

Company: Southern California Gas Company (U 904 G)  
Proceeding: 2019 General Rate Case  
Application: A.17-10-008  
Exhibit: SCG-04-R

**REVISED**

**SOCALGAS**

**DIRECT TESTIMONY OF GINA OROZCO-MEJIA**

**(GAS DISTRIBUTION)**

**December 2017**

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



A  Sempra Energy utility®

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**SUMMARY**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
Total Non-Shared Services	115,943	147,879	31,936
Total Shared Services (Incurred)	689	275	-414
<b>Total O&amp;M</b>	<b>116,632</b>	<b>148,154</b>	<b>31,522</b>

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>Shown in Thousands of 2016 Dollars</b>	<b>2016 Adjusted-Recorded</b>	<b>Estimated 2017</b>	<b>Estimated 2018</b>	<b>Estimated 2019</b>
<b>Total CAPITAL</b>	<b>301,472</b>	<b>278,473</b>	<b>324,801</b>	<b>347,842</b>

In total, Southern California Gas Company (SoCalGas or the Company) requests the California Public Utilities Commission (CPUC or Commission) adopt its Test Year 2019 (TY 2019) General Rate Case (GRC) forecast of \$148,154,000 for Gas Distribution operations and maintenance (O&M) expenses, which is composed of \$147,879,000 for non-shared service activities and \$275,000 for shared service activities. SoCalGas further requests the Commission adopt its forecast for capital expenditures in 2017, 2018, and 2019 of \$278,473,000, \$324,801,000, and \$347,842,000, respectively. SoCalGas’ O&M and capital requests are reasonable and fully justified in that the activities:

- maintain and enhance the delivery of safe, clean, and reliable service to customers;
- are consistent with operational laws, codes, and standards established by local, state, and federal authorities;
- support SoCalGas’ commitment to mitigate risks associated with hazards to customer/public and employee/contractor safety, infrastructure integrity, and system reliability;
- 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; and
- maintain and strengthen a qualified workforce.

The activities described in my testimony below are consistent with operational laws, codes, and standards established by local, state, and federal authorities.<sup>1</sup> This work safeguards the long-term safety and 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 responds to changing regulatory and legislative requirements.

The activities in my testimony maintain the delivery of safe, clean, and reliable service to SoCalGas' customers. SoCalGas prioritizes 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.<sup>2</sup>

The key work categories included in my request in support of this commitment to safety and gas system integrity are as follows:

- Leak Repairs – Main and service line leak evaluation and repair work is completed to address public safety, infrastructure condition, and material failure. Additional leak indications are expected as, among other things, SoCalGas increases the amount of pipeline surveyed for leaks each year.
- 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. SoCalGas anticipates this work will continue to trend up, as seen in the last five years, due to an increase in construction activity in the public and private sectors. Furthermore, as Senate Bill (SB) 661, the Dig Safe Act of 2016, is enforced against third-party excavators, SoCalGas anticipates increased participation in the One-Call (Dig-Alert or Underground Service Alert (USA)) service, resulting in additional locate and mark tickets.

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<sup>1</sup> Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards, 49 C.F.R. § 192 *et seq.*; Cal. Gov't Code § 4216 *et seq.*; General Order (GO) 112-F; and GO 58-A.

<sup>2</sup> SoCalGas Natural Gas System Operator Safety Plan, submitted Mar. 8, 2017, at 2.



- Leak Survey – SoCalGas proactively surveys its gas distribution system for leakage at frequencies determined based on the pipe material involved, the operating pressure, whether 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 Systems) to better assess gas distribution infrastructure and meet leak survey compliance requirements. Furthermore, changes in leak survey cycles will increase the amount of pipe surveyed in TY 2019.
- 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 a 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 its customers and mitigate system reliability risks. Some examples of this work include:

- New Business – System expansion is performed mainly under SoCalGas’ obligation to provide service to new customers and includes the installation of new pipeline infrastructure. SoCalGas anticipates this work will continue to increase as the number of new meter set installations increases due to growth in housing starts and local employment.
- Capacity improvements – Projects to improve system capacity, such as adding new pipelines or replacing existing infrastructure with larger systems, are completed to accommodate customer and/or load growth.
- 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 to address aging infrastructure and expansion needs, thus requiring an increase in SoCalGas’ pipeline facilities alterations.

The activities in my testimony also maintain and strengthen a qualified workforce. Safety is rooted in all phases of gas distribution training. SoCalGas is taking proactive action to enhance employee training, qualification, and work quality. An integral component of overall workforce proficiency is the Operator Qualification (OpQual) program. As part of OpQual compliance, employees are trained, either formally or informally, whenever significant changes occur in a work task or as required under SoCalGas' Gas Standards, state pipeline safety standards under GO 112-F (formerly known as GO 112-E), and federal pipeline safety standards under the Department of Transportation's (DOT) Pipeline Safety and Hazardous Materials Administration's (PHMSA) 49 C.F.R. § 192. My testimony covers the time associated with Gas Distribution personnel training and qualification. Additional information regarding the OpQual program and skills training can be found in the Gas System Integrity testimony of Omar Rivera (Exhibit SCG-05).

1 **REVISED**

2 **SOCALGAS DIRECT TESTIMONY OF GINA OROZCO-MEJIA**  
3 **(GAS DISTRIBUTION)**

4 **I. INTRODUCTION**

5 **A. Summary of Gas Distribution Costs and Activities**

6 My testimony supports the TY 2019 forecasts for O&M costs for both non-shared and  
7 shared services, and capital costs for the forecast years 2017, 2018, and 2019, associated with the  
8 Gas Distribution area for SoCalGas.

9 In total, SoCalGas requests the Commission adopt its TY 2019 forecast of \$148,154,000  
10 for Gas Distribution O&M expenses, which is composed of \$147,879,000 for non-shared service  
11 activities and \$275,000 for shared service activities. SoCalGas further requests the Commission  
12 adopt its forecast of capital expenditures for 2017, 2018, and 2019 of \$278,473,000,  
13 \$324,801,000, and \$347,842,000, respectively. Table GOM-01 summarizes my sponsored costs.

14 **Table GOM-01**  
15 **Southern California Gas Company**  
16 **Test Year 2019 Summary of Total Costs**

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<b>GAS DISTRIBUTION (In 2016 \$)</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
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<b>GAS DISTRIBUTION (In 2016 \$)</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
<b>Total CAPITAL</b>	<b>301,472</b>	<b>278,473</b>	<b>324,801</b>	<b>347,842</b>

18 The purpose of this testimony is to demonstrate the reasonableness of SoCalGas' Gas  
19 Distribution capital expenditure and expense forecasts to operate and maintain the gas  
20 distribution system and construct new gas distribution facilities. SoCalGas' philosophy is to  
21 provide safe, clean, and reliable delivery of natural gas to customers at reasonable rates. This  
22 commitment requires that SoCalGas continue to invest in its employees, pipeline assets, and

1 support services to mitigate risks associated with the safety of the public and employees; system  
2 reliability; and infrastructure integrity. Specifically, the activities discussed herein:

- 3 • Maintain and enhance safety;
- 4 • Reflect local, state, and federal regulatory and legislative requirements;
- 5 • Maintain overall system integrity and reliability;
- 6 • Respond to customer growth;
- 7 • Comply with franchise obligations; and
- 8 • Maintain and strengthen a qualified workforce.

9 This testimony discusses non-shared and shared expenses in support of O&M functions  
10 for gas distribution mains and services, measurement and regulator stations, customer meters,  
11 regulators, and electronic equipment, and includes associated engineering, supervision, technical  
12 office, and regional public affairs support. The capital expenditures presented herein are in  
13 support of the installation, replacement, and relocation of distribution pipeline infrastructure. All  
14 costs in this testimony are shown in 2016 dollars, unless otherwise noted.

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

18 SoCalGas' gas distribution system consists of a network of approximately 100,586<sup>3</sup> miles  
19 of interconnected gas mains, services, and associated pipeline facilities. These mains and  
20 services, constructed of both steel and plastic materials in varying diameters, are located in most  
21 streets within SoCalGas' service territory. The primary function of this distribution pipeline  
22 network is to deliver natural gas from SoCalGas' transmission system to approximately 5.9  
23 million customer meters<sup>4</sup> in an area of approximately 20,000 square miles, stretching from  
24 Visalia in the north to Mexico in the south, and as far east as the California/Nevada border, as  
25 depicted in Figure GOM 1 below.  
26

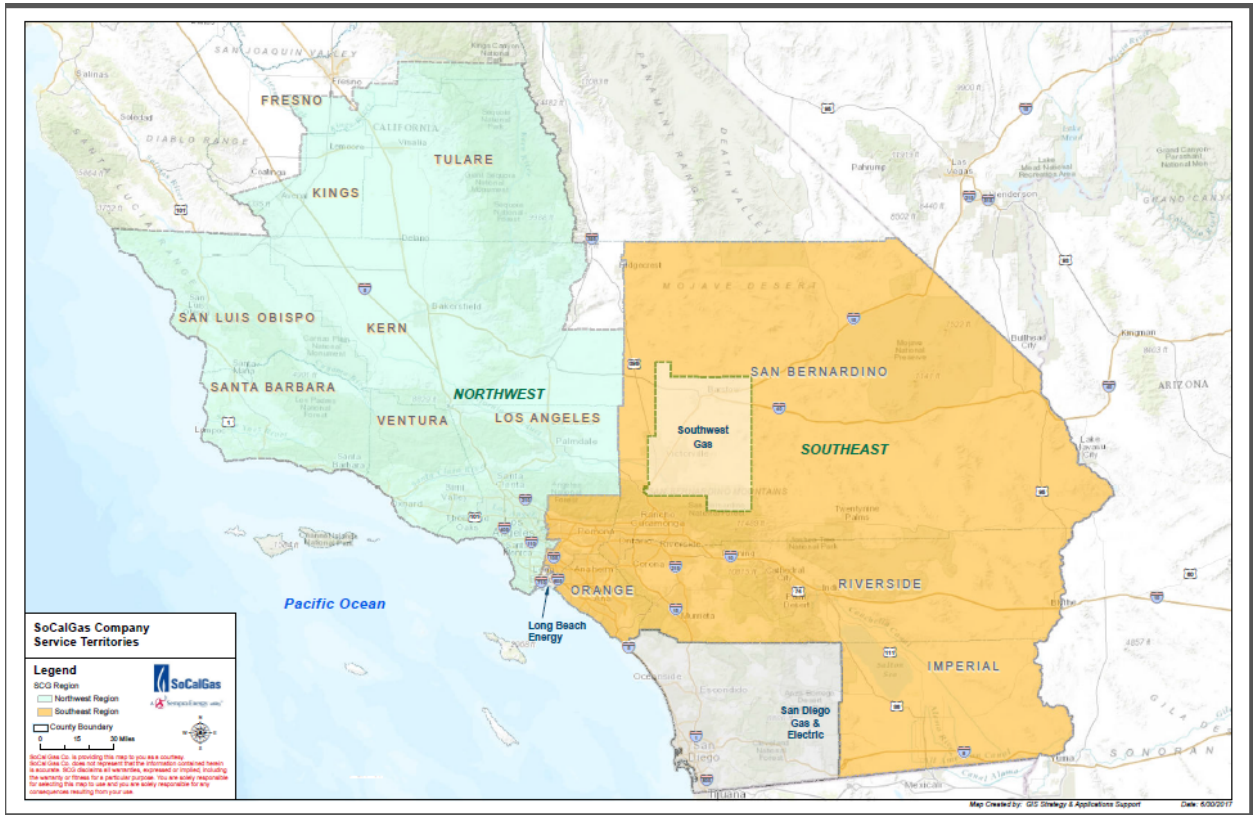
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<sup>3</sup> Total mileage that Gas Distribution operates including supply lines greater than 20% Specified Minimum Yield Strength (SMYS) that are reported on the DOT-Transmission report.

<sup>4</sup> See SoCalGas website: <http://www.socalgas.com/about-us/company-info.shtml>.

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**Figure GOM 1 - SoCalGas Gas Distribution Service Territory**



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SoCalGas’ Gas Distribution network is composed of approximately 51,070<sup>5</sup> 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. In addition, SoCalGas’ Gas Distribution maintains approximately 49,516 miles of service lines. The gas service lines connect high- and medium-pressure mains to each customer meter set assembly (MSA) and “house pipeline.”

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. SoCalGas’ workforce ranges from front-line construction crews to technical planners and field

<sup>5</sup> Total miles of mains that Gas Distribution operates including supply lines greater than 20% SMYS that are reported on the DOT-Transmission report.

1 engineers. There are approximately 1,900 distribution employees located at four operating  
2 regional headquarter facilities and 52 operating bases throughout SoCalGas' service territory.  
3 These employees are responsible for maintaining safe and reliable operation of the gas  
4 distribution system.

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

9 SoCalGas is committed to continued long-term investment in its pipeline infrastructure to  
10 maintain the integrity of its distribution system and comply with applicable local, state, and  
11 federal laws and regulations. SoCalGas actively evaluates the condition of its pipeline system  
12 through maintenance and operations activities, and replaces pipeline segments to preserve the  
13 safe and reliable system customers expect. With the forecasted level of funding, and by  
14 continuing to identify ways to improve gas distribution system installation, operation,  
15 maintenance, and support activities, SoCalGas anticipates that it can continue to manage the gas  
16 distribution system through business and operational challenges, and to provide safe, clean, and  
17 reliable natural gas service at reasonable rates.

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

21 Trained and Qualified Workforce

22 Safety is rooted in all phases of Gas Distribution training. Maintaining a skilled,  
23 qualified, and dedicated workforce is critical to SoCalGas' continued success. It is through the  
24 efforts of these employees that SoCalGas can continue to deliver safe, clean, and reliable service  
25 to customers and maintain the integrity of its pipeline infrastructure at reasonable rates.

26 SoCalGas is experiencing increased pressures associated with maintaining a highly-trained and  
27 qualified workforce.

28 Within the workforce there is increased turnover, due primarily to retirements and  
29 employee movement as a result of promotions and transfers, which continue to pose challenges  
30 to SoCalGas. In particular, SoCalGas is experiencing these challenges in the areas of knowledge  
31 transfer, skills development, and overall proficiency of the replacement workforce. Gas  
32 Distribution is taking appropriate measures to maintain its highly-skilled workforce, recognizing

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

#### 6 Aging Infrastructure

7 SoCalGas has a long history of delivering safe and reliable natural gas service,  
8 notwithstanding the fact that a significant portion of the pipeline infrastructure has been in  
9 service for more than 50 years. Good maintenance practices have allowed SoCalGas to safely  
10 and reliably operate these pipeline facilities for this extended period, but this cannot continue  
11 forever. As the Company's pipeline infrastructure continues to age, it requires higher levels of  
12 maintenance, which results in higher costs. This eventually manifests itself in the need for  
13 capital replacement of those pipelines. SoCalGas attempts to maintain a reasonable balance  
14 between increased maintenance needs and eventual replacement.

15 In addition to aging pipelines, SoCalGas is also addressing the aging of other pipeline  
16 infrastructure, such as Measurement and Regulation (M&R) equipment, electronic systems, and  
17 cathodic protection system components, such as anode beds and rectifiers. All components of  
18 the gas distribution system have a finite useful life that must be observed and repairs must be  
19 anticipated to avoid service interruptions, non-compliance situations, or adverse safety  
20 conditions.

#### 21 System Expansion

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

#### 30 Customer and Load Demands

31 As a public utility, SoCalGas has an obligation to provide natural gas service to  
32 customers within its service territory. As the customer base grows and expands, new demands

1 are placed on existing infrastructure. For example, customer load growth creates the need for  
2 facility upgrades, increasing customer density can require the relocation of existing  
3 infrastructure, and general business improvements require the Company to protect its  
4 infrastructure from potential damage due to third-party construction. Field experience indicates  
5 that more favorable economic conditions lead to increases in various work requirements.  
6 SoCalGas anticipates that as the economy continues to improve due to an increase in housing  
7 starts and local employment,<sup>6</sup> this will impact activities related to customer and load demands.

#### 8 State and Municipal Agency Construction Requirements

9 The construction, operation, and maintenance of SoCalGas' vast pipeline system require  
10 interaction and compliance with numerous agencies. These agencies continue to impose new  
11 and often more stringent administrative, planning, and field construction operating conditions  
12 that can result in increased cost pressures to maintain the gas distribution system. This includes  
13 increased costs associated with permits, traffic control plans, paving repair requirements, and  
14 restricted work hours. SoCalGas works diligently with these agencies to find solutions that are  
15 in the best interest of customers and agencies. Nevertheless, these rules often result in cost  
16 increases.

#### 17 Regulatory Requirements

18 The activities described in my testimony are consistent with operational laws, codes, and  
19 standards established by local, state, and federal authorities.<sup>7</sup> These requirements continue to  
20 increase, necessitating changes in work processes and the addition of resources to complete  
21 impacted operations, maintenance, and construction work. Some of these incremental pressures  
22 are associated with the implementation of GO 112-F and SB 661.

23 Effective January 1, 2017, GO 112-F is the State of California's code governing the  
24 design, construction, testing, operation, and maintenance of natural gas lines. Some of the  
25 upward pressures associated from the updated General Order include:

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<sup>6</sup> IHS Global Insight 2017 Regional Forecast is used as a directional indicator for general economic conditions and potential economic growth.

<sup>7</sup> Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards, 49 C.F.R. § 192 *et seq.*; Cal. Gov't Code § 4216 *et seq.*; GO 112-F; and GO 58-A.



- 1 • Increase leak survey frequency for high-pressure pipelines (DOT-defined  
2 transmission lines)<sup>8</sup> from every year to every 6 months. In Gas Distribution, these  
3 lines are known as supply lines.
- 4 • Additional requirements for managing encroachments, including notifications; and  
5 development of written plans.
- 6 • Additional monitoring, reporting, and recordkeeping, including new parsing of leak  
7 repair and response time data (*e.g.*, response time to make safe and arrive on scene  
8 captured in 5-minute intervals up to 45 minutes, 45-60 minutes, and greater than 60  
9 minutes); new monitoring and reporting of timeliness to update maps; new criteria  
10 and notification for over-pressure incidents; and new parsing of excavation damage  
11 data (*e.g.*, damages and costs related to homeowners).

12 In 2016, the California Governor signed SB 661, named the Dig Safe Act of 2016, which  
13 added enforcement to the digging law by establishing the California Underground Facilities Safe  
14 Excavation Board. The Board is authorized to take action against those parties who violate the  
15 excavation law under California Government Code Section 4216. The Dig Safe Act is expected  
16 to require more excavators to notify USA, which will add upward pressure to an already  
17 increasing USA ticket volume in California. Other notable impacts of the Dig Safe Act include  
18 the requirement for marking the presence of known abandoned lines and keeping abandoned line  
19 records, which will increase time spent locating each ticket and create additional work for  
20 supporting activities.

21 The Commission's recent Decision (D.) 17-06-015 established more stringent repair  
22 timelines under SB 1371 to reduce methane emissions from natural gas leaks. In addition to  
23 continuing leak repairs in accordance with GO 112-F's requirements, SoCalGas requests  
24 incremental funding to further expedite reduction of its pending non-hazardous leak inventory  
25 and leak repair activities for additional leaks identified. SoCalGas anticipates addressing more  
26 leaks found due to accelerated leak survey cycles, new or more stringent regulatory  
27 requirements, and changes in work practices and more sensitive detection equipment.

28 SoCalGas anticipates that the level of funding requested in this testimony will provide the  
29 resources to comply with these incremental regulatory requirements.

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<sup>8</sup> 49 C.F.R. § 192.3.



**Table GOM-03**  
**Southern California Gas Company**  
**Summary of RAMP Capital-Related Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>RAMP Risk Chapter</b>	<b>2017 Estimated RAMP Total (000s)</b>	<b>2018 Estimated RAMP Total (000s)</b>	<b>2019 Estimated RAMP Total (000s)</b>
SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins	3,800	2,500	0
SCG-2 Employee, Contractor, Customer and Public Safety	3,871	3,304	2,204
SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure	207	207	207
SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure	6,196	7,487	8,271
<b>Total Capital</b>	<b>14,074</b>	<b>13,498</b>	<b>10,682</b>

My testimony includes costs to mitigate Gas Distribution risks primarily associated with customer/public and employee/contractor safety, system reliability, regulatory and legislative compliance, and pipeline system integrity. Specific risks, mitigating measures, and associated costs are further discussed in Section II of my testimony.

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

As described in the Fueling our Future Policy testimony of Hal Snyder and Randall Clark (Exhibit SCG-03/SDG&E-03), the utilities began the Fueling our Future (FOF) initiative in May 2016 to examine operations across the Company and identify opportunities for efficiency improvements. Through this process, ideas were generated, reviewed, analyzed, and targeted for implementation from 2017 through TY 2019. For some ideas, an implementation cost is applied to lay the ground work for subsequent savings. Table GOM-04 provides a summary of SoCalGas' Gas Distribution FOF cost efficiencies covered in my testimony.

**Table GOM-04**  
**Southern California Gas Company**  
**Summary of FOF Implementation Costs (+) and Savings (-)**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>FOF O&amp;M – Implementation Costs (+) and Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
FOF-Implementation	70	0	0
FOF-Benefit Savings	-823	-2,986	-4,742
<b>Total O&amp;M</b>	<b>-753</b>	<b>-2,986</b>	<b>-4,742</b>

1 Specific cost saving elements are discussed further in Section III of my testimony.

2 **D. Summary of Aliso-Related Costs**

3 In compliance with Decision (D.) 16-06-054,<sup>10</sup> the Aliso Incident Expenditure  
4 Requirements testimony of Andrew Steinberg (Exhibit SCG-12) describes the process  
5 undertaken so the 2019 Test Year forecasts do not include the additional costs from the Aliso  
6 Canyon Storage Facility gas leak incident (Aliso Incident), and demonstrates that the itemized  
7 recorded costs are removed from the historical information used by the impacted GRC witnesses.

8 As a result of removing historical costs related to the Aliso Incident from Gas  
9 Distribution adjusted recorded data, and in tandem with the forecasting method(s) employed and  
10 described herein, additional costs of the Aliso Incident response are not included as a component  
11 of my TY 2019 funding request. Historical Gas Distribution costs that are related to the Aliso  
12 Incident are removed as adjustments in my workpapers (Ex. SCG-04-WP) and also identified in  
13 Table GOM-05 below.

14 **Table GOM-05**  
15 **Southern California Gas Company**  
16 **Summary of Excluded Aliso-Related Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>Workpaper</b>	<b>2015 Adjustment (000s)</b>	<b>2016 Adjustment (000s)</b>	<b>Total (000s)</b>
2GD000.000, Field Support	0	-88	-88
2GD000.001, Leak Survey	0	-70	-70
2GD000.003, Main Maintenance	0	-3	-3
2GD000.004, Service Maintenance	0	-10	-10
2GD001.000, Asset Management	0	-64	-64
2GD002.000, Measurement & Regulation	0	-2	-2
2GD004.000, Operations and Management	-4	-58	-61
2GD005.000, Regional Public Affairs	-140	-1,563	-1,703
<b>Total Non-Shared</b>	<b>-144</b>	<b>-1,858</b>	<b>-2,002</b>
2200-0431.000, FIELD SERVICES LEADERSHIP & OPERATIONS ASSESSMENT	0	-17	-17
<b>Total Shared Services</b>	<b>0</b>	<b>-17</b>	<b>-17</b>
<b>Total O&amp;M</b>	<b>-144</b>	<b>-1,875</b>	<b>-2,018</b>

17  
<sup>10</sup> D.16-06-054, at 332 (Ordering Paragraph (OP) 12) and 324 (Conclusion of Law 75).

1           **E.       Summary of Costs and Benefits Related to Advanced Metering**  
2           **Infrastructure (AMI)**

3           By TY 2019, SoCalGas' AMI deployment will be completed and therefore the costs  
4 associated with the deployment and post-deployment phases, including the related O&M  
5 benefits, will no longer be recorded to the AMI Balancing Account. In this GRC, AMI operating  
6 impacts will be integrated into base business operations for the first time. Accordingly, the  
7 associated forecasts and explanations for any incremental costs and benefits impacting  
8 SoCalGas' Gas Distribution have been incorporated into my testimony. In addition, in the  
9 Advanced Metering Infrastructure Policy testimony of Rene Garcia (Exhibit SCG-17), SoCalGas  
10 is proposing an ongoing maintenance and operations team required to monitor, operate, maintain,  
11 and optimize the AMI solution (Advanced Metering Operations).

12           **F.       Support To and From Other Witnesses**

13           My testimony also references the testimony and workpapers of several other witnesses,  
14 either in support of their testimony or as referential support for mine. Those witnesses are Diana  
15 Day (Ex. SCG-02/SDG&E-02, Risk Management and Policy), Omar Rivera (Ex. SCG-05, Gas  
16 System Integrity), Andrew Steinberg (Ex. SCG-12, Aliso Incident Expenditure Requirements),  
17 Hal Snyder and Randall Clark (Ex. SCG-03/SDG&E-03, Fueling Our Future), Maria Martinez  
18 (Exhibit SCG-14, Pipeline Integrity for Transmission and Distribution), Gwen Marelli (Exhibit  
19 SCG-18, Customer Services – Field and Meter Reading), Carmen Herrera (Exhibit SCG-23,  
20 Fleet Services and Facility Operations), Darrell Johnson (Exhibit SCG-25, Environmental  
21 Services), James Vanderhye (Exhibit SCG-34/SDG&E-32, Shared Services and Shared Assets  
22 Billing, Segmentation, & Capital Reassignments), Denita Willoughby (Exhibit SCG-  
23 22/SDG&E-20, Supply Management, Logistics & Supplier Diversity), and Rose-Marie Payan  
24 (Exhibit SCG-39, Gas Customer Forecast).

25           **1.       Gas System Integrity**

26           Gas Distribution receives support from centralized staff organizations including from  
27 System Integrity and Asset Management; and Pipeline Safety and Compliance. The support  
28 activities provided by these two groups are discussed by Mr. Rivera (Ex. SCG-05). These  
29 activities include providing formal training to Gas Distribution employees at the Pico Rivera  
30 training facility; Gas Standards development and maintenance; the management of the Damage

1 Prevention and Public Awareness Programs; tools and technology research and implementation;  
2 enterprise systems support (GIS, Click, SAP, etc.); and OpQual program management.

## 3 **2. Small Meter and Regulator Purchases**

4 I sponsor the capital costs associated with the purchase of both Gas Distribution and  
5 Customer Services meters and regulators. The labor costs associated with the replacement of  
6 small meters and regulators, typically at residential and small commercial sites, is discussed by  
7 Ms. Marelli (Ex. SCG-18). Additional information about these capital purchases may be found  
8 in Section V.L (M&R Devices) of my testimony.

## 9 **3. New Meter Set Forecast**

10 Gas Distribution's New Business construction capital costs, and related meter and  
11 regulator unit purchases, are driven by the number of new customer meter set installations.  
12 Details on the forecast of customer meter sets can be found in the workpaper of Ms. Payan,  
13 Exhibit SCG-39-WP. Additional information about the forecasts related to new meter sets may  
14 be found in Sections V.A (New Business) and V.L (M&R Devices) of my testimony.

## 15 **4. Economic Growth**

16 Gas Distribution utilized non-farm employment growth information, as reported by IHS  
17 Global Insight, as a directional indicator for general economic conditions and potential economic  
18 growth. This IHS Global Insight employment forecast is shown in the workpaper of Ms. Payan,  
19 Ex. SCG-39-WP. Additional information may be found in the following sections of my  
20 testimony: Sections V.A (New Business); Section III.A.1 (Locate and Mark); Section III.A.2  
21 (Leak Survey); Section III.B (Asset Management); Section V.B (Pressure Betterment); Section  
22 V.F (Main and Service Abandonments); Section V.I (Pipeline Relocations – Freeway), Section  
23 V.J (Pipeline Relocations – Franchise), and Section V.K (Other Distribution Capital Projects and  
24 Meter Guards).

## 25 **5. Incremental Vehicles**

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

**Table GOM-06  
Southern California Gas Company  
Incremental Vehicles**

<b>Vehicle Type</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>Testimony Sections</b>
Light-Duty Vehicle	21	29	35	III.A.1, III.A.2, III.A.4, III.A.7, V.N
Medium-Duty Vehicle (Van)	1	3	4	III.A.3, V.G
Heavy-Duty Vehicle (Crew Truck)	44	29	19	III.A.7, III.B.6, III.A.6, V.A, V.D, V.E, V.F, V.H
Total	66	61	58	

The costs associated with these vehicles are discussed by Ms. Herrera (Ex. SCG-23).

**6. Distribution Integrity Management Program Activity Moving to Gas Distribution Operations**

A leak survey activity currently funded through 2018 as part of the Distribution Integrity Management Program (DIMP) and covered by Ms. Martinez (Ex. SCG-14) will become part of routine Gas Distribution operations in TY 2019. This activity is discussed further in my testimony in Section III.A.2 (Leak Survey).

**II. RISK ASSESSMENT MITIGATION PHASE AND SAFETY CULTURE**

**A. Risk Assessment Mitigation Phase**

As illustrated in Table GOM-07, part of my requested funds is linked to mitigating top safety risks that have been identified in the RAMP Report. These top risks were identified through the RAMP process described in the RAMP Report and are associated with activities sponsored in my testimony. These risks are summarized in Table GOM-07 below:

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**Table GOM-07**  
**Southern California Gas Company**  
**RAMP Risks Summary**

<b>RAMP Risk</b>	<b>Description</b>
SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins	This risk relates to the potential impacts from dig-ins resulting from third-party activities; and is focused on the more serious results of third-party damage that lead to a release of natural gas with the possibility of hazard to life and property. The release of natural gas may not just occur at the time of the damage. A leak or rupture may also occur after the infrastructure has been damaged and reburied but becomes weakened over time.
SCG-2 Employee, Contractor, Customer, and Public Safety	This risk covers conditions and practices which may result in severe harm to employee, contractor, customer, and/or public safety such as driving, customer premises, and appliance conditions, as well as non-adherence to company safety policies, procedures, and programs.
SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure	This risk relates to the potential public safety and property impacts that may result from the failure of high-pressure pipelines (greater than 60 psi).
SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure	This risk relates to the public safety and property impacts that can result from failure of medium-pressure pipelines (60 psi and less).

4

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

5

In the course of developing the GRC forecasts, SoCalGas evaluated the scope, schedule and resource requirement, and synergies of RAMP-related projects and programs to determine costs already covered in the base year and those that are incremental increases expected in the TY 2019. RAMP-related costs and activity descriptions are further described in Sections III and V below as well as in my workpapers. The general treatment of RAMP forecasting is described by Ms. Day and Ms. York (Ex. SCG-02/SDG&E-02, Chapters 1 and 3, respectively). Table GOM-08 also provides a summary of RAMP-related O&M costs by workpaper number. Table GOM-09 also provides a summary of RAMP-related capital costs by workpaper number.

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**Table GOM-08**  
**Southern California Gas Company**  
**RAMP O&M Summary Breakdown of Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>SCG-1 Catastrophic Damage Involving Third-Party Dig-Ins</b>	<b>2016 Embedded Base Costs (000s)</b>	<b>TY2019 Estimated Incremental (000s)</b>	<b>Total (000s)</b>
2GD000.000, Field Support	3,476	0	3,476
2GD000.002, Locate & Mark	12,669	1,921	14,590
2GD004.000, Operations and Management	111	0	111
<b>Total</b>	<b>16,256</b>	<b>1,921</b>	<b>18,177</b>
<b>SCG-2 Employee, Contractor, Customer, and Public Safety</b>	<b>2016 Embedded Base Costs (000s)</b>	<b>TY2019 Estimated Incremental (000s)</b>	<b>Total (000s)</b>
2GD000.000, Field Support	4,973	20	4,993
2GD000.003, Main Maintenance	942	920	1,862
2GD003.000, Cathodic Protection	879	0	879
2GD004.000, Operations and Management	2,092	0	2,092
<b>Total</b>	<b>8,886</b>	<b>940</b>	<b>9,826</b>
<b>SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure</b>	<b>2016 Embedded Base Costs (000s)</b>	<b>TY2019 Estimated Incremental (000s)</b>	<b>Total (000s)</b>
2GD000.000, Field Support	59	0	59
<b>Total</b>	<b>59</b>	<b>0</b>	<b>59</b>
<b>SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure</b>	<b>2016 Embedded Base Costs (000s)</b>	<b>TY2019 Estimated Incremental (000s)</b>	<b>Total (000s)</b>
2GD000.000, Field Support	2,940	722	3,662
2GD000.001, Leak Survey	7,080	1,240	8,320
2GD002.000, Measurement & Regulation	4,741	1,647	6,388
2GD003.000, Cathodic Protection	10,519	5,056	15,575
<b>Total</b>	<b>25,280</b>	<b>8,665</b>	<b>33,945</b>

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**Table GOM-09**  
**Southern California Gas Company**  
**RAMP Capital Summary Breakdown of Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>SCG-1 Catastrophic Damage Involving Third Party Dig-Ins</b>	<b>2017 Estimated RAMP Total (000s)</b>	<b>2018 Estimated RAMP Total (000s)</b>	<b>2019 Estimated RAMP Total (000s)</b>
007250.002, RAMP - Incremental - Standardizing locate and mark tools used by locators by replacing aging tools	3,800	2,500	0
<b>Total</b>	<b>3,800</b>	<b>2,500</b>	<b>0</b>
<b>SCG-2 Employee, Contractor, Customer and Public Safety</b>	<b>2017 Estimated RAMP Total (000s)</b>	<b>2018 Estimated RAMP Total (000s)</b>	<b>2019 Estimated RAMP Total (000s)</b>
002520.002, RAMP - Base - Risk ID SCG-02/SCG Employee Contractor Customer & Public Safety - Traffic Control	2,146	2,146	2,146
007250.004, RAMP - Incremental - Upgrade Nomex coveralls and fresh air equipment	1,667	0	0
007250.005, RAMP - Incremental - Confined space air monitoring system for field personnel	0	1,100	0
009030.002, RAMP - Base - Risk ID SCG-02/SCG Employee Contractor Customer & Public Safety - Field Inspections	58	58	58
<b>Total</b>	<b>3,871</b>	<b>3,304</b>	<b>2,204</b>
<b>SCG-4 Catastrophic Damage Involving High-Pressure Pipeline Failure</b>	<b>2017 Estimated RAMP Total (000s)</b>	<b>2018 Estimated RAMP Total (000s)</b>	<b>2019 Estimated RAMP Total (000s)</b>
002650.002, RAMP - Base - Risk ID SCG-04/SCG High-Pressure Pipeline Failure - Overpressure protection	185	185	185
002700.004, RAMP - Base - Risk ID SCG-04/SCG High-Pressure Pipeline Failure -Valve Inspections Capital	22	22	22
<b>Total</b>	<b>207</b>	<b>207</b>	<b>207</b>

<b>SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline Failure</b>	<b>2017 Estimated RAMP Total (000s)</b>	<b>2018 Estimated RAMP Total (000s)</b>	<b>2019 Estimated RAMP Total (000s)</b>
001730.003, RAMP - Base - Risk ID SCG-10/SCG Medium-Pressure Pipeline Failure - Cathodic Protection (Per Region)	3,908	5,096	5,590
002560.002, RAMP - Base - Risk ID SCG-10/SCG Medium-Pressure Pipeline Failure - Meter Set Assembly (MSA)	2,150	2,258	2,526
002650.003, RAMP - Base - Risk ID SCG-10/SCG Medium-Pressure Pipeline Failure - Overpressure protection	42	42	42
002700.003, RAMP - Base - Risk ID SCG-10/SCG Medium-Pressure Pipeline Failure - Valve Inspections Capital	13	5	5
009030.003, RAMP - Base - Risk ID SCG-10/SCG Medium-Pressure Pipeline Failure - Utility Conflict Review	83	86	108
<b>Total</b>	<b>6,196</b>	<b>7,487</b>	<b>8,271</b>

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The RAMP risk mitigation efforts are associated with specific actions such as programs, projects, processes, and technology. For each of these mitigation efforts, an evaluation was made to determine the portion, if any, that was already performed as part of historical activities (*i.e.*, embedded base costs) and the portion, if any, that was incremental to base year activities. Furthermore, for the incremental activities, a review was completed to determine if any portion of incremental activity was part of the workgroup’s base forecast methodology (*i.e.*, base year, trending, averaging, etc.). The result was what SoCalGas considers to be a true representation of incremental increases over the base year expenses.

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

My incremental request supports the ongoing management of these risks that could pose significant safety, reliability, and financial consequences to our customers and employees. The

1 anticipated risk reduction benefits that may be achieved by my incremental work elements or  
2 activities are summarized below.

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

4 SoCalGas operates and manages a natural gas network of approximately 100,586 miles of  
5 Distribution pipe in a service territory of approximately 20,000 square miles, exposing this pipe  
6 system to third-party dig-ins. Across the spectrum, third-party damage to pipelines can range  
7 from minor scratches or dents, to ruptures with an uncontrolled release of natural gas, presenting  
8 the potential for serious consequences.

9 As noted in the RAMP Report, damages resulting from excavation activity is the number  
10 one RAMP risk and represents the greatest safety threat to SoCalGas' pipeline infrastructure  
11 with potential for catastrophic consequences to public safety.<sup>11</sup> SoCalGas manages the risk of  
12 third-party dig-ins through mitigation actions that have been developed and implemented over  
13 many years, including:

- 14 • Training<sup>12</sup> – While training activity is pervasive throughout the Company, the  
15 mitigation covered in my testimony consists of programs that provide Gas  
16 Distribution personnel the knowledge to perform activities associated with locating  
17 and marking pipelines, such as (1) Locate and Mark training, and (2) Locate and  
18 Mark Operator Qualification. Adequately preparing and qualifying personnel to  
19 perform their jobs gives them the ability to follow applicable policies and procedures  
20 in a safe manner. This, in turn allows SoCalGas to operate and maintain its system in  
21 a safe manner, thus protecting employees, contractors, and the public from a damaged  
22 pipeline.
- 23 • Locate and Mark Activities – This mitigation comprises two main activities covered  
24 in my testimony that are related to performing or supporting locate and mark work:  
25 (1) Locate and Mark, and (2) Pipeline Observation (stand-by). Other activities such  
26 as Staff Support and Public Awareness Programs are covered by Mr. Rivera (Ex.  
27 SCG-05).

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<sup>11</sup> SED's Risk and Safety Aspects of Risk Assessment and Mitigation Phase Report of San Diego Gas & Electric Company and Southern California Gas Company, dated Mar. 8, 2017, at 30.

<sup>12</sup> My testimony covers the time associated with Gas Distribution personnel training and qualification. The costs for instructors, training materials, and training facilities are included in the testimony of Mr. Rivera (Ex. SCG-05).

- Locate and Mark is the work performed by SoCalGas personnel required to respond to over 700,000 USA notifications per year. To complete this activity, SoCalGas physically goes to the job site, locates all pipelines in the vicinity of the excavation, and appropriately marks its location. Knowing the location of the pipeline allows the third party to avoid that area or carefully perform the excavation work to avoid contact with the pipeline. This activity is mandated by state law (California Government Code Section 4216) and federal law (Code of Federal Regulations (C.F.R.) Title 49 Part 192.614). As discussed above, SB 661, an update adding enforcement provisions to California’s excavation law, is expected to compel more excavators to call USA, which SoCalGas anticipates will add upward pressure to an already increasing ticket volume in its service territory. As a result, more resources will be needed to perform Locate and Mark activities so that excavators can avoid the risk of damaging pipelines.
- Pipeline Observation (stand-by) is performed in accordance with the requirements of 49 C.F.R. § 192.935, Pipeline Observation (stand-by), which requires a qualified Company representative to be present any time excavation activities take place near a covered pipeline segment. SoCalGas requires this activity for all pipelines operating at high pressure (pressure above 60 psi). Pipeline observation helps to verify that contractors protect high-pressure pipelines located near construction activity. The purpose is to decrease the likelihood of an event occurring by having another pair of qualified eyes observing the work being done. This is a best practice in the gas industry and is also critical to another top RAMP risk – the safety of employees/contractors and the public/customers. With the rise in USA tickets, external construction activity, and more stringent excavation laws, SoCalGas anticipates there will be an increased need for pipeline observation.

In addition to these long-standing mitigation actions, SoCalGas will implement new incremental projects to further manage this risk, including the standardization of locating equipment discussed below. Other projects such as automating the prioritization of USA tickets are covered by Mr. Rivera (Ex. SCG-05).

- Standardize Locating Equipment – Currently, the Company issues different pieces of equipment to employees performing the locate and mark activity. By having several locating units, there is a risk that an employee may not fully understand each unit,

1 which could result in an inaccurate field mark. Standardizing the Locate and Mark  
2 equipment will improve locator knowledge and experience with the equipment. It  
3 will also enable more focused training dedicated to one tool instead of several tools.

4 Alternatives Considered:

5 SoCalGas considered two alternatives when developing the proposed plan for the Dig-Ins  
6 risk:

- 7 • Centralize Locate and Mark – Centralizing the Locate and Mark activity under a  
8 single dedicated organization would allow for a more focused approach to performing  
9 Locate and Mark activities. This alternative was not chosen as it would eliminate the  
10 flexibility to use employees for other tasks when needed; and it would require  
11 additional resources for both field personnel and supervisors.
- 12 • Add Contractors – Supplanting the Locate and Mark workforce with contractors  
13 would provide a larger pool of resources, and although SoCalGas can currently use  
14 contractors under certain conditions, larger scale use would require developing a  
15 long-term strategy, detailed cost-benefit assessment, change management plan, as  
16 well as collaboration with the Company’s Collective Bargaining Unit. For this  
17 reason, it was determined that the proposed mitigation actions were preferred during  
18 this GRC period.

19 The costs associated with training and Locate and Mark mitigation activities are covered  
20 in the base year and base forecast of the Field O&M – Field Support and Locate and Mark; and  
21 Operations and Management workgroups discussed in Sections III.A.1 and III.C of my  
22 testimony. The cost for the standardization of locating equipment is included as an incremental  
23 increase in the Capital Tools category discussed in Section V.M of my testimony.

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

25 At SoCalGas, the safety of employees, contractors, customers, and the public in the  
26 communities it serves is a core value. The Company safety culture has evolved over 150 years  
27 and underpins the Company’s programs, policies, procedures, guidelines, and best practices. As  
28 stated above, the Employee, Contractor, Customer, and Public Safety risk entails an employee  
29 and/or contractor who does not adhere to Company policies or procedures, which then results in  
30 a safety-related incident. SoCalGas manages this risk through mitigation actions that have been

1 developed and implemented over many years, as well as proposed incremental projects,  
2 programs, and processes, including:

- 3 • Employee Training – New hires, transfers, or newly-assigned employees are required  
4 to complete and pass initial training, such as defensive driver’s training for positions  
5 where the employee is expected to drive more than 3,000 miles per year on Company  
6 business. Refresher training is another important element of managing this risk. This  
7 includes weekly reviews of relevant policies and procedures, safety tailgates to  
8 discuss workplace hazards, work plans and responsibilities, safety stand-downs to  
9 discuss safety incidents, close call reviews, safety bulletins, safety committee  
10 meetings to develop and present material on various safety topics, and dialogue  
11 meetings with Company and department leadership.
- 12 • Personal Protective Equipment (PPE) and Safety Equipment – SoCalGas provides its  
13 employees with the PPE required to safely perform work (e.g., flame-retardant suits,  
14 eye protection, gloves, etc.). Additionally, job-specific tools are provided as required  
15 to safely perform work.
- 16 • Above-Ground and Below-Ground Gas Facility and Pipeline Inspections – SoCalGas  
17 inspects its pipeline systems pursuant to the applicable rules and regulations.<sup>13</sup> These  
18 inspection activities include: leak surveys, pipeline patrols, internal and external  
19 corrosion control, valve inspection, meter inspection, underground vaults, pipeline  
20 crossings, and pressure-relief devices.

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

- 24 • Confined space air monitoring system for field personnel – This program will replace  
25 the current confined space and H<sub>2</sub>S (hydrogen sulfide) monitoring equipment that is  
26 used to reduce the risk to employee safety. The existing devices are reaching the end  
27 of their useful life and potential failures present a risk to the safety of employees  
28 working in gaseous atmospheres. Within Gas Distribution, personnel that can  
29 potentially enter a confined space, such as an underground vault, will use a new air

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<sup>13</sup> See e.g., 49 C.F.R. § 192 *et seq.* and GO 112-F.

1 monitoring system. All impacted employees will be provided training on this new  
2 equipment.

- 3 • Upgrade Nomex coveralls and fresh air equipment – Field personnel working in  
4 Immediately Dangerous to Life or Health (IDLH) environments or in flammable  
5 atmospheres must wear gas extraction suits and a Supplied Air Respirator (SAR) with  
6 an escape bottle or a Self-Contained Breathing Apparatus (SCBA). SoCalGas will  
7 replace the SAR kits with SCBA kits prior to equipment failure and to create  
8 consistency among operating groups. The fire-resistant gloves currently used with  
9 the gas extraction suits provide minimal dexterity, making it difficult for field  
10 personnel to handle small tools and equipment. Replacement of these gloves will  
11 reduce the risks associated with working in potentially hazardous atmospheres for  
12 extended periods of time.

13 Alternative Considered:

14 While it is possible for SoCalGas to continue to use current equipment and devices  
15 for a longer duration, this would not be prudent to address the safety of our field  
16 employees and contractors performing high-risk functions. In some cases, it would  
17 not be feasible, such as for SAR kits, because they are no longer supported by the  
18 manufacturer and replacement will need to commence as soon as 2018 before  
19 equipment failure per specifications. SoCalGas considered other vendors for the  
20 Nomex coveralls and associated fresh air equipment, and tested their equipment to  
21 compare to its current equipment. However, he selected vendor met SoCalGas safety  
22 standards, while other vendors were unable to meet these safety standards.

23 The costs for the confined space air monitoring system; the Nomex coveralls; and fresh  
24 air equipment are included as incremental increases in Sections III.A.7 and V.M of my  
25 testimony. Other costs associated with training; PPE and safety equipment; and gas facility and  
26 pipeline inspections are covered in the base year and base forecast as discussed in Sections III  
27 and V of my testimony.

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

30 SoCalGas operates approximately 6,700 miles of high-pressure pipelines (pressure  
31 greater than 60 psi) of which approximately 3,700 are operated and maintained by Gas  
32 Distribution, in a service territory that spans 12 counties. SoCalGas manages this risk of damage



1 caused by a high-pressure pipeline failure event, which results in catastrophic consequences,  
2 through mitigation actions that have been developed and implemented over many years,  
3 including the following activities included in my testimony:

- 4 • Maintenance – SoCalGas performs maintenance activities in accordance with federal  
5 and state requirements, including performing leak survey, pipeline patrol, bridge, and  
6 span inspections; and meter set assemblies, valve, and regulator station inspection and  
7 maintenance on a regular basis. These preventive measures address potential  
8 conditions that otherwise could lead to a failure.
- 9 • Qualifications of Pipeline Personnel – SoCalGas trains and qualifies personnel  
10 working on pipelines in compliance with federal and state<sup>14</sup> OpQual requirements.  
11 This training and qualification provides employees with the tools to understand  
12 operating procedures and recognize and address abnormal operating conditions.
- 13 • Requirements for Corrosion Control through Cathodic Protection (CP) – SoCalGas  
14 complies with the safety requirements prescribed by 49 C.F.R. § 192 Subpart I –  
15 Requirements for Corrosion Control Operations, which include monitoring of CP  
16 areas, remediation of CP areas that are out of tolerance, and preventative installations  
17 to avoid areas out of tolerance. These activities address threats related to external and  
18 internal pipeline corrosion.
- 19 • Operations – SoCalGas complies with the safety requirements prescribed by 49  
20 C.F.R. § 192 Subpart L – Operations, which include emergency preparedness and  
21 odorization. These activities are intended to address threats associated with the  
22 ability to recognize a pipeline leak and response in case of a failure.

23 SoCalGas is proposing to continue with its baseline activities described above to mitigate  
24 this risk. The costs associated with Gas Distribution mitigation activities related to the risk of  
25 catastrophic damage involving high-pressure pipeline failure are covered in the base year and the  
26 base forecasts discussed in Sections III and V of my testimony.

#### 27 **4. SCG-10 Catastrophic Damage Involving Medium-Pressure Pipeline** 28 **Failure**

29 SoCalGas Gas Distribution operates approximately 100,586 miles of medium-pressure  
30 main and service pipes throughout its service territory. SoCalGas manages the risk of damage

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<sup>14</sup> *Id.*

1 caused by a medium-pressure pipeline failure event, which results in catastrophic consequences,  
2 through mitigation actions that have been developed and implemented over many years. As in  
3 the case of the risk associated with catastrophic damage involving high-pressure pipeline failure,  
4 SoCalGas manages this risk through compliance with applicable federal and state regulations,  
5 including:

- 6 • 49 C.F.R. § 192 Subpart M – Maintenance: Patrolling, Leak Survey, Pressure  
7 Limiting and Regulator Station Inspections and Maintenance, Valve Maintenance  
8 intended to address Equipment Failure and Natural Forces;
- 9 • 49 C.F.R. § 192 Subpart N – Qualifications of Pipeline Personnel: Training and  
10 procedures intended to address Incorrect Operations;
- 11 • 49 C.F.R. § 192 Subpart I – Requirements for Corrosion Control: Corrosion control  
12 and monitoring intended to address corrosion; and
- 13 • 49 C.F.R. § 192 Subpart L – Operations: Locate and Mark, Odorization, Emergency  
14 Preparedness, Continual Surveillance intended to address Equipment Failure,  
15 Incorrect Operations and Natural Forces.

16 Alternatives Considered:

17 SoCalGas considered two alternatives when developing the proposed plan for this  
18 Catastrophic Damage Involving Medium-Pressure Pipeline Failure risk, including further  
19 acceleration of unprotected steel main work and acceleration of pipeline replacement. The  
20 strategy for large scale replacement of families of pipe is covered by Ms. Martinez (Ex. SCG-  
21 14).

22 SoCalGas is proposing to continue with its baseline activities described above to mitigate  
23 this risk. In addition, SoCalGas is proposing to expand and add new mitigations to further  
24 address the risk of medium-pressure pipeline failure through an incremental replacement rate of  
25 early vintage pipe. The incremental replacement of early vintage pipe is covered by Ms.  
26 Martinez (Ex. SCG-14). The costs associated with Gas Distribution mitigation activities related  
27 to the risk of catastrophic damage involving medium-pressure pipeline failure are covered in the  
28 base year and the base forecasts discussed in Sections III and V of my testimony.

29 My incremental request supports the ongoing management and reduction of the risks  
30 identified by the RAMP Report and discussed above that could pose significant safety and  
31 reliability consequences to SoCalGas' customers, employees, and contractors. The anticipated

1 risk reduction benefits that may be achieved by my incremental ask are summarized in Sections  
2 III and V of my testimony.

3 **B. Safety Culture**

4 SoCalGas' longstanding commitment to safety focuses on three primary areas –  
5 (1) employee/contractor safety, (2) customer/public safety, and (3) the safety of the gas delivery  
6 system. This safety focus is embedded in what we do and is the foundation for who we are –  
7 from initial employee training, to the installation, operation, and maintenance of our utility  
8 infrastructure, and to our commitment to provide safe, clean, and reliable service to our  
9 customers at reasonable rates. SoCalGas regularly assesses its safety culture and encourages two-  
10 way communication between employees and management as a means of identifying and  
11 managing safety risks. In addition to the reporting of pipeline and occupational safety incidents,  
12 there are multiple methods for employees to report close calls/near misses. At SoCalGas, safety  
13 is a core value so we provide all employees with the training necessary to safely perform their  
14 job responsibilities, such as the Smith Driver refresher course, regular discussion on Illness  
15 Prevention, regular enforcement of "Stop the Job," and the importance of covering all PPE at all  
16 times.

17 As noted in in the RAMP Report, third-party dig-ins pose the greatest hazard to our  
18 system and the safety of the communities we serve. As explained above, public safety is a top  
19 priority for SoCalGas. Gas Distribution O&M covers the management of the programs designed  
20 to mitigate the frequency and impact of third-party dig-ins. Additionally, SoCalGas responds to  
21 any emergency to its infrastructure. The Emergency Operations Center, the Distribution Gas  
22 Emergency Centers and Transmission Command Center activate as needed to monitor,  
23 coordinate, communicate, and support our field crews and support personnel responding to  
24 emergencies.

25 SoCalGas takes an integrated approach to pipeline safety and integrity, beginning with  
26 the design and construction of facilities and followed by continual evaluation and improvement  
27 of operation and maintenance activities, public communication and awareness, emergency  
28 response, safety programs and practices, the implementation of new technologies, defined  
29 procurement processes that facilitate materials traceability, and a workplace that encourages  
30 continual open and informal discussion of safety-related issues. On a daily basis, O&M and  
31 capital work elements are managed based on a variety of risk factors and work drivers, such as

1 federal and state regulatory requirements, customer and pipeline growth expectations, franchise  
2 obligations, permitting requirements, and conditions found during inspections. These work  
3 elements are prioritized based first, on immediate safety and compliance considerations, and  
4 then, work is actively prioritized considering factors such as regulatory compliance deadlines,  
5 customer scheduling requirements, and overall infrastructure condition. Safety and compliance  
6 considerations are captured throughout the Company's policies and procedures.

7       Generally, examples of O&M activities categorized as safety and compliance include:  
8 leak survey and patrols; leak repairs; locate and mark, stand-by observations, and depth checks;  
9 inspections of valves, bridges, spans, and M&R facilities; and maintenance of cathodic  
10 protection systems. These elements are generally prioritized ahead of work that can be safely  
11 managed to occur within a more flexible schedule. For example, in the case of Code 1  
12 (hazardous) leaks,<sup>15</sup> Gas Distribution crews are required to take immediate and continuous action  
13 until the hazard has been mitigated. Activities with more flexible schedules that are also  
14 required to safeguard the integrity of the pipeline system include: main and service alterations;  
15 compliance work self-audits; and employee training. Additionally, there are a number of support  
16 activities necessary to complete work. These include: dispatch and work scheduling;  
17 supervision; technical support; tools; technology systems; and quality assurance.

18       In addition to O&M activities, to maintain safe and reliable service, SoCalGas makes a  
19 variety of capital improvements, including pressure betterment projects to improve areas of low  
20 pressure, pipeline renewals to replace deteriorated pipelines or obsolete equipment, installations  
21 and replacements of cathodic protection systems, and the purchase of electronic monitoring  
22 devices for pressure tracking. The specific factors considered in the prioritization process of  
23 capital work that is performed to mitigate these RAMP risks may vary depending on the type of  
24 project. The prioritization of pipeline projects (*e.g.*, mains, services, cathodic protection, valves,  
25 and regulator station replacements) is driven by a review of maintenance activities and findings,  
26 results of field workforce inspections, and records of condition. These inspection evaluation  
27 elements are some of the factors used to determine replacement needs.

28       Other factors considered for the replacement of assets include the age of the  
29 infrastructure, general equipment reliability, and/or design obsolescence. In addition, during the

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<sup>15</sup> 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.

1 evaluation of distribution main and service replacements, field and technical staff consider the  
2 results from a computational model used to help assess the risk-rank of pipeline segments.

3           Since capital work is dynamic, ongoing assessment of system operations is necessary.  
4 For example, construction timelines can be affected by permitting, material availability,  
5 customer schedules, other construction-related factors, and/or additional work requirements that  
6 may arise throughout the year in response to maintenance, inspection, and other routine  
7 activities. These real-time operational situations are considered when evaluating and  
8 subsequently addressing daily distribution pipeline safety and reliability risks.

9           Not only does an effective safety culture know and understand its responsibilities and  
10 objectives, it does so by building and maintaining a qualified workforce and by mitigating risks  
11 associated with public and employee safety hazards, system integrity, and reliability. The  
12 OpQual program in Gas Distribution addresses employee training, qualifications, and work  
13 quality. It is an integral part of an overall workforce proficiency effort and is key to SoCalGas'  
14 safety culture. OpQual compliance is closely monitored and employees are trained whenever  
15 significant changes occur. The OpQual program aligns with recommendations by the CPUC  
16 auditors and industry leading practices, and it complies with SB 705, which requires pipeline  
17 operators to establish and update a Gas Safety Plan that is consistent with leading practices and  
18 federal statutes.

19

1 **III. NON-SHARED COSTS**

2 Operations and maintenance activities are routinely performed on approximately 100,586  
3 miles of gas distribution main and service pipeline and associated facilities in response to federal  
4 and state regulatory agency codes and standards,<sup>16</sup> customer and pipeline growth expectations,  
5 franchise obligations, and to sustain safe and reliable operation of the pipeline system. This  
6 work includes leakage surveys, leak repairs, maintenance on mains and services, application of  
7 corrosion control measures, valve maintenance, regulator station maintenance, monitoring meter  
8 accuracy, checking for odorant, and locating and marking buried pipes to avoid damage caused  
9 from digging by others. In addition, there is a variety of supporting work necessary to complete  
10 this field operations and maintenance work. Examples of support work include maintaining  
11 pipeline maps and related gas system location information, administering and implementing city  
12 permitting and traffic control requirements, and maintaining engineering models of system flows  
13 and pressures. Investment in these activities supports SoCalGas’ commitment to mitigate risks  
14 associated with hazards to public and employee safety, infrastructure integrity, and system  
15 reliability.

16 The level of funding requested in this testimony is consistent with continuing compliance  
17 with pipeline safety regulations and the continued safe and reliable operation of SoCalGas’ gas  
18 distribution pipeline system.

19 Spending to comply with federal DIMP regulations governing distribution pipeline  
20 integrity is addressed by Ms. Martinez (Ex. SCG-14). Spending associated with gas operations  
21 staff support including formal training for Gas Distribution employees at the Pico Rivera training  
22 facility; Gas Standards development and maintenance; the management of the Damage  
23 Prevention and Public Awareness Programs; tools and technology research and implementation;  
24 enterprise systems support (GIS, Click, SAP, etc.); and OpQual program management is  
25 addressed by Mr. Rivera (Ex. SCG-05).

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

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<sup>16</sup> See, e.g., Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards, 49 C.F.R. § 192; Cal. Gov’t Code § 4216, *et seq.*; GO 112-F; and GO 58-A.

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

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

8 In preparing projections for the TY 2019 forecast, SoCalGas Gas Distribution Operations  
9 reviewed historical spending levels, including units of work, and developed an assessment of  
10 future needs and associated risks. This analysis entailed a review of the historical 2012 through  
11 2016 spending and consideration of the underlying cost drivers. Depending on future  
12 expectations for the underlying cost drivers, a primary forecast methodology was selected.  
13 Selected methods include forecasting based on historical averages, simple linear trending of  
14 historical data, and 2016 adjusted recorded base year spending. In addition, incremental work  
15 above levels of historical spending and to maintain the safe and reliable operation of the  
16 distribution system and supporting work processes were identified. An analytical calculation  
17 was then performed to determine the funding of these new or more-extensive work elements.  
18 The overall result is a forecast that has its foundation based on the historical representation, to  
19 which incremental expenses have been added.

20 In summary, Gas Distribution requests the Commission adopt a TY 2019 forecast of  
21 O&M expense for non-shared services of \$147,879,000, as summarized in Table GOM-10  
22 below. This is an increase of \$31,936,000 over the 2016 adjusted recorded base. This increase  
23 is driven by increased regulatory pressures, safety process enhancements, workforce technical  
24 skills training and qualification, customer and load growth, system expansion, infrastructure  
25 renewal, and state and municipal agency construction requirements. Table GOM-10 below  
26 summarizes the total non-shared O&M forecasts for the listed cost categories.

**Table GOM-10**  
**Southern California Gas Company**  
**Non-Shared O&M Summary of Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>Categories of Management</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
A. Field Operations & Maintenance	98,667	129,116	30,449
B. Asset Management	8,171	6,965	-1,206
C. Operations Management & Training	5,645	7,378	1,733
D. Regional Public Affairs	3,460	4,420	960
<b>Total Non-Shared Services</b>	<b>115,943</b>	<b>147,879</b>	<b>31,936</b>

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; (4) the forecast amounts are reasonable in light of historical spending and anticipated work increases; and (5) the activities support SoCalGas' commitment to mitigate risks associated with hazards to public and employee safety, infrastructure integrity, and system reliability.

**A. Field Operations and Maintenance**

**Table GOM-11**  
**Southern California Gas Company**  
**Field Operations and Maintenance**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
1. Locate & Mark	13,628	16,050	2,422
2. Leak Survey	7,080	10,711	3,631
3. Measurement & Regulation	13,831	14,888	1,057
4. Cathodic Protection	14,403	18,322	3,919
5. Main Maintenance	11,383	20,772	9,389
6. Service Maintenance	10,339	16,997	6,658
7. Field Support	19,402	21,069	1,667
8. Tools Fittings & Materials	8,601	10,307	1,706
<b>Total</b>	<b>98,667</b>	<b>129,116</b>	<b>30,449</b>



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.1 (Summary of Gas Distribution Costs and 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 M&R. 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 C.F.R. § 192 and California’s “One-Call” statute,<sup>17</sup> which requires the owner of underground facilities to identify substructures at locations of planned excavations. Table GOM-12 below summarizes Gas Distribution O&M costs associated with Locate and Mark activities.

**Table GOM-12  
Southern California Gas Company  
Locate and Mark**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
1. Locate & Mark	13,628	16,050	2,422

<sup>17</sup> See Cal. Gov’t Code § 4216, *et seq.*

1                                   **a.       Description of Costs and Underlying Activities**

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

- 5           • Locating and marking SoCalGas’ underground pipelines;
- 6           • Conducting job observations;
- 7           • Performing pothole operations; and
- 8           • Performing depth checks.

9           Once a notification is received from Underground Service Alert (the Underground  
10 Service Alert Region Notification Center), SoCalGas has two working days to respond and  
11 identify the location of SoCalGas pipelines within the identified parameter of a pending  
12 excavation project.<sup>18</sup> SoCalGas’ employees receive Locate and Mark work orders electronically  
13 on a Mobile Data Terminal (MDT) through a wireless connection or while docked at the  
14 operating base. The employee must travel to the project site and identify the location of  
15 SoCalGas’ underground substructures utilizing an electronic pipe-locating device, substructure  
16 maps, and service history records. Color-coded markings are then placed over the substructures  
17 to visually identify the location of SoCalGas’ underground facilities. Locate requests can range  
18 in scope from a construction project that entails a single excavation, to projects comprised of  
19 thousands of feet of construction requiring extensive effort to appropriately mark the location  
20 throughout the length of SoCalGas’ underground pipelines. Details on the historical Locate and  
21 Mark work orders (tickets) can be found in supplemental workpaper SCG-04-GOM-O&M-SUP-  
22 008, located under Locate and Mark in Ex. SCG-04-WP.

23           Conducting job observations of other entities excavating in close proximity to SoCalGas’  
24 pipelines is another important damage prevention activity included in this workgroup.  
25 Generally, this involves an employee inspecting job sites to notify excavators of the location of  
26 critical SoCalGas facilities. The State of California mandates a preconstruction meeting with  
27 excavators requesting Locate and Mark support and requires continuous monitoring of all  
28 excavations within ten feet of high-pressure pipelines.<sup>19</sup>

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<sup>18</sup> See Cal. Gov’t Code § 4216.2.

<sup>19</sup> See Cal. Gov’t Code §4216.2(c).

1 Another damage prevention activity included in this workgroup is referred to as  
2 “potholing” and relates to the California State Code for “Tolerance Zone.”<sup>20</sup> A customer  
3 notification to USA generates a formal request sent to SoCalGas, known as a USA ticket, to  
4 locate and mark existing gas facilities. USA markings are used by the requesting agency to  
5 establish if underground facilities pose a conflict with proposed plans. If needed, a small  
6 excavation may be done to visually verify the exact location of any facilities indicated at that  
7 location.

8 The fourth damage prevention activity included in this workgroup is referred to as a  
9 “depth check.” This entails excavating over SoCalGas’ underground pipelines in advance of  
10 specific construction projects to identify elevation data. This information is often required in  
11 advance of a municipal construction project to avoid conflicts with, and potential relocation of,  
12 SoCalGas’ existing underground pipelines. If depth information is known, there are often ways  
13 to negotiate design changes to avoid costly relocation requirements.

14 In 2016, the California Governor signed SB 661, named the Dig Safe Act of 2016, which  
15 added enforcement to the digging law by establishing the California Underground Facilities Safe  
16 Excavation Board. The Board is authorized to take action against those parties who violate the  
17 excavation law under California Code Section 4216. The Dig Safe Act is expected to require  
18 more excavators to notify USA, which will add upward pressure to an already increasing USA  
19 ticket volume in California. As a result, more employees will be needed to perform Locate and  
20 Mark activities in order for the Company to meet increasing USA ticket demands and prevent  
21 marking delays. Other notable impacts of the Dig Safe Act include the requirement for marking  
22 the presence of known abandoned lines and keeping abandoned line records, which will increase  
23 time spent locating each ticket and create additional work for supporting activities.

24 As discussed in Section II above, damages resulting from excavation activity is the  
25 number one RAMP risk and represents the greatest safety threat to SoCalGas’ pipeline  
26 infrastructure with potential for catastrophic consequences to public safety. SoCalGas manages  
27 the risk of third-party dig-ins through mitigation actions that have been developed and  
28 implemented over many years, including locate and mark activities. The costs in my testimony  
29 support the mitigation of risks associated with hazards to public and employee safety and to the  
30 reliability of SoCalGas’ system. Properly locating and marking gas facilities, as well as

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<sup>20</sup> See Cal. Gov’t Code §4216(u).

1 performing job observations and depth checks, are activities completed to avert damage by third-  
2 party excavators that can interrupt gas service. Furthermore, the completion of this work  
3 provides important information to safeguard those working around gas facilities and to protect  
4 the integrity and reliability of the pipeline system.

5 **b. Forecast Method**

6 In developing the TY 2019 forecast, historical expenditures and work units for 2012  
7 through 2016 were evaluated. As previously discussed, one of the cost drivers for locate and  
8 mark work are changes in federal, state, and local regulations and requirements that increase the  
9 number of tickets, size of work area, and time on premise. Furthermore, the locate and mark  
10 activity is driven by general construction activity in public and private rights-of-way and  
11 customer growth, which generally fluctuate with economic conditions. Gas Distribution selected  
12 non-farm employment growth, as reported by IHS Global Insight, as a directional indicator for  
13 general economic conditions and potential economic growth, which generally drive construction  
14 activities. This IHS Global Insight employment forecast is shown in the workpaper of Ms.  
15 Payan, Ex. SCG-39-WP. In general, IHS Global Insight forecasts that the non-farm employment  
16 growth will continue to trend in a positive direction over the TY 2019 GRC period. For these  
17 reasons, the Locate and Mark forecast is based on the linear trend observed during the last five  
18 years (2012 through 2016). Using a five-year average or base forecast would not appropriately  
19 account for the increase in work anticipated over the forecast period, as implementation activities  
20 associated with new requirements and construction activities continue to increase. The five-year  
21 (2012-2016) historical linear trend forecast results in a \$1,811,000 increase from the 2016  
22 adjusted recorded base in TY 2019.

23 In order to perform the incremental work associated with this work category, SoCalGas is  
24 adding seven incremental light duty trucks in 2017, six in 2018, and six in 2019. The costs  
25 associated with these vehicles are discussed by Ms. Herrera (Ex. SCG-23).

26 Added to this base forecast are incremental work elements to adequately fund Locate and  
27 Mark activities in TY 2019. These work elements are described below. The total incremental  
28 funding needed for this workgroup, including the base forecast and the incremental increase, is  
29 \$2,422,000 over the 2016 adjusted recorded base for TY 2019.

1 **i. USA Ticket Price Increase**

2 The regional notification centers, USA South and USA North, will increase the  
3 membership fees that Utilities pay, due to an anticipated increase in tickets driven by the new  
4 requirements in the Dig Safe Act of 2016. Beginning July 1<sup>st</sup>, 2017, SoCalGas' costs will  
5 increase by \$0.15 per new ticket for the regional notification center covering the southern region  
6 of the service territory (DigAlert, also known as USA South). The regional notification center  
7 covering the northern part of the SoCalGas' service territory (USA North 811, also known as  
8 USA North) uses a membership fee structure, which will increase by 2% over the base year 2016  
9 cost. Additional details can be found in supplemental workpaper SCG-04-GOM-O&M-SUP-009  
10 located under Locate and Mark in Ex. SCG-04-WP. The impact from this incremental cost on  
11 Locate and Mark is \$111,000 over the base forecast in TY 2019.

12 **ii. Vacuum Technology for Potholing**

13 This activity encompasses the use of keyhole technology to “daylight” or excavate to find  
14 hard-to-locate underground pipelines. Keyhole technology utilizes a high-powered vacuum  
15 mounted on a truck to excavate through soil in a relatively small footprint as compared to  
16 traditional excavation methods. SoCalGas intends to contract with vendors to increase capacity  
17 beyond the current capability of company crews to provide accurate locating and marking of  
18 hard-to-find or un-locatable pipelines and reduce the risk of damage to its infrastructure, thus  
19 enhancing public safety. This new work process adds a mitigation measure in support of the  
20 RAMP risk Catastrophic Damage Involving Third-Party Dig-Ins. The impact from this  
21 incremental activity on Locate and Mark is \$500,000 over the base forecast in TY 2019.

22 **c. Cost Drivers**

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

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

7 Furthermore, the RAMP Report identified the need to increase locate and mark activities  
 8 to respond to the incremental work anticipated in the forecast period. The costs associated with  
 9 this RAMP activity are included in the Locate and Mark base forecast for TY 2019.

10 **2. Leak Survey**

11 Recorded to this workgroup are the labor and non-labor expenses associated with federal  
 12 and state pipeline safety regulation,<sup>21</sup> which requires SoCalGas to survey its gas distribution  
 13 system for leakage. Table GOM-13 below summarizes Gas Distribution O&M costs associated  
 14 with Leak Survey activities.

15 **Table GOM-13**  
 16 **Southern California Gas Company**  
 17 **Leak Survey**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
2. Leak Survey	7,080	10,711	3,631

18 **a. Description of Costs and Underlying Activities**

19 SoCalGas pipelines are routinely leak surveyed at intervals of one, three, or five years.  
 20 The frequency of this survey is determined by the pipe material involved (*i.e.*, plastic or steel),  
 21 the operating pressure, whether the pipe is under cathodic protection, and the proximity of the  
 22 pipe to various population densities. For example, annual surveys are scheduled in business  
 23 districts, which are defined as a principal business area in a community where large numbers of  
 24 people regularly congregate to engage in business activities, and near public service  
 25 establishments, such as schools, churches, and hospitals.<sup>22</sup> Three-year survey cycles are used for  
 26

<sup>21</sup> 49 C.F.R. § 192.723 (Distribution systems: Leakage surveys); GO 112-F.

<sup>22</sup> 49 C.F.R. § 192.723.

1 all cathodically unprotected mains and services. Five-year survey cycles are typically used for  
2 plastic and cathodically protected steel mains and services installed in residential areas. In order  
3 to comply with the requirements of the recently adopted SB 1371, in lieu of a system-wide three-  
4 year leak survey cycle in areas where GO 112-F, or its successors, requires surveying every five  
5 years, SoCalGas will propose a risk-assessment based, more cost-effective methodology for  
6 conducting gas distribution pipeline leak surveys at a less frequent interval and justify this  
7 alternative in its SB 1371 Compliance Plan filing in March 2018, subject to Commission  
8 approval. This cost is not included in the TY 2019 GRC request; instead, it will be addressed in  
9 a separate proceeding as discussed by Mr. Johnson (Ex. SCG-25). Furthermore, SoCalGas will  
10 accelerate leak surveying of pre-1986 plastic pipe (Aldyl-A) from a 5-year cycle to an annual  
11 cycle. The costs for 2017 and 2018 are covered by Ms. Martinez (Ex. SCG-14). The costs  
12 needed to cover this activity in TY 2019 are included in my testimony.

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

22 During the survey, the field employee patrols above the identified location of SoCalGas'  
23 distribution subsurface main and service pipelines with a leak detector to identify, classify, and  
24 generate an immediate repair work order, when necessary. SoCalGas currently has  
25 approximately 100,586 miles of main and service pipeline that require leak survey.

26 The leak survey activity is a mitigation measure supporting three top safety risks  
27 identified in the RAMP Report and discussed in Section II above: (1) Employee, Contractor,  
28 Customer, and Public Safety, (2) Catastrophic Damage Involving High-Pressure Pipeline Failure  
29 and (3) Catastrophic Damage Involving Medium-Pressure Pipeline Failure. The leak survey cost  
30 supports the safety and reliability of SoCalGas' system by performing the fundamental  
31 compliance and safety process of leak surveying pipelines to monitor for leakage in the pipeline

1 system. Furthermore, this activity supports SoCalGas' commitment to mitigate risks associated  
2 with hazards to public and employee safety, infrastructure integrity, and system reliability.

3 **b. Forecast Method**

4 As SoCalGas continues to experience growth of its pipeline system, survey requirements  
5 will increase. New pipe installed in years 2012 through 2016 will continue to increase the  
6 survey footage requirements in the years 2017 through 2019. In addition, changes in work  
7 practices and use of more sensitive equipment will continue to impact the cost to complete leak  
8 survey work. Given these continuing upward pressures, SoCalGas chose the five-year (2012  
9 through 2016) historical linear trend to forecast the base spending for the leak survey work.  
10 Using an average methodology would not capture the continued growth and change in work  
11 requirements and would underestimate a critical safety-related operations expense. Furthermore,  
12 as shown in Table GOM-14 below, the historical leak survey footage has been increasing over  
13 this period, further evidencing growth in this work element. The five-year (2012 through 2016)  
14 linear trend forecast results in an increase of \$1,240,000 over the 2016 adjusted recorded base in  
15 TY 2019.

16 **Table GOM-14**  
17 **Southern California Gas Company**  
18 **Annual Distribution Pipe Leak Surveyed by Year**

<b>Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
Footage Surveyed	122,557,935	123,471,709	128,439,777	136,551,473	142,615,571

19  
20 In order to perform the base incremental work associated with this work category,  
21 SoCalGas is adding nine incremental light duty trucks in 2017, four in 2018, and three in TY  
22 2019. The costs associated with these vehicles are discussed by Ms. Herrera (Ex. SCG-23).

23 Added to the base forecast are incremental work elements not reflected in the base  
24 forecast to adequately fund leak survey activities in TY 2019. These work elements are  
25 described below. The total incremental funding to fund the leak survey activity, including  
26 incremental increases, is \$3,631,000 over the 2016 adjusted recorded base for TY 2019. Below  
27 is a description of incremental work elements.

28 **i. Bi-Annual High-Pressure Leak Survey**



1 The revised GO 112-F added the requirement to leak survey DOT-defined, high-pressure  
2 transmission pipelines known as supply lines twice a year instead of once as previously required.  
3 This new requirement went into effect in 2017. Given that the leak survey activity is a  
4 mitigation measure supporting the RAMP risk Catastrophic Damage Involving High-Pressure  
5 Pipeline Failure, SoCalGas will apply the bi-annual leak survey requirement to all its high-  
6 pressure lines by the TY 2019. The impacted pipe mileage in 2017 and 2018 is 690 miles each  
7 year. This number will increase to approximately 3,700 miles by the TY 2019. This will  
8 increase the amount of survey performed by Gas Distribution on a yearly basis. Additional  
9 details can be found in supplemental workpaper SCG-04-GOM-O&M-SUP-005, located under  
10 Leak Survey in Ex. SCG-04-WP. The funding needed to address this incremental work is  
11 \$1,035,000 over the base forecast for TY 2019.

12 In order to perform this incremental leak survey, SoCalGas is adding eight incremental  
13 light duty trucks in TY 2019. The costs associated with these vehicles are discussed by Ms.  
14 Herrera (Ex. SCG-23).

15 **ii. Enhanced Leak Survey - Early Vintage Plastic Pipe**

16 SoCalGas plans to increase survey cycle requirements for all pre-1986 plastic pipe  
17 (Aldyl-A) from a five-year survey cycle to an annual cycle. This change adds a mitigation  
18 measure in support of RAMP risk: Catastrophic Damage Involving Medium-Pressure Pipeline  
19 Failure. Aldyl-A is a polyethylene plastic pipe material widely used in the gas industry. Early  
20 vintages of this material (1970s and 1980s) can experience brittleness as it ages, increasing the  
21 risk for leakage. The incremental cost for 2017 and 2018 are covered by Ms. Martinez (Ex.  
22 SCG-14). By TY 2019, it is anticipated that this change in survey cycle will be integrated into  
23 routine work and as such, the costs for TY 2019 are shown in my testimony. Additional details  
24 can be found in supplemental workpaper SCG-04-GOM-O&M-SUP-004, located under Leak  
25 Survey in Ex. SCG-04-WP.

26 The incremental funding needed over the base forecast for this upward pressure is  
27 \$1,690,000 for TY 2019.

28 **iii. Fueling Our Future**

29 A net FOF benefit savings of \$334,000 is included in TY 2019 request for Leak Survey.  
30 Currently, a leak survey map can have multiple leak surveys with different compliance dates,  
31 which result in multiple trips to the same area to complete the required leak survey work. This

1 FOF idea will align the leak survey compliance dates on a leak survey map so that it may be  
 2 possible to issue a survey to the same employee, eliminating the need for multiple trips. The  
 3 implementation cost applied to 2017 involves reviewing, consolidating, and realigning the leak  
 4 survey compliance dates on one map within the same month. This contracted work will enable a  
 5 more efficient way of completing leak surveys in 2017, 2018, and TY 2019. Table GOM – 15  
 6 provides a summary of the FOF implementation and ongoing benefit cost efficiencies.

7 **Table GOM-15**  
 8 **Southern California Gas Company**  
 9 **FOF Implementation Costs (+) and Benefit Savings (-)**

<b>FOF (In 2016 \$)- Implementation Costs (+) and Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
Leak Survey - Implementation Costs	10	0	0
Leak Survey – Benefit Savings	-83	-334	-334

10  
 11 **c. Cost Drivers**

12 Costs incurred in this workgroup are primarily related to the amount of footage requiring  
 13 leak survey. Survey requirements increase with every foot of new pipeline installed in the  
 14 system. As pipe is added to the system to support new industrial, commercial, and residential  
 15 developments, it must be leak-surveyed in the timeframe required by state and federal  
 16 regulations. Furthermore, increased construction raises the need for special leak survey. In  
 17 addition, changes in regulatory requirements and system integrity needs will accelerate leak  
 18 survey cycles adding to the amount of pipe that must be surveyed annually. This includes the  
 19 requirement to increase the leak survey cycles for high-pressure pipelines and for pre-1986  
 20 plastic pipes. Likewise, changes in work practices and use of new more sensitive equipment can  
 21 also impact the cost to complete leak survey work.

22 Furthermore, the RAMP Report identified the need to increase leak survey activities to  
 23 respond to the incremental work anticipated in the forecast period. The incremental RAMP costs  
 24 are identified above. Other costs associated with this RAMP activity are included in the Leak  
 25 Survey base forecast for TY 2019.

26 **3. M&R**

27 Recorded to this workgroup are labor and non-labor expenses for maintaining and  
 28 operating regulator stations, medium and large MSAs, also known as customer meters), and

1 associated components. Table GOM-16 below summarizes Gas Distribution O&M costs  
2 associated with M&R activities.

3 **Table GOM-16**  
4 **Southern California Gas Company**  
5 **M&R**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
3. Measurement & Regulation	13,831	14,888	1,057

6 **a. Description of Costs and Underlying Activities**

7 M&R activities focus primarily on maintaining and operating approximately 1,975  
8 regulator stations and approximately 102,000 medium and large customer MSAs in the  
9 SoCalGas service territory. Regulator stations reduce the pressure of gas entering the  
10 distribution system from high-pressure pipelines to provide the lower pressures used on the  
11 distribution pipeline network. Medium and large customers MSAs require routine maintenance  
12 of the meters, regulators, and other components to meet customers' capacity requirements and to  
13 measure gas volume accurately.

14 Federal pipeline safety regulation 49 C.F.R. § 192.739(a) (Pressure limiting and  
15 regulating stations: Inspection and testing) requires annual inspection and maintenance of all  
16 regulator stations to maintain these devices in good mechanical condition. Pressure checks are  
17 done to verify that the station's pressure protection devices perform as designed. If a station  
18 does not perform properly, internal maintenance and inspections are conducted. This consists of  
19 disassembling the regulator devices and inspecting the internal components for worn or damaged  
20 parts. The regulator is cleaned and inspected for corrosion and any faulty parts are replaced. As  
21 regulator stations age, their parts and equipment begin to wear, malfunction, and are hard to  
22 disassemble, increasing maintenance requirements.

23 GO 58-A requires routine maintenance on medium and large MSAs. This General Order  
24 requires that meters, regulators, and other components be maintained, repaired, and tested  
25 periodically to meet customers' capacity requirements and to measure gas volume accurately.  
26 To maintain measurement accuracy, meters are subject to Planned Meter Changeouts (PMC) or  
27 are periodically tested, as prescribed in Section 13 of GO 58-A. If an Electronic Pressure

1 Corrector is used for gas measurement, it is also subject to periodic inspection. An Electronic  
2 Pressure Corrector work order includes checks on calibration, configuration, battery condition,  
3 communication, and wiring. If the MSA is housed in a vault, the vault needs to be inspected, and  
4 repaired, if necessary, to protect the MSA.

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

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

15 The M&R activity is a mitigation measure supporting three top safety risks identified in  
16 the RAMP Report and discussed in Section II above: (1) Employee, Contractor, Customer, and  
17 Public Safety, (2) Catastrophic Damage Involving High-Pressure Pipeline Failure, and (3)  
18 Catastrophic Damage Involving Medium-Pressure Pipeline Failure. The costs in this workgroup  
19 support the safety and reliability of SoCalGas' system, as well as compliance activities required  
20 by governmental regulations. Furthermore, the activities covered in this workgroup support  
21 SoCalGas' commitment to mitigate risks associated with hazards to public and employee safety,  
22 infrastructure integrity, and system reliability.

### 23 **b. Forecast Method**

24 In developing the TY 2019 forecast, SoCalGas evaluated the historical expenditures for  
25 2012 through 2016 and cost drivers for the M&R workgroup. As the pipeline system continues  
26 to grow and its components continue to age additional operations and maintenance work will be  
27 necessary. Given these continuing upward pressures on base activities, SoCalGas chose a five-  
28 year (2012 through 2016) linear trend to forecast the base funding requirement for TY 2019.  
29 The linear trend results in an increase of \$1,474,000 from the 2016 adjusted recorded base in TY  
30 2019.

1 In order to perform the incremental work associated with this work category, SoCalGas is  
2 adding one incremental medium duty trucks in 2017, two in 2018, and one in TY 2019. The  
3 costs associated with this vehicle are discussed by Ms. Herrera (Ex. SCG-23).

4 Added to this base are incremental work elements not reflected in the base forecast to  
5 adequately fund M&R activities in TY 2019. These work elements are described below. The  
6 total incremental funding for this workgroup, including the base forecast, benefits, and  
7 incremental increases is \$1,057,000 over the 2016 adjusted recorded base in TY 2019.

8 **i. Advanced Metering Infrastructure (AMI) Remediation**

9 The AMI project has deployed nearly 6,000,000 AMI modules throughout the SoCalGas  
10 service territory. These modules are mounted on the gas meter as an additional piece of  
11 telemetry/communications equipment. Approximately 96,500 modules will be maintained by  
12 Gas Distribution, with the balance being maintained by Customer Service Field. The costs  
13 associated with Customer Service are discussed by Ms. Marelli (Ex. SCG-18).

14 As with any asset, there is ongoing maintenance for which costs must be accounted.  
15 Based on the experience with the AMI module units installed to date, there is an estimated  
16 annual failure rate of approximately 1.92% for advanced meters maintained by M&R. For the  
17 purposes of this forecast, it is assumed that a simple module replacement will be the full scope of  
18 work needed to respond to approximately 1,900 maintenance work orders annually. Additional  
19 details can be found in supplemental workpaper SCG-04-GOM-O&M-SUP-010, located under  
20 M&R in Ex. SCG-04-WP. The funding to address this incremental requirement is \$264,000 over  
21 the base forecast for TY 2019.

22 In order to perform this incremental meter remediation, SoCalGas is adding one  
23 incremental medium truck in TY 2019. The costs associated with these vehicles are discussed by  
24 Ms. Herrera (Ex. SCG-23).

25 **ii. Meter Transmission Unit (MTU) Battery Replacements**

26 As part of the AMI project, Meter Transmission Units (MTU) were installed within the  
27 Gas Distribution system. These units are attached to either an electronic pressure monitor (EPM)  
28 or an electronic volume corrector (EVC). During the annual MTU inspection, the battery will be  
29 inspected and if required, replaced. It is estimated that approximately 3,000 MTU batteries will  
30 be replaced annually. The funding to address this incremental requirement is \$120,000 over the  
31 base forecast for TY 2019.

1 **iii. Fueling Our Future**

2 A net FOF benefit savings of \$60,000 is included in TY 2019 for M&R. This saving is  
3 related to changes in equipment used for pre-fabricated regulator stations and meter set  
4 assemblies that reduce maintenance cost. Specifically, EZR regulators will be replaced with  
5 Mooney regulators and 8C-15 rotary meters will be replaced with AC800 diaphragm meters.  
6 Table GOM-17 provides a summary of the FOF ongoing cost efficiencies associated with these  
7 changes.

8 **Table GOM-17**  
9 **Southern California Gas Company**  
10 **FOF Benefit Savings (-)**

FOF (In 2016 \$) - Benefit Savings (-)	Estimated 2017 (000s)	Estimated 2018 (000s)	Estimated 2019 (000s)
Measurement & Regulation – Benefit Savings	-60	-60	-60

11 **iv. Advanced Metering Infrastructure (AMI) Benefits**

12 A net AMI benefit savings of \$741,000 is included in TY 2019 for M&R, related to  
13 SoCalGas transitioning approximately 2,000 Electric Pressure Monitors (EPMs) on to its AMI  
14 communication network which will reduce the communication costs currently paid to third  
15 parties. The EPMs are used to monitor pipeline pressure throughout the service territory and  
16 currently communicates using landline or IP telecommunication through a third-party. The AMI  
17 network eliminates the need and expense for each EPM to have its own external telecom line.

18 **c. Cost Drivers**

19 Work activities within the M&R workgroup are driven by regulatory requirements as  
20 well as the need to safeguard the safety and integrity of the pipeline system, thus mitigating risks  
21 associated with hazards to public and employee safety and system reliability. Cost drivers  
22 associated with this workgroup include the inspections that must be completed at each of the  
23 facilities maintained by the M&R team (e.g., regulation stations, valves, MSAs,  
24 pressure/volumetric correctors, and electronic pressure monitors); the follow-up maintenance  
25 identified by these inspection results; the recurring routine, scheduled maintenance work;  
26 unscheduled maintenance work (e.g., unexpected malfunction of a device); emergency support  
27 (e.g., system shut down to respond to a damage, pressure incident, or major event as in the case  
28 of an earthquake); and support of general operations requirements (e.g., 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.

Furthermore, the RAMP Report identified the need to continue M&R activities to respond to the incremental work anticipated in the forecast period. The costs associated with this RAMP activity are included in the M&R base forecast for TY 2019.

**4. Cathodic Protection**

Without proper intervention, buried steel pipelines will corrode by reverting back to their natural state as an iron oxide. 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 GOM-18 below summarizes Gas Distribution O&M costs associated with CP activities.

**Table GOM-18  
Southern California Gas Company  
Cathodic Protection**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
4. Cathodic Protection	14,403	18,322	3,919

**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 activities.

1 Activities for the inspection and evaluation of the CP system on SoCalGas' steel  
2 distribution pipelines are undertaken to maintain the longevity and performance of SoCalGas'  
3 distribution steel pipeline system and are performed by system protection specialists responsible  
4 for maintaining compliance with 49 C.F.R. § 192.465 (External corrosion control: Monitoring).  
5 Inspection and evaluation of the pipelines' CP system can include: checking rectifiers for proper  
6 operation, identifying the location of interface bonds, evaluating "short circuits," identifying  
7 locations for installation of anodes for continued pipe protection, and taking pipe-to-soil readings  
8 to evaluate electric current levels. Based on the results of these monitoring activities,  
9 replacement, upgrade, or alteration of CP system components may be planned.

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

16 Examples of maintenance activities performed within this workgroup include:

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

24 The cathodic protection activity is a mitigation measure supporting three top safety risks  
25 identified in the RAMP Report and discussed in Section II above: (1) Employee, Contractor,  
26 Customer, and Public Safety, (2) Catastrophic Damage Involving High-Pressure Pipeline Failure,  
27 and (3) Catastrophic Damage Involving Medium-Pressure Pipeline Failure. This cost supports  
28 the safety and reliability of SoCalGas' system by performing the CP maintenance to prevent  
29 corrosion and extend the life of the distribution pipelines.



1                                   **b.       Forecast Method**

2               In developing the TY 2019 forecast, historical expenditures and work units for 2012  
3 through 2016 were evaluated. As discussed above, there are several factors that will continue to  
4 place pressure on the maintenance of the CP system. Multiple CP activities are covered in this  
5 workgroup as well as several factors that influence the level of spending in a given year. These  
6 factors include increasing aging infrastructure, municipality requirements, and material  
7 degradation. The CP costs have experienced an upward trend in cost associated with multiple  
8 work drivers, as discussed in the Cost Drivers section below. SoCalGas does not see this trend  
9 reversing. Therefore, a five-year (2012 through 2016) historical linear trend was used to forecast  
10 the base expense for this workgroup. Using a simple average forecasting method would not be  
11 appropriate for this work category, as it would not sufficiently fund critical compliance and  
12 maintenance work for the anticipated growing work requirements. The base forecast results in  
13 an increase of \$3,316,000 in TY 2019 over the 2016 adjusted recorded base.

14               In order to perform the incremental work associated with this work category, SoCalGas is  
15 adding four incremental light duty trucks in 2017, five in 2018, and six in 2019. The costs  
16 associated with these vehicles are discussed by Ms. Herrera (Ex. SCG-23).

17               Added to this base are incremental work elements not reflected in the base forecast to  
18 adequately fund CP activities in TY 2019. These work elements are described below. The total  
19 incremental funding for this workgroup, including the base forecast and incremental increases, is  
20 \$3,919,000 over the 2016 adjusted recorded base for TY 2019.

21                                   **i.       Incremental Cathodic Protection System Enhancement**

22               SoCalGas uses a method known as “100 mV (millivolt) shift” to test the effectiveness of  
23 over 1,300 of its cathodic protection areas. Based on feedback from the Commission’s Safety  
24 and Enforcement Division (SED) during a Safety Audit and upon further review, SoCalGas  
25 issued new guidelines requiring the re-evaluation of existing 100 mV shift areas at least every  
26 10 years to verify their effectiveness as a measurement for adequate cathodic protection of the  
27 area. SoCalGas will reevaluate 75 CP packages in 2018 and 175 CP packages annually starting  
28 in TY 2019. This incremental work activity supports the safety and integrity of the system and  
29 adds a mitigation measure in support of the three RAMP risks discussed above in Description of  
30 Costs and Underlying Activities. Additional details can be found in supplemental workpaper

1 SCG-04-GOM-O&M-SUP-003, located under Cathodic Protection in Ex. SCG-04-WP. The  
2 funding to address this incremental requirement is \$650,000 over the base forecast for TY 2019.

3 In order to perform this incremental CP work, SoCalGas is adding three incremental light  
4 duty truck in 2018 and four in TY 2019. The costs associated with this vehicle are discussed by  
5 Ms. Herrera (Ex. SCG-23).

6 **ii. Fueling Our Future**

7 A net FOF benefit savings of \$47,000 is included in the TY 2019 request for Cathodic  
8 Protection. The savings will be accomplished by implementing work processes that allow  
9 employees to job site report instead of reporting to the operations base, on several days out of the  
10 work week. The savings will be accomplished by reducing the drive time at the beginning and  
11 end of the shift. Table GOM-19 provides a summary of the FOF ongoing benefit cost  
12 efficiencies.

13 **Table GOM-19**  
14 **Southern California Gas Company**  
15 **FOF Benefit Savings (-)**

<b>FOF (In 2016 \$) - Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
Cathodic Protection - Benefit Savings (-)	-12	-47	-47

16  
17 **c. Cost Drivers**

18 Work activities within the Cathodic Protection workgroup are driven by regulatory  
19 requirements<sup>23</sup> as well as the need to safeguard the integrity of the pipeline system and minimize  
20 future corrosion-related leaks, thus mitigating risks associated with hazards to public safety. The  
21 basic cost drivers for this workgroup are the compliance inspections and associated evaluations  
22 (troubleshooting), as well as planned and unplanned maintenance actions that must be completed  
23 each year for each CP area and isolated CP segment. These maintenance activities include  
24 replacing, upgrading, or altering components of the CP system such as anodes, rectifiers, anode  
25 beds, bonds, test points, electric drops, anode wells, and insulators. Many of these activities are  
26 driven by the age of the system components, with generally older elements requiring more  
27 maintenance.

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<sup>23</sup> See e.g., 49 C.F.R. § 192.465 (External corrosion control: Monitoring).

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

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

14 In addition, the RAMP Report identified the need to continue corrosion control activities  
 15 to respond to the incremental work anticipated in the forecast period. The costs associated with  
 16 this RAMP activity are included in the Corrosion Control base forecast for TY 2019.

17 **5. Main Maintenance**

18 The main maintenance work in this workgroup is designed to meet federal (49 C.F.R. §  
 19 192) and state (GO 112-F, SB 1371) pipeline safety regulations and to extend the life of  
 20 distribution main pipelines and related infrastructure. Table GOM-20 below summarizes Gas  
 21 Distribution O&M costs associated with Main Maintenance activities.

22 **Table GOM-20**  
 23 **Southern California Gas Company**  
 24 **Main Maintenance**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
5. Main Maintenance	11,383	20,772	9,389

1                                   **a.       Description of Costs and Underlying Activities**

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

- 5           • Leak evaluation;
- 6           • Leak repairs;
- 7           • Franchise alterations;
- 8           • Compliance maintenance; and
- 9           • Miscellaneous main maintenance.

10           Main leak evaluation and repair work is generally completed to mitigate risks associated  
11 with hazards to public safety, and to address infrastructure condition, and material degradation.  
12 Main leaks in the gas distribution system are often identified through SoCalGas’ leak surveys, by  
13 field service personnel while completing other field work assignments, and via customer calls.  
14 In responding, SoCalGas completes a process of identification and evaluation. Leaks are  
15 prioritized for ongoing field response based on a number of factors including location,  
16 concentration of gas, and potential hazard to the public and property. Federal and state pipeline  
17 safety regulations require operators to take immediate action to contain hazardous leaks (referred  
18 to as “Code 1” within SoCalGas) and to repair them promptly. Non-hazardous leaks are  
19 prioritized based on their potential to become hazardous and are repaired within 15 months or re-  
20 evaluated until their classification changes. With the Commission’s approval of SB 1371’s new  
21 Best Practice requirements, starting in June 2017, non-hazardous leaks must be repaired in a  
22 period not to exceed three years. Main leak repairs generally require excavating in public and  
23 private property to determine the exact location of the leak and make repairs. This work often  
24 involves setting up traffic control, cutting pavement or concrete, excavating, and repairing main  
25 pipe facilities; followed by backfilling the excavation, compacting the soil, and making  
26 permanent repairs to pavement and landscaping.

27           SoCalGas holds numerous franchise agreements with the municipalities in its 20,000  
28 square-mile service territory. These agreements, which outline the terms under which SoCalGas  
29 utilizes public rights-of-way, normally require the relocation or alteration of SoCalGas facilities  
30 if they conflict with municipality projects. Some typical projects that impact SoCalGas facilities  
31 include street resurfacing, widening, or complete reconstruction. These projects can require

1 maintenance activity by SoCalGas ranging from raising valve lids and casings after they are  
2 paved over, to completely relocating SoCalGas pipelines to facilitate street reconstruction. Other  
3 typical municipality projects include sewer and water pipeline maintenance, replacement, or new  
4 installation. These projects can also require work by SoCalGas to avoid a conflict with the  
5 municipality's proposed construction, which can range from altering the elevation of segments of  
6 SoCalGas pipelines in their present locations to relocating segments of pipeline or related  
7 facilities completely. Franchise work is a municipality-driven requirement; therefore, the impact  
8 to SoCalGas can vary significantly, depending on available municipality funds to complete the  
9 projects.

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

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

19 The miscellaneous main maintenance category consists of the following activities:

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

25 The main maintenance activity is a mitigation measure supporting three top safety risks  
26 identified in the RAMP Report and discussed in Section II above: (1) Employee, Contractor,  
27 Customer, and Public Safety, (2) Catastrophic Damage Involving High-Pressure Pipeline Failure,  
28 and (3) Catastrophic Damage Involving Medium-Pressure Pipeline Failure. The cost associated  
29 with main maintenance supports SoCalGas' commitment to mitigate risks associated with  
30 hazards to public safety, infrastructure integrity, and system reliability. Furthermore, this request

1 supports SoCalGas’ ability to achieve the objective set forth in SB 705 to “[p]rovide timely  
2 response to customer and employee reports of leaks and other hazardous conditions and  
3 emergency events...”<sup>24</sup>

4 **b. Forecast Method**

5 In developing the TY 2019 forecast, historical expenditures and work units for 2012  
6 through 2016 were evaluated. In addition to the labor and non-labor costs, the main maintenance  
7 workgroup contains credits collected from third parties to compensate for damages caused to the  
8 gas pipeline system during excavation activities. The Main Maintenance costs have experienced  
9 an upward trend in costs associated with multiple work drivers, as discussed in the Cost Drivers  
10 section below. SoCalGas does not see this trend reversing.

11 Regulatory/legislative pressures continue to increase, the infrastructure is getting older,  
12 and municipality work and general construction continues to increase. Therefore, a five-year  
13 (2012 through 2016) historical linear trend was used to forecast base expenses for these  
14 workgroup components. Using a simple average forecasting method would not be appropriate  
15 for this work category, as it would not sufficiently fund critical compliance and maintenance  
16 work for the anticipated growing work requirements.

17 For the damage credits component of this workgroup, SoCalGas used a five-year (2012  
18 through 2016) average to forecast future expense. This option is best suited for these activities,  
19 given the unpredictability of damages – both in terms of frequency and severity - and the timing  
20 of collecting funds from third parties. Furthermore, the collection of the damage credit can occur  
21 in a different year as the damage itself. Given this uncertainty and variability, a five-year  
22 average for damage credits is the best forecast option. The base forecast for this workgroup  
23 results in an increase of \$4,633,000 in TY 2019 from the 2016 adjusted recorded base.  
24 Additional details may be found in supplemental workpaper SCG-04-GOM-O&M-SUP-002,  
25 located under Main Maintenance in Ex. SCG-04-WP.

26 In order to perform the incremental work associated with this work category, SoCalGas is  
27 adding one incremental crew truck in 2018. The costs associated with these vehicles are  
28 discussed by Ms. Herrera (Ex. SCG-23).

29 Added to this base is an incremental work element not reflected in the base forecast to  
30 adequately fund main maintenance activities in TY 2019. This work element is described below.

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<sup>24</sup> Cal. Pub. Util. Code § 961(d)(6).

1 The total incremental funding for this workgroup, including the base forecast and the incremental  
2 increase, is \$9,389,000 over the 2016 adjusted recorded base for TY 2019.

3 **i. Leak Repairs**

4 In the TY 2016 GRC, SoCalGas committed to repairing an incremental 800 main leaks in  
5 2015 and 1,600 main leaks every year starting in 2016 to reduce its inventory (also known as its  
6 “backlog”) of pending non-hazardous leaks, and requested funding of \$2.02 million in TY 2016  
7 (in 2013 dollars). Based on this data, for the TY 2016 forecast, the total leak repairs assumed to  
8 reduce the inventory for the period 2015 through 2018 was 5,600 leaks. In order to fulfill its TY  
9 2016 GRC commitment as well as the settlement with the Environmental Defense Fund (EDF) to  
10 continue to work together in good faith to determine a plan of repair for the non-hazardous leak  
11 inventory,<sup>25</sup> SoCalGas has forecasted in this TY 2019 GRC an increase in the number of  
12 incremental leak repairs in 2017 and 2018 to 2,800 and 4,870, respectively for a total of 7,670  
13 over this two-year period because the inventory has gone up since those assumptions were made  
14 in 2014. As such, anything incremental to those assumptions would require additional funding  
15 beyond the levels authorized in the TY 2016 GRC Decision (D.) 16-06-054. SoCalGas  
16 anticipates an incremental expense of approximately \$19.2 million over these two years to  
17 complete the incremental work.

18 Impacts from new or more stringent regulatory requirements as well changes in work  
19 practices and more sensitive detection equipment implemented to strengthen leak identifications  
20 and repair practices are increasing the number of leaks found as well as the time it takes to repair  
21 leaks. The changes in equipment and leak repair standard support SoCalGas’ commitment to  
22 increasing the safety and integrity of its pipeline system, and the safety of employees, contractors  
23 and the public. Another upward pressure driving the number of leaks found is the accelerated  
24 leak survey SoCalGas will implement during this GRC period.

25 Given SoCalGas commitment to reducing its previous TY 2016 GRC leak inventory by  
26 the end of 2018 and also addressing the incremental portion driven by the anticipated increase in  
27 leaks found, SoCalGas forecasts repairing approximately 2,800 leaks in 2017, 4,870 leaks in  
28 2018, and 2,400 leaks in TY 2019 over the base forecast. Additional details can be found in  
29 supplemental workpaper SCG-04-GOM-O&M-SUP-001, located under Main Maintenance in

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<sup>25</sup> See the Compliance testimony of Jamie York (Exhibit SCG-45/SDG&E-44).

1 Ex. SCG-04-WP. The impact from the work to address incremental main leaks found is  
2 \$6,000,000 over the base forecast in TY 2019.

3 The funding request for the leak repairs covered in my testimony does not overlap with  
4 the leak abatement program's cost recovery mechanism that will be implemented as part of  
5 SB1371.<sup>26</sup> The main drivers of the leak repair costs included in my testimony are intertwined  
6 with safety-related work (e.g., acceleration of leak survey cycles) and building upon previous  
7 GRC commitments (TY 2016 GRC and EDF Settlement) to reduce the inventory, even though  
8 these repairs will also have a secondary benefit of reducing methane emissions. In contrast, the  
9 main driver for SB 1371 is reducing methane emissions and therefore focuses on addressing  
10 emerging, non-hazardous leaks on steel pipes, for which current state and federal codes<sup>27</sup> do not  
11 require a specific repair schedule.

12 **ii. Fueling Our Future**

13 A net FOF benefit savings of \$1,244,000 is included in TY 2019 for Main Maintenance.  
14 This includes a benefit in the amount of \$969,000 associated with optimizing procurement  
15 strategies for Gas Distribution, as discussed by Ms. Willoughby (Ex. SCG-22/SDG&E-20). In  
16 addition, SoCalGas will add construction crews to develop bench strength and improve technical  
17 skills of field personnel thus optimizing crew mix. This will include transferring some of the  
18 less complex paving repair work from contractor to company crew with the objective of  
19 completing this work in a more cost-effective manner. The implementation cost applied to 2017  
20 involves additional crews and required tools. These tools will enable a more efficient way of  
21 completing necessary paving in 2017, 2018, and TY 2019. Table GOM-21 provides a summary  
22 of the FOF implementation costs and ongoing benefit savings.

23 **Table GOM-21**  
24 **Southern California Gas Company**  
25 **FOF Implementation Costs (+) and Benefit Savings (-)**

<b>FOF (In 2016 \$) - Implementation Costs (+) and Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
Main Maintenance – Implementation Cost	60	0	0
Main Maintenance – Benefit Savings	-348	-1,222	-1,244

<sup>26</sup> On June 19, 2017, the Commission issued a final Phase 1 Decision 17-06-015 in R.15-01-008 to implement SB 1371's Natural Gas Leak Abatement Program (NGLAP).

<sup>27</sup> See 49 C.F.R. § 192 *et seq.* and GO 112-F.



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**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. As discussed in Section III.A.2 – Leak Survey, SoCalGas will be accelerating the leak survey cycles for high-pressure and pre-1986 pipes. This will likely result in finding additional leaks.
- 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

1 includes damage to pipeline protective coatings or deformation of the pipeline  
2 without causing an immediate leak. These repairs are also completed as part of this  
3 work category.

- 4 • The level of work completed by municipalities such as street resurfacing, widening,  
5 or reconstruction; and sewer and water pipeline maintenance, replacement or new  
6 installations. Per its franchise agreements, SoCalGas is required to complete  
7 associated maintenance activities, such as raising or lowering SoCalGas valve casings  
8 and lids; altering the elevation of segments of SoCalGas pipelines in their present  
9 locations; or relocating segments of pipeline or related facilities completely. The  
10 impact to SoCalGas can vary significantly, depending on available municipality  
11 funds, which may be driven by economic conditions.
- 12 • The level of construction activities performed by SoCalGas that require the repair of  
13 uneven paving related to its construction activities in private and public property.
- 14 • Government regulations can also impact this work category as a result of more  
15 stringent requirements. As previously discussed, SoCalGas is taking action to reduce  
16 its inventory of pending non-hazardous leaks and repair all leaks consistent with the  
17 timelines in 49 C.F.R. § 192, GO 112-F, and SB 1371.
- 18 • Other drivers include the cost for materials, paving, permitting, and special  
19 municipality construction requirements. As these cost pressures increase, they impact  
20 the overall cost for this activity.

21 Furthermore, the RAMP Report identified the need to continue maintenance and  
22 operations activities to further address the risk of catastrophic damage involving a medium- or  
23 high-pressure pipeline failure. The incremental RAMP costs are identified above. Other costs  
24 associated with this RAMP activity are included in the Main Maintenance base forecast for TY  
25 2019.

## 26 **6. Service Maintenance**

27 The work in this workgroup is designed to meet federal (49 C.F.R. § 192) and state, (GO  
28 112-F) pipeline safety regulations and to extend the life of the distribution service pipeline  
29 system. Service maintenance work is generally corrective in nature and is required to keep the  
30 natural gas system operating safely and reliably. Table GOM-22 below summarizes Gas  
31 Distribution O&M costs associated with Service Maintenance activities.

**Table GOM-22**  
**Southern California Gas Company**  
**Service Maintenance**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
6. Service Maintenance	10,339	16,997	6,658

**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;
- MSA alterations and meter guard replacements; and
- 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 follow the process discussed in the Main Maintenance section above, for identification, investigation, coding, prioritization and repair.

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:

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

4 The service maintenance activity is a mitigation measure supporting three top safety risks  
5 identified in the RAMP Report and discussed in Section II above: (1) Employee, Contractor,  
6 Customer, and Public Safety, (2) Catastrophic Damage Involving High-Pressure Pipeline Failure,  
7 and (3) Catastrophic Damage Involving Medium-Pressure Pipeline Failure. The cost associated  
8 with service maintenance supports SoCalGas' commitment to mitigate risks associated with  
9 hazards to public safety, infrastructure integrity, and system reliability.

#### 10 **b. Forecast Method**

11 In developing the TY 2019 forecast, historical expenditures and work units for 2012  
12 through 2016 were evaluated. There are multiple service maintenance activities covered in this  
13 workgroup as well as a variety of factors that influence the level of work and associated spending  
14 for this workgroup, including an aging infrastructure, government regulations, public safety,  
15 customer requests, municipality requirements, material failure, infrastructure condition, and  
16 economic conditions. In addition, changes in work practices and use of new more sensitive  
17 equipment will continue to increase the cost to complete service leak repair work as well as work  
18 associated with clearing residual gas from house-line leaks.<sup>28</sup> Given these continuing upward  
19 pressures from a variety of drivers, SoCalGas used a five-year (2012 through 2016) linear trend  
20 to forecast the base level of funding needed for TY 2019. Using an average or base year  
21 forecasting method would not be appropriate for this work category as it would not provide  
22 sufficient funding for the level of work anticipated in the future for this critical compliance and  
23 maintenance activity. The five-year linear trend base forecast results in an increase of  
24 \$1,995,000 in TY 2019 from the 2016 adjusted recorded base.

25 In order to perform the incremental work associated with this work category, SoCalGas is  
26 adding three incremental crew trucks in 2017, one in 2018, and one in 2019. The costs  
27 associated with these vehicles are discussed by Ms. Herrera (Ex. SCG-23).

28 Added to this base are incremental work elements not reflected in the base forecast to  
29 adequately fund service maintenance activities in TY 2019. These work elements are described

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<sup>28</sup> "House-line" refers to the gas line beyond the meter, owned by the home or business.

1 below. The total incremental funding for this workgroup, including the base forecast and the  
2 incremental increase, is \$6,658,000 over the 2016 adjusted recorded base for TY 2019.

3 **i. MSA Maintenance and Meter Guard Activities**

4 As discussed by Ms. Marelli (Ex. SCG-18), in 2016 SoCalGas implemented a focused  
5 MSA inspection program to comply with atmospheric corrosion code requirements<sup>29</sup> and to do a  
6 more thorough review of conditions at the MSA. As Customer Services increases the number of  
7 MSA inspections, the amount of work orders generated for maintenance follow up will continue  
8 to increase. This includes work items such as repair or replacement of risers, service valves,  
9 small MSAs, and meter guards. Work elements that present a hazard are addressed immediