately fund equipment and tools in 2014, 2015, and 2016. These include the non-routine tools and mobile data terminal replacements described below.

b. Non-Routine Tool Purchases

i. Multi-Gas Detector Replacement Effort

This project encompasses system-wide replacement of existing multi-gas leak detectors and related support equipment utilized by SoCalGas' Customer Services Field personnel to measure carbon monoxide levels and to perform gas leakage measurements as part of safety investigations. SoCalGas currently employs an inventory comprised of approximately 1,300 detectors and 60 calibration stations, which will be replaced in 2015. The replacement of the multi-gas test equipment has the purpose of mitigating the following issues:

- SoCalGas has been experiencing reliability and performance related issues that support full replacement of existing multi-gas detection equipment. These units also have measurement consistency problems.
- The existing units are reaching their life expectancy. Electrical components incorporated with multi-gas detection technology have a limited lifespan requiring periodic repair and/or replacement.
- Warranty expiration in September 2014 will result in the potential for incurring significant repair costs.

This project's cost is forecast to be $2,417,000 in 2015. See supplemental workpaper SCG-FBA-CAP-SUP-013 in Exhibit SCG-04-CWP for additional details.

ii. Combustible Gas Indicator Equipment Replacement Effort

This project encompasses system-wide replacement of existing combustible gas indicators and related support equipment utilized by SoCalGas personnel to measure methane gas levels and perform leakage and safety investigations. SoCalGas currently uses an inventory comprised of approximately 1,800 detectors and 65 calibration stations, which will be replaced in year 2014. SoCalGas has been utilizing the same combustible gas indicator model for 30

years. A review of this equipment substantiates the need to perform a system wide replacement as supported below:

- The age of the equipment varies from 10 to 30 years old, and in many cases units have exceeded their life expectancy.
- The manufacturer has discontinued manufacturing of components required to support this equipment, thus limiting the ability to maintain the existing inventory.
- Advancements in technology related to calibration, data logging, and continual sampling will enhance SoCalGas' ability to provide more accurate leak monitoring and access instrument data

This forecast for this project is $3,133,000 in 2014. See supplemental workpaper SCG-FBA-CAP-SUP-013 in Exhibit SCG-04-CWP for additional details.

iii. Leak Detection Equipment Replacement Effort

This project encompasses system-wide replacement of existing leak detection equipment to be executed in year 2016. This handheld unit is the primary leak detection instrument utilized by SoCalGas when performing annual, routine, and special underground leakage survey activities. SoCalGas currently employs an inventory comprised of approximately 375 units utilizing first generation infrared technology to identify and quantify underground leakage. SoCalGas will systematically upgrade its existing inventory of handheld pipeline leak detection equipment which will provide several benefits:

- Optical enhancements associated with advances in infrared technology will eliminate moisture-related false read indications during leak investigations. Newer instruments are built with a longer infrared wavelength design, which significantly reduces sensitivity to variations in humidity conditions that exist with current inventory of instruments.
- Improved manufacturing and assembly processes associated with critical components in this equipment have increased the reliability and consistency of the instrument.
- Addition of Bluetooth technology will provide a path of communication for future data collection and integration with existing software platforms.

This project's cost is forecast to be $4,429,000 in 2016. See supplemental workpaper SCG-FBA-CAP-SUP-013 in Exhibit SCG-04-CWP for additional details.

iv. GIS-Based Leak Survey Tracker

The GIS-based Leak Survey tracker is a hand-held device that will be used while performing leak surveys. This technology will enable surveyors to geo-tag the position of leaks as they are found. Such geo-tag information can then be collected electronically to document the field survey findings. The ability to collect this information electronically with interface to SoCalGas' existing and future technologies such as, the GIS and Maintenance and Inspections databases, can enhance the ability for abnormal field conditions to be reported, recorded, and followed up accordingly with minimal manual intervention. This device will be Bluetooth linked to SoCalGas' leak detectors and will run on a mid-ware application that will integrate with the GIS and inspection systems. SoCalGas will purchase approximately 400 of these units in year 2016. This project's cost is forecast to be $1,271,000 in 2016. See supplemental workpaper SCG-FBA-CAP-SUP-013 in Exhibit SCG-04-CWP for additional details.

v. Field Training Facility Improvement for Situation City

This project will construct a restroom facility in SoCalGas' Situation City, field training facility in Pico Rivera, California. The construction of this restroom will provide an appropriate facility at a location where students are trained on a regular basis. Increased usage of the Situation City training area has created a need for a permanent full-use bathroom. There is a considerable distance from the regular training building to the field training grounds. The maintenance of this facility is not part of the Company's Facility Services organization and therefore, is not included within that forecast. SoCalGas plans to execute this project in 2015, after obtaining all required design plan approvals and permits. This project's cost is forecast to be $271,000 in 2015. See supplemental workpaper SCG-FBA-CAP-SUP-013 in Exhibit SCG-04-CWP for additional details.

c. Mobile Data Terminal Replacements

This project encompasses system wide replacement of existing mobile data terminals utilized by SoCalGas' Field Operations maintenance and construction personnel and supervisors. These ruggedized laptops are a critical component in the management and scheduling of daily work, as well as a means of providing two-way communication between field crews, dispatch, and supervision. SoCalGas currently employs an inventory comprised of approximately 1,100 of these units, which will be replaced during the three-year period, 2014 through 2016. Systematic

replacement of Field Operations mobile data terminals will mitigate a number of issues including:

- Most of the existing MDTs are more than five years old and are beyond their original three-year manufacturer's warranty. SoCalGas has been experiencing increasing levels of unit failures requiring increased repairs.
- By their nature, field computers have a limited lifespan due to the working environment and constant use they are subjected to on a daily basis. Replacement and upgrades to newer technologies (faster computing speed, better processors, and increased memory and communications abilities) can potentially reduce field operation disruptions and downtime.
- SoCalGas experienced an average failure rate for MDTs at about 25% in the first five years of use in the field. The rate is anticipated to increases after five years. Therefore, this project strives to maintain operational reliability by prioritizing the replacement of those reaching five years and out of warranty. Not replacing these units could result in operational disruption due to failures and potentially jeopardize compliance schedules.

This project is forecast to cost $2,326,000 per year in 2014 and 2015, and $1,745,000 in 2016. See supplemental workpaper SCG-FBA-CAP-SUP-013.1 in Exhibit SCG-04-CWP for additional details.

3. Cost Drivers

The main driver for capital tools and equipment purchases is the need to continuously equip SoCalGas' employees with safe and reliable tools and equipment. As previously discussed, SoCalGas' tools and equipment are exposed to rigorous environments that impact their useful lives. Many of the tools and equipment being utilized in the field contain sensitive components that are subject to shock, vibration, rain and dusty conditions, which are factors that contribute to the deterioration of the equipment. Furthermore, work increases in other capital and O&M work categories increase the need for personnel and therefore, the tools they use to perform their job.

The main driver of this plant category is the need to replace existing tools that are broken, outdated, or have out lived their useful lives. The underlying cost drivers for this capital work category include expenditures associated with the purchase of capital tools and equipment used

by Gas distribution field personnel for the maintenance and construction of gas pipeline systems. In addition, SoCalGas invests in new tools that provide innovative ways of completing field work in order to lessen customer disruptions, improve pipeline facility documentation, and improve gas system and employee safety.

O. Field Capital Support

This work category provides the labor and non-labor funding for a broad range of services to support Gas Distribution field capital asset construction. The forecast for the Field Capital Support work category is summarized in Table FBA-40 below.

TABLE FBA-40
Southern California Gas Company
Field Capital Support

GAS DISTRIBUTION				
Shown in Thousands of 2013 Dollars				
O. Field Capital Support	**2013 Adjusted-Recorded**	**Estimated 2014**	**Estimated 2015**	**Estimated 2016**
1. Field Capital Support	44,230	53,734	53,448	53,222
Total	**44,230**	**53,734**	**53,448**	**53,222**

1. Description of Costs and Underlying Activities

Traditional work categories in this budget include project planning, local engineering, clerical support and field dispatch, field management and supervision, updating of mapping products, and off-production time for support personnel and field crews that install Gas Distribution capital assets.

Support activities recorded to this budget include:

Technical Planning

Technical planning refers to all activities that take place in the Region technical and district offices in support of capital projects. These support work activities include, but are not limited to, the following:

- Planning the Project – Conducting field visits to assess job site requirements; retrieving available sub-structure drawings from multiple sources for the proposed site to determine construction options; selecting materials; job specifications and method of installation; job specific gas control instructions; developing traffic control procedures; and obtaining permits.

- Produce Project Drawings – Drawings that are required to obtain construction permits, used by SoCalGas and contractor field crews for asset installation, and documenting the project in SoCalGas records. This includes updating the SoCalGas Geographic Information System (GIS) with graphical and facility information. These personnel are responsible for updating all distribution infrastructure maps whenever facilities in the field are constructed, modified or replaced. The timely maintenance of these gas distribution system records is a critical risk mitigation measure in preventing hazards to public and employee safety, infrastructure integrity, and to the reliable delivery of natural gas to SoCalGas customers.
- Acquire and Manage Third-Party Services – Acquire third-party contract services such as paving, steel plates, equipment, and new business joint trenching. Verify that third-party services provided meet SoCalGas standards and that the joint trench provided by the applicant is to specifications.
- Work Order Cost Estimating – Provide work order cost estimates for each capital project.

Local Engineering

The work performed by local engineering personnel includes gas network analysis, hydraulic modeling, development of construction design requirements, pressure control specifications, administration of the regional emergency response centers, region emergency response, and assessments of construction impacts on the reliability and integrity of the gas distribution system.

Clerical

Clerical support includes a number of functions that assist capital projects including: obtaining permits; requesting third-party services such as paving; reconciling all project documentation; reviewing accuracy of information; and entering work order data into SoCalGas' system of records. In addition, Clerical supports the accurate records retention of construction permits, work orders, and customer requests for archival.

Scheduling and Dispatch

Dispatch support coordinates all aspects of the construction job, including availability of supplies, materials, and contract support personnel; and schedules work for completion in the field.

Field Management and Supervision

Field management and supervision of SoCalGas and contractor field crews is covered by this area. This includes the inspection of Company and contractor work to verify that construction follows job specifications, construction and safety standards, employee safety procedures, and compliance with Operator Qualification requirements. This also includes the management of frontline supervisors and technical planning office supervisors.

Off-Production Time

Off-production time refers to hours that are paid to employees who are assigned capital construction projects, but spend time away from the job site. Examples of off-production time include attending skills training classes and participating in required meetings to accomplish the job. This is applicable to both field and technical personnel.

Personnel in the Field Capital Support work category are critical to the success of capital projects as they handle tasks throughout the life cycle of a construction job. To prepare a project for field construction, personnel within this work category initiate, plan, design, and schedule for field dispatch. Once the job is in field construction, field management oversees the field crews and is responsible for making field decisions that are compliant with standards and policies. After the project has been completed in the field, there is the remaining task of reconciling the construction as-built information, which also involves the personnel in this work category.

These forecasted capital expenditures support the Company's commitment to mitigate risks to public safety, reliability and the integrity of the natural gas system.

2. Forecast Method

Collectively, the level of support activities, as outlined above, can fluctuate with the level of capital construction activity. Generally, the greater the volume of construction activity, the larger the support costs. Due to this relationship, the forecast expenditures for the budget category of Field Capital Support is based on the level of historical costs as a percentage of construction costs incurred.

Over the past five years (2009 through 2013), the percentage has ranged from 29% to 36%, with 2009 experiencing the highest ratio and 2011 the lowest. As SoCalGas continues to appropriately staff capital support services to respond to the increasing capital work, it anticipates additional pressures in this work category. A five year (2009 through 2013) average of the historical range yields 32%. However SoCalGas believes that overall efficiency gains can

be driven in this area. Therefore, as a foundational forecast, SoCalGas applied a labor ratio of 30% to the overall projected capital construction cost. This labor ratio was determined using the weighted average ratio of the four lowest percentage years (2010 through 2013).

The resulting forecast for Field Capital Support for 2014, 2015, and 2016 is $53,734,000, $53,448,000, and $53,222,000, respectively. See supplemental workpaper SCG-FBA-CAP-SUP-014 in Exhibit SCG-04-CWP for calculation details.

This forecast must support the large amount of mapping products requiring updating as construction work continues to increase. As previously described, the timely maintenance of mapping records is a critical risk mitigation measure to safeguard public and employee safety, maintain system reliability, and protect infrastructure integrity. SoCalGas recognized that additional resources must be hired and trained to respond to this critical work pressure. This cost is included within the forecast ratio described above. Therefore no additional funding is requested during this forecast period.

In order to perform the incremental work forecasted in this area, SoCalGas is adding nine incremental light duty trucks in 2014 and one in 2016. The costs associated with these vehicles can be found in the prepared direct testimony of Carmen Herrera, Exhibit SCG-15.

3. Cost Drivers

As discussed above, collectively, the level of support activities for Field Capital Support can fluctuate with the level of capital construction activity. Generally, the greater the volume of construction activity, the larger the support costs. Specifically the construction drivers that most closely impact the Field Capital Support work category are found in the capital work categories: New Business, Pressure Betterment, Supply Line Replacements, Main Replacements, Service Replacements, Main and Service Abandonments, Regulator Stations, Cathodic Protection Capital, Pipeline Relocations – Freeway, Pipeline Relocations – Franchise, Other Distribution Capital Projects, and Meter Guards. Given this relationship, the cost drivers impacting construction related work categories, as described in the Capital section in this testimony, will also impact the Field Capital Support work category.

P. Information Technology Capital Projects

I provide the business justification for 13 Information Technology capital projects that are sponsored by Chris Olmsted in his prepared direct testimony, Exhibit SCG-18. The business justification for each of these projects is discussed below.

1. Construction, Planning, and Design Enhancements Phases 1 and 2 and Reporting Enhancements

The Construction Planning and Design initiative spans the full construction process for gas and electric distribution projects, from initiation, planning, design, construction, through as-built, and reconciliation. The project includes replacing existing work management systems with SAP, implementing the use of MDTs for recording excavation details and materials installed during construction, implementing the use of Graphical Work Design software, increasing real-time communication and coordination across the construction process, and integrating accounting, supply management, cost estimating and GIS mapping systems.

Construction, Planning, and Design will fully implement SAP/ClickMobile and Graphical Work Design to all SoCalGas distribution regions by December 31, 2014. Additional funding is required in 2015 and 2016 to deliver gas and electric enhancements that will further improve the efficacy of the implemented SAP/ClickMobile and Graphical Work Design functionalities. The end result will be improvements to the end-user experience that will further leverage the integrative capabilities of the implemented systems. Enhancements include fine-tuning the implemented functionalities and adding necessary improvements identified through experience in using the new systems, where end-users have identified additional ways to improve the way business is conducted. New enhancements include project management tools that will improve internal and external customer service, additional process controls to stay in compliance with regulations, and improved data capture to minimize data errors, gaps, and delays.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpapers 00776F, 00810A, and 00810B).

2. Maintenance and Inspection Compliance Reporting

This project will enable SoCalGas Gas Distribution Operations to respond more quickly and accurately to annual CPUC Gas Distribution audits, the growing number of external data requests, and the increasingly complex requests for ad-hoc compliance, operational and engineering reports. The Pacific Gas and Electric Company San Bruno incident, the continuously-changing regulatory requirements associated with the DIMP, and the PSEP have resulted in an increased number of requests for inspection and maintenance data for SoCalGas and SDG&E and a more robust reporting system is required to meet these needs.

Implementation of improved reporting systems will provide self-service capability to create ad-hoc reports, perform trend analysis, and provide a Maintenance and Inspection data

repository to support future reporting requirements. This project includes implementation of an architectural solution that provides flexibility to quickly change data models.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpapers 00750A and 00776G).

3. Maintenance and Inspection and Measurement and Regulation Stabilization

The Maintenance and Inspection and Measurement and Regulation Stabilization projects include numerous enhancements to ClickSchedule and ClickMobile software and address a number of key compliance and reliability-based enhancements. Enhancements and configurations are needed to verify that maintenance and inspections and/or meter and regulator work orders are completed correctly to meet CPUC requirements and safeguard public safety and system reliability. Enhancements are also needed to fix existing issues or bugs to mitigate compliance risks. Enhancements will address:

- General Order 58A and CFR Title 49: Today's unstructured data entry leads to information being inconsistently provided in the completion of certain ClickMobile work types, such as Orifice orders. Enhancements are needed to assist crews in completing work orders by adding new condition codes and fields that serve to automatically upload to the work management system upon completion and reduce manual back office updates. Enhancements are needed to increase data integrity and accuracy of CPUC auditable fields, by correcting various lookup tables for equipment and enabling SAP notifications to be automatically created for meter change-out work types.
- Tariff Rules 15 and 16 (General Order 58A): To provide customer billing with accurate data, enhancements are needed to add and/or update validation messages, add missing data values, and replicate necessary fields when completing various ClickMobile forms.
- Reporting and Auditing: To assist in internal and external auditing efforts, enhancements are needed to capture data in ClickMobile. Any comments or information are committed and become read-only within ClickSchedule. Enhancements are needed to allow the scheduling organizations to generate business rule violation reports (such as violating compliance early start and due dates).

Specifically for pipeline reporting requirements, changes to mobile forms are needed to align with GIS implementation (above ground – hazardous and above ground – non-hazardous leaks).

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00776O).

4. Maintenance and Inspection GuiXT Phase 2

SAP-PM is used for all SoCalGas Gas Distribution-mandated inspection and maintenance work. One of the challenges identified in the initial implementation was the complexity of the native SAP interface for business users. The objective of this project is to simplify the SAP interface for users to reduce the number of errors, simplify and reduce required training and support, and increase user efficiency. This project is the second phase of a program started in 2012 and will complete the implementation of the GuiXT application for the highest priority roles in SoCalGas Gas Distribution. The GuiXT application provides user-interface customization with the SAP-PM application, enabling customization for different jobs, and simplifying the process.

The project will include the development and implementation of a graphical user interface in SAP-PM, Maintenance and Inspection, for three specified user roles, Dispatch Specialist, System Protection Clerk, and Maintenance Planner. The resulting design will be consistent, both technically and functionally, with the GuiXT solution implemented for SoCalGas Gas Distribution in 2012 and the roles being implemented for the SAP Construction, Planning and Design project.

Implementation of the GuiXT user interface for SAP users will provide:

- A single "launch pad" for the specified role, rather than the numerous required SAP transactions.
- Consolidation of multiple data entry screens into one screen to eliminate unnecessary and confusing options.
- Automated validation on data entry to obtain complete and accurate compliance data.

The simplified interface and the data entry validation provide for a user experience that is more intuitive and results in a reduction of training, including refresher training and simplified user job aides.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00776Q).

5. Click Upgrade

The purpose of this project is to provide additional enhancements for the Click software after it is upgraded to the new version (version 8). According to SoCalGas' experience, it is predicted that there will be number of unforeseen system enhancements after the Click software is upgraded into the new platform, and this project is intended to address those issues. Additionally, the project will address several usability issues that are not possible to address in the current version of the software and will likely require additional configuration changes after completion of the version upgrade.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00776A).

6. Click Version 8 Functional Enhancements

Click Software Company has upgraded the Click software into a new platform and SoCalGas needs to upgrade the software to stay within the framework of vendor support. In addition, this technology upgrade will enable SoCalGas to reduce the amount of customization that has been built into the current version of the software and resolve many of the current software stability issues. This upgrade will also provide opportunities for business process improvements, such as increasing the accuracy of crew management by allowing real time view between Area Resource Scheduling Organizations, crews, and Field Supervisors and reducing crew setup errors with an easier and simplified crew management board.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00776N).

7. Click and SAP Disaster Recovery Tier Upgrade

The purpose of this project is to align recovery of critical computer applications that are used by the Maintenance and Inspection and Measurement and Regulation organizations. Specifically, Click software and SAP-PM applications are essential enterprise systems that are currently in Disaster Recovery Tier 3, which could result in up to a five-day downtime, resulting in delays in planned, outage, and emergency work scheduling and dispatching. Related work management systems are Disaster Recovery Tier 1 and GIS is Disaster Recovery Tier 2. The scope of this project includes providing backup systems, databases, and integrations that are

required to move Click and SAP-PM from Disaster Recovery Tier 3 to Disaster Recovery Tier 1. In addition, implementation of this project will help to avoid significant customer and reliability impacts if Click and/or SAP-PM outage is coincident with peaks in outage and restoration work (*e.g.*, during a natural disaster that impacts both the data center and distribution system).

Implementation of this project will reduce restoration time for enhanced ability to schedule and dispatch work originated in Network Management System. It will also enhance Business Resumption Plan activities by restoring automated systems and reduce the productivity losses associated with reverting to inefficient manual processes.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00776D).

8. Field Mobile Data Terminal Upgrade

The purpose of this project is to upgrade aging MDT computers in the field and avoid downtime in Field Operations due to computer failures. The scope of this project includes replacing MDTs that are more than five years old and subject to a high probability of breakdowns based on experience with similar equipment in the field. Also, included in this project is the cost of upgrading the operating system of the field computers from the obsolete Windows XP to Windows 7 Operating System. This upgrade is mandatory since Microsoft no longer supports the Windows XP Operating System. This MDT project accounts for a purchase of MDTs prior to the units discussed in Section IV.N (Capital Tools and Equipment) of this testimony. As such, these costs are not duplicative.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00777E).

9. Field Force Reporting

The purpose of this project is to further expand operational compliance reporting for Gas Distribution and Measurement and Regulation Control Environment. This project will enable the Company to identify trends and adjust and correct field force assignments and resources to support operational compliance and goals. This project is planned to be implemented in two tracks. Track 1 will utilize ClickAnalyze, the reporting tool for Click applications, and create Operational Performance Reports primarily using Click data. Track 2 will deliver Operational compliance reporting using SAP and Click data. This project will support operational compliance, and improve the ability to identify potential operational deficiencies in the field.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00776H).

10. Gas Operations Performance Analytics Phase 2

Through the Operational Excellence 20/20 Program, SoCalGas implemented systems that enable the gathering of information that would allow operations management to monitor both asset and employee performance to support improvements in reliability, safety, compliance and productivity. Phase 1 of the Gas Performance and Productivity Analytics project was implemented in the fourth quarter of 2013 to demonstrate how this data could be made available in an easy-to-use manner (using in-memory computing technology) to enable efficient decision-making in these areas. Phase 2 builds on the foundation established in Phase 1 and will expand the reporting and analytical platform that the Gas Distribution Operations organization will use to generate Gas Distribution key performance indicators, metrics and operational reports.

Information currently stored in non-integrated systems and manual extraction processes limit Gas Distribution Operations' ability to generate cross-functional reporting for District and Region management and Company leadership. This project will provide easily-accessible performance and productivity metrics to effectively manage Gas Distribution Field Operations consistently across regions, enhance the ability to identify continuous improvement opportunities through metric comparisons, and improve the ability to identify and focus on areas for improvement.

Implementation of this project will provide greater business insight and more informed decisions, which allows for identification and correction of trends before they become issues.

Additional information may be found in the Information Technology capital workpapers of Chris Olmsted, Exhibit SCG-18-CWP (Workpaper 00786A).

V. CONCLUSION

SoCalGas requests the Commission adopt its TY2016 forecast of $144,986,000 for Gas Distribution O&M expenses, which is composed of $137,077,000 for non-shared service activities and $7,909,000 for shared service activities. This is an increase of $36,319,000 over the 2013 adjusted recorded base. This increase is driven by increased agency regulations and requirements, improved economic conditions, system expansion, infrastructure renewal, field technical skills training and qualification, and integration and support of new technology.

SoCalGas further requests the Commission adopt its capital forecast of $274,426,000, $271,848,000, and $273,616,000 in 2014, 2015, and 2016, respectively. The primary factors influencing the capital forecast are anticipated increases in new business related activity and pipeline system renewal work.

These forecast expenditures support SoCalGas' overarching objective to maintain operational excellence while providing safe, reliable delivery of natural gas at a reasonable cost to customers. The Commission should find this request reasonable in that:

- The activities are necessary to maintain the delivery of safe and reliable service that SoCalGas has been providing customers for many years;
- The activities are consistent with operational codes and standards established by local, state, and federal agencies;
- The activities respond to operations, maintenance, and construction needs associated with projected customer and system growth and demands of city, county, and state agencies under the Company's franchise agreements; and
- The forecast amounts are reasonable in light of historical spending and anticipated work increases.

SoCalGas faces a number of challenges affecting both the physical operation of the pipeline system and cost management aspects of its business. Operations and maintenance requirements increase as the system expands. Additional maintenance and replacement work is required to continue to maintain reliability of an aging infrastructure. Agencies and regulatory bodies continue to impose operating conditions that increase the cost of doing business. To successfully overcome these challenges and achieve SoCalGas' goals of continuing to provide safe and reliable service at reasonable cost, employees must be trained and ready to respond.

The forecast presented in this testimony reflects SoCalGas' best judgment of work and the associated costs required to:

- Operate and maintain its gas distribution system in a manner that complies with applicable laws and regulations and safeguards the safety of the public and employees;
- Construct new gas distribution facilities in accordance with the Company's obligation to serve and to maintain system reliability;
- Replace existing facilities that are experiencing deterioration to safeguard public safety and preserve infrastructure integrity; and
- Respond to reasonable customer and governmental agency requests.

Accordingly, SoCalGas' TY2016 forecast is a reasonable estimate of future requirements and should be adopted by the Commission.

This concludes my revised prepared direct testimony.

VI. WITNESS QUALIFICATIONS

My name is Frank Ayala. My business address is 701 N. Bullis Rd., Compton, California, 90221. I am employed by SoCalGas as Director of Gas Operations – Northwest Region. I am one of two Gas Operations region directors who are responsible for all distribution pipeline operations in SoCalGas including the safe and reliable delivery of gas energy through the distribution pipeline network and the overall management related to the operation, maintenance, installation, and replacement of the gas distribution system. I also direct a group that provides technical and financial support for gas distribution project management and construction activities. This includes gas distribution planning and system design; emergency preparedness; response and recovery; and the preparation and management of O&M and capital budgets.

I have been employed at SoCalGas since 1967, and have held a variety of operating and staff management positions in Human Resources, Public Affairs, Field Operations, and Gas Operations. I have worked in much of SoCalGas' service territory. In my previous position, I provided leadership to a team of professionals that provided services to SoCalGas and SDG&E operations organizations to support the safe and reliable delivery of natural gas; develop and implement gas standards and business process enhancements related to the operation, maintenance, planning, installation, and replacement of the gas distribution system; provide compliance assurance support; and provide technical skills training and employee operator qualification.

I received my Bachelor and Masters of Business Administration degrees from Pepperdine University. In addition to my corporate responsibilities, I am very active in the community. I am past Chairman of the Board of the Mexican American Opportunities Foundation, the largest Hispanic non-profit social services delivery organization in the United States. I was also a member of the University of California, Irvine Chief Executive Roundtable.

I have previously testified before the Commission.

APPENDIX A – GLOSSARY OF ACRONYMS

AMI	Advanced Metering Infrastructure
ASME	American Society of Mechanical Engineers
CalTrans	California Department of Transportation
CFR	Code of Federal Regulations
CP	Cathodic Protection
CPUC	California Public Utilities Commission
DIMP	Distribution Integrity Management Program
DOT	United States Department of Transportation
GEMS	Gas Energy Measurement System
GIS	Geographic Information System
MDT	Mobile Data Terminal
MSA	Meter Set Assembly
O&M	Operations and Maintenance
PHMSA	Pipeline and Hazardous Materials Safety Administration
psi	Pounds per Square Inch
PSEP	Pipeline Safety Enhancement Plan
RPA	Regional Public Affairs
SAP	Systems, Applications, and Products in Data Processing
SAP-PM	Systems, Applications, and Products in Data Processing – Plant Maintenance
SB	Senate Bill
SDG&E	San Diego Gas & Electric Company
SoCalGas	Southern California Gas Company
TY	Test Year

APPENDIX B – REFERENCE INFORMATION

Cross Reference Table for Support to and from Other Witnesses

Area	Witness	Exhibit	Section	Notes
1. Small Meter and Regulator Purchases	Sara Franke	SCG-10	II.B.1	Gas Distribution provided the residential new business meter forecast, which was used to calculate a portion of the labor for Customer Services Field - Operations.
1. Small Meter and Regulator Purchases	Sara Franke	SCG-10	II.B.1	Customer Services Field provided the residential meter change-out forecast (180,000 per year, Table SAF-6), which was used to calculate a portion of Gas Distribution's Meters and Regulators forecasts.
2. Curb Regulator Replacements	Sara Franke	SCG-10	II.B.1.g	Gas Distribution provided the proactive curb regulator replacement forecast, which was used to calculate a portion of Customer Services Field labor.
3. Information Technology (IT) Capital Projects	Chris Olmsted	SCG-18	IV.A	Gas Distribution provided the operational requirement for the Gas Distribution IT Capital projects. IT calculated and sponsored the cost forecasts. Corresponding IT capital workgroup numbers are provided in Exhibit SCG-04, Section IV.P on IT Capital Projects.
4. New Meter Set Forecast	Rose-Marie Payan	SCG-30-WP	New Meter Sets	Witness Rose-Marie Payan provided the new meter set forecast, which was used to calculate Gas Distribution's New Business Construction forecast. It was also used to calculate a portion of the forecasts for Meters, Regulators, and Gas Energy Measurement Systems. The meter set forecast calculations are described in the workpapers of Rose-Marie Payan.

5. Economic Growth	Rose-Marie Payan	SCG-30-WP	Commercial Meter, Industrial Meter	The non-farm employment is shown in Rose-Marie's workpapers as the sum of EMPCOM (commercial nonfarm employment) and EMPIND (industrial employment). A file showing the percent change is being provided in response to question C.2, below. This forecast was not used arithmetically in Gas Distribution's calculations, but rather as a directional indicator, to support the forecast methodology.
6. Incremental Vehicles	Carmen Herrera	SCG-15-WP	Amortization, Interest	Gas Distribution provided the forecasted number of incremental vehicles required for its operations, which was used as part of the Fleet forecasts. In the Fleet and Facilities workpapers, Gas Distribution's incremental vehicle forecast is shown in the supplemental workpapers for Amortization and Interest.
8. Distribution Integrity Management Program Activities Moving to Gas Distribution Operations	Maria Martinez	SCG-08-WP	DIMP	Gas Distribution developed the 2016 forecast for these associated positions, Pipeline Integrity developed the 2014-2015 forecast. These positions are not specifically identified in the Pipeline Integrity testimony or workpapers, although they are included in the total DIMP forecast for 2014 and 2015.
7. Shared Services	Mark Diancin	SCG-25	II.E	Gas Distribution provided the Gas Distribution shared services forecast which was used in the total shared services calculations.
9. Leak Reduction Effort	Jill Tracy	SCG-17	IV.A	Environmental Services provided support for Gas Distribution's forecast for leak reduction efforts.

The table below shows the Gas Distribution forecast for each of the items listed above, as well as the location in Gas Distribution's exhibits.

Item	Location of Forecast in Exhibit SCG-04	Gas Distribution Workpaper Exhibit	Forecast		
			2014	2015	2016
(1) Small Meter and Regulator Replacements[1]	IV.M.1. Meters	SCG-04-CWP	$26,399	$26,925	$27,610
	IV.M.2. Regulators	SCG-04-CWP	$8,537	$8,712	$10,337
(2) Proactive Curb Regulator Replacements[1]	IV.M.2. Regulators	SCG-04-CWP	$8,537	$8,712	$10,337
(3) Information Technology Capital Projects[2]	N/A	N/A	N/A	N/A	N/A
(4) New Meter Set Forecast[3]	IV.B.2.a. New Business Construction	SCG-04-CWP	$29,713	$34,159	$38,016
	IV.M.1. Meters	SCG-04-CWP	$26,399	$26,925	$27,610
	IV.M.2. Regulators	SCG-04-CWP	$8,537	$8,712	$10,337
	IV.M.3. Gas Energy Measurement Systems	SCG-04-CWP	$1,367	$1,443	$1,508
(5) Economic Growth[4]	II.B.1. Locate and Mark	SCG-04-WP	$11,517	$11,983	$12,449
	II.C. Asset Management	SCG-04-WP	$8,731	$9,913	$10,827
	IV.C. Pressure Betterment	SCG-04-CWP	$27,561	$23,445	$16,009
	IV.G. Main and Service Abandonments	SCG-04-CWP	$3,582	$3,582	$3,582
	IV.J. Pipeline Relocations - Freeway	SCG-04-CWP	$10,301	$10,301	$10,301
	IV.K. Pipeline Relocations - Franchise	SCG-04-CWP	$18,472	$20,128	$21,783

	IV.L.1. Other Distribution Capital Projects	SCG-04-CWP	$3,042	$3,042	$3,042
(6) Incremental Vehicles[2]	N/A	N/A	N/A	N/A	N/A
(7) Shared Services	III. Shared Operations and Maintenance Costs	SCG-04-WP	$3,409	$3,409	$7,909
(8) Distribution Integrity Management Program Activities Moving to Gas Distribution Operations	II.D.b.i. Gas Distribution - High Pressure Technical Advisors	SCG-04-WP	$0	$0	$206
	II.D.c.i. Gas Operations Pipeline Maintenance - Quality Assurance Program	SCG-04-WP	$0	$0	$1,339
	II.D.c.iii. Gas Operations Pipeline Maintenance - Compliance Assurance Technical Advisor	SCG-04-WP	$0	$0	$103
(9) Leak Reduction Effort	II.B.5.b.i. Leak Reduction Effort	SCG-04-WP	$0	$1,007	$2,015
	II.B.6.b.i. Leak Reduction Effort	SCG-04-WP	$0	$114	$229
	IV.F.2.a. Replacement of Leaking Services	SCG-04-CWP	$7,108	$790	$0

Table Notes:

1. Small meter replacements, small regulator replacements, and proactive curb regulator replacements represent a portion of the total meter and regulator forecast (shown above). Calculation details can be found in the workpapers.

2. The cost forecast for this item was not included in Gas Distribution's area.

3. New meters, regulators, and gas energy measurement systems (GEMS) represent a portion of the total meter, regulator, and GEMS forecast (shown here). Calculation details can be found in the workpapers.

4. Non-farm employment growth was not used arithmetically in Gas Distribution's calculations, but rather as a directional indicator, to support the forecast methodology.

Various Links to Source Documents

Below are links to the materials referenced in testimony.

- 49 CFR 192.179: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-179.pdf
- 49 CFR 192.181: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-181.pdf
- 49 CFR 192.353(a): http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-353.pdf
- 49 CFR 192.465: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-465.pdf
- 49 CFR 192.615: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-615.pdf
- 49 CFR 192.723: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-723.pdf
- 49 CFR 192.739(a): http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-739.pdf
- 49 CFR 192.741: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-741.pdf
- 49 CFR 192.935: http://www.gpo.gov/fdsys/pkg/CFR-2013-title49-vol3/pdf/CFR-2013-title49-vol3-sec192-935.pdf
- GO 58A: http://docs.cpuc.ca.gov/PUBLISHED/GENERAL_ORDER/54827.PDF
- GO 112-E: http://docs.cpuc.ca.gov/PUBLISHED/GENERAL_ORDER/126869.htm
- SB 44: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120SB44
- SB 705: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201120120SB705
- SB 1371: http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201320140SB1371
- Cal. Code Regs. tit. 8, § 1541(b)(1)(B) (2007): https://www.dir.ca.gov/title8/1541.html

IHS Global Insight Non-Farm Employment Forecast

Below is a copy of IHS Global Insight's forecast for non-farm employment in the aggregated 12-county SoCalGas area (counties of Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura). This information is from Global Insight's Feb 2014 Regional forecast. This forecast corresponds to information provided in the workpapers of Rose-Marie Payan, Exhibit SCG-30-WP.

For 2016 General Rate Case (in gas customer forecast): SCG Employment

Aggregated 12-county SoCalGas area (counties of Fresno, Imperial, Kern, Kings, Los Angeles, Orange, Riverside, San Bernardino, San Luis Obispo, Santa Barbara, Tulare, and Ventura).

Year	Nonfarm Employment (millions)	Nonfarm Employment (% change)
2000	7.615	
2001	7.709	1.2%
2002	7.703	-0.1%
2003	7.726	0.3%
2004	7.844	1.5%
2005	8.002	2.0%
2006	8.180	2.2%
2007	8.224	0.5%
2008	8.084	-1.7%
2009	7.579	-6.2%
2010	7.474	-1.4%
2011	7.533	0.8%
2012	7.680	1.9%
2013	7.808	1.7%
2014	7.930	1.6%
2015	8.095	2.1%
2016	8.269	2.1%
2017	8.415	1.8%
2018	8.512	1.1%
2019	8.580	0.8%
2020	8.638	0.7%
2021	8.670	0.4%
2022	8.714	0.5%
2023	8.763	0.6%
2024	8.817	0.6%
2025	8.874	0.7%

Source: From Global Insight's Feb 2014 Regional forecast

Feb. 19, 2014

Incremental Vehicles – Leak Survey Activities

The incremental vehicles for Leak Survey activities were estimated using the forecasted number of FTEs, the average number of employees per vehicle, and the five-year 2009-2013 average percentage of straight time hours.

	Calculation	2014	2015	2016
Forecasted Leak Survey FTEs	**[A]**	93.84	101.38	108.93
FTE Increase Over 2013 Base Year (88.33 FTEs)	**[B]** ([A]-88.33)	5.50	13.05	20.60
5-Year 2009-2013 Average % of Straight Time Leak Survey Hours	**[C]**	98%	98%	98%
Estimated Incremental Employees Over 2013 Base Year	**[D]** ([B] x [C])	5	13	20
Estimated Incremental Employees in Each Year	**[E]** ([D] - [D] of Prev. Year)	5	8	7
Estimated Incremental Vehicles in Each Year, 1 Vehicle per Employee	**[F]** ([E] / 1 Employee/Vehicle)	5	8	7

Adjusted-Recorded and Forecasted Data

The tables below show the 2009 - 2013 adjusted recorded expenses and the 2014 - 2016 forecasts for Gas Distribution's O&M and capital categories. Amounts are shown in constant 2013 dollars.

Co_Code 2200
Exh No:SCG-04-WP
Gina Orozco-Mejia

Category		Category-sub	2009	2010	2011	2012	2013	2014	2015	2016
						Constant$ (000)				
O&M										
Non_Shared										
B Field Operations & Maintenance	1	Locate & Mark	10,755	10,411	10,109	10,601	11,041	11,517	11,984	12,450
	2	Leak Survey	4,108	4,175	4,799	5,563	6,253	6,683	7,252	7,821
	3	Measurement & Regulation	12,357	11,057	10,943	11,440	11,971	11,578	11,601	11,789
	4	Cathodic Protection	12,362	10,356	10,675	10,241	10,851	11,679	12,451	13,390
	5	Main Maintenance	7,303	7,600	10,833	12,969	10,830	14,094	16,497	18,899
	6	Service Maintenance	11,108	9,948	8,597	9,667	7,144	9,293	9,407	9,522
	7	Field Support	15,643	17,051	17,930	19,325	18,536	20,395	23,268	24,895
	8	Tools, Fittings & Materials	6,844	6,182	6,352	7,258	7,087	7,213	7,370	7,526
Field Operations & Maintenance Total			80,480	76,780	80,238	87,064	83,713	92,452	99,830	106,292
C Asset Management	1	Asset Management	5,171	5,548	6,896	7,874	7,550	8,730	9,913	10,827
Asset Management Total			5,171	5,548	6,896	7,874	7,550	8,730	9,913	10,827
D Operations Management & Training	1	Operations Management & Training	8,001	7,378	7,951	9,629	9,949	11,258	12,347	15,644
Operations Management & Training Total			8,001	7,378	7,951	9,629	9,949	11,258	12,347	15,644
E Regional Public Affairs	1	Regional Public Affairs	4,014	3,893	4,340	4,460	4,042	4,200	4,316	4,316
Regional Public Affairs Total			4,014	3,893	4,340	4,460	4,042	4,200	4,316	4,316
Non-Shared Total			97,666	93,599	99,425	109,027	105,254	116,640	126,406	137,079
Shared Services										
B Operations Leadership & Support	1	Enterprise Systems Solutions Production Support	616	731	1,041	762	913	913	913	913
	2	Field Services Leadership & Operations Assessment	503	406	864	548	383	383	383	4,883
	3	Field Technologies	686	549	543	370	356	356	356	356
	4	Gas Operations Services	72	317	428	484	279	279	279	279
	5	Operator Qualification		183	176	202	278	278	278	278
	6	Distribution Field Services		263	618	811	774	774	774	774
	7	Maintenance Process			460	456	429	429	429	429
Operations Leadership & Support Total			1,877	2,449	4,130	3,633	3,412	3,412	3,412	7,912
Shared Services Total			1,877	2,449	4,130	3,633	3,412	3,412	3,412	7,912
OM Total			**99,543**	**96,048**	**103,555**	**112,660**	**108,666**	**120,052**	**129,818**	**144,991**

Co_Code 2200
Witness_Name Gina Orozco-Mejia

Row Labels	Cat_Desc	Cat_	Cat_Sub_Desc	Constant$ (000) 2009	2010	2011	2012	2013	2014	2015	2016
Exh No:SCG-04-CWP											
CAP				186,841	183,252	196,354	189,761	218,161	274,426	271,848	273,616
B	New Business	1	New Business Construction	17,310	13,183	16,213	16,170	24,733	29,713	34,159	38,016
		2	New Business Trench Reimbursements	1,491	859	720	637	725	887	887	887
		3	New Business Forfeitures	(7,660)	(7,709)	(7,796)	(6,390)	(5,612)	(6,410)	(6,410)	(6,410)
	New Business Total			**11,141**	**6,333**	**9,137**	**10,417**	**19,846**	**24,190**	**28,636**	**32,493**
C	Pressure Betterments	1	Pressure Betterments - Routine	13,321	11,475	15,092	12,901	9,153	12,389	12,389	12,389
		2	Pressure Betterments - Non-Routine					3,232	15,172	11,056	3,620
	Pressure Betterments Total			**13,321**	**11,475**	**15,092**	**12,901**	**12,385**	**27,561**	**23,445**	**16,009**
D	Supply Line Replacements	1	Supply Line Replacements	2,399	1,477	5,220	9,494	2,746	4,267	4,267	4,267
	Supply Line Replacements Total			**2,399**	**1,477**	**5,220**	**9,494**	**2,746**	**4,267**	**4,267**	**4,267**
E	Main Replacements	1	Main Replacements	43,871	52,508	57,169	38,124	44,497	47,233	47,233	47,233
	Main Replacements Total			**43,871**	**52,508**	**57,169**	**38,124**	**44,497**	**47,233**	**47,233**	**47,233**
F	Service Replacements	1	Service Replacements	14,746	13,640	15,431	14,236	17,489	22,217	15,899	15,109
	Service Replacements Total			**14,746**	**13,640**	**15,431**	**14,236**	**17,489**	**22,217**	**15,899**	**15,109**
G	Main & Service Abandonments	1	Main & Service Abandonments	3,509	3,001	3,859	3,471	4,072	3,582	3,582	3,582
	Main & Service Abandonments Total			**3,509**	**3,001**	**3,859**	**3,471**	**4,072**	**3,582**	**3,582**	**3,582**
H	Regulator Stations	1	Regulator Stations	4,746	4,430	6,617	4,729	7,250	5,554	5,554	5,554
	Regulator Stations Total			**4,746**	**4,430**	**6,617**	**4,729**	**7,250**	**5,554**	**5,554**	**5,554**
I	Cathodic Protection Capital	1	Cathodic Protection Capital	4,852	4,013	3,778	2,432	3,883	8,048	9,169	9,169
	Cathodic Protection Capital Total			**4,852**	**4,013**	**3,778**	**2,432**	**3,883**	**8,048**	**9,169**	**9,169**
J	Pipeline Relocations - Freeway	1	Pipeline Relocations - Freeway	2,726	2,077	1,515	9,047	10,302	10,301	10,301	10,301
	Pipeline Relocations - Freeway Total			**2,726**	**2,077**	**1,515**	**9,047**	**10,302**	**10,301**	**10,301**	**10,301**
K	Pipeline Relocations - Franchise	1	Pipeline Relocations - Franchise	10,915	13,149	10,645	17,116	16,567	18,472	20,128	21,783
	Pipeline Relocations - Franchise Total			**10,915**	**13,149**	**10,645**	**17,116**	**16,567**	**18,472**	**20,128**	**21,783**
L	Other Distribution Capital Projects & Meter Guards	1	Other Distribution Capital Projects	3,379	3,163	1,418	3,130	4,123	3,042	3,042	3,042
		2	Meter Guards	785	1,465	800	688	386	825	825	825
	Other Distribution Capital Projects & Meter Guards Total			**4,164**	**4,628**	**2,218**	**3,818**	**4,509**	**3,867**	**3,867**	**3,867**
M	Measurement & Regulation Devices	1	Meters	20,116	19,024	17,571	16,474	18,986	26,399	26,925	27,610
		2	Regulators	4,281	4,454	4,756	4,321	6,825	8,537	8,712	10,337
		3	Gas Energy Measurement Systems	493	460	973	1,455	1,146	1,367	1,443	1,508
		4	Electronic Pressure Monitors	180	280	811	718	1,061	928	1,110	608
	Measurement & Regulation Devices Total			**25,070**	**24,218**	**24,111**	**22,968**	**28,018**	**37,231**	**38,190**	**40,063**
N	Capital Tools	1	Capital Tools & Equipment - Routine	833	1,303	1,075	2,071	2,384	2,710	3,115	3,519
		2	Capital Tools - Non-Routine	651	1,641	186	58	(17)	3,133	2,688	5,700
		3	Capital Tools - Mobile Data Terminal Replacements						2,326	2,326	1,745
	Capital Tools Total			**1,484**	**2,944**	**1,261**	**2,129**	**2,367**	**8,169**	**8,129**	**10,964**
O	Field Capital Support	1	Field Capital Support	43,897	39,359	40,301	38,879	44,230	53,734	53,448	53,222
	Field Capital Support Total			**43,897**	**39,359**	**40,301**	**38,879**	**44,230**	**53,734**	**53,448**	**53,222**
Grand Total				**186,841**	**183,252**	**196,354**	**189,761**	**218,161**	**274,426**	**271,848**	**273,616**

Supplemental Workpaper Reference Table

For every "zero-based" forecast methodology that was not equal to zero, SoCalGas Gas Distribution provided a supplemental workpaper showing the calculations. The supplemental workpapers can be found in the workpaper locations shown in the table below.

Workpaper	Exhibit	Supplemental Workpaper Title	Page
2GD000.003 - Field O&M - Main Maintenance	SCG-04-WP	SCG-FBA-O&M-SUP-007	50
001510 - New Business Construction	SCG-04-CWP	SCG-FBA-CAP-SUP-001	13
B01510 - New Business Forfeitures	SCG-04-CWP	SCG-FBA-CAP-SUP-002	32
002810 - Pressure Betterments - Non-Routine	SCG-04-CWP	SCG-FBA-CAP-SUP-003.1 SCG-FBA-CAP-SUP-003.2 SCG-FBA-CAP-SUP-003.3	53 - 56
001630 - Meters	SCG-04-CWP	SCG-FBA-CAP-SUP-009	171 - 172
001640 - Regulators	SCG-04-CWP	SCG-FBA-CAP-SUP-010	182 - 183
002800 - Gas Energy Measurement Systems (GEMS)	SCG-04-CWP	SCG-FBA-CAP-SUP-011	193 - 194
001810 - Electronic Pressure Monitors (EPMs)	SCG-04-CWP	SCG-FBA-CAP-SUP-012	204 - 205
009060 - Capital Tools - Non-Routine	SCG-04-CWP	SCG-FBA-CAP-SUP-013	230
00725A - Capital Tools - MDT Replacements	SCG-04-CWP	SCG-FBA-CAP-SUP-013.1	237
009030 - Field Capital Support	SCG-04-CWP	SCG-FBA-CAP-SUP-014	248

SoCal Gas 2016 GRC Testimony Revision Log – March 2015

Exhibit	Witness	Page	Line	Revision Detail
SCG-04	Frank Ayala	FBA-53	4	Changed “out of compliance issue.” to “out of compliance issues.”
SCG-04	Frank Ayala	FBA-108	10	Changed “on average, 25 stations” to “on average, 26 stations”
SCG-04	Frank Ayala	FBA-109	6	Changed “approximately 25 stations” to “approximately 26 stations”
SCG-04	Frank Ayala	FBA-111	18	Changed “18,100 miles of steel main” to “18,600 miles of steel main”
SCG-04	Frank Ayala	FBA-111	18	Changed “752,000 steel services” to “751,000 steel services”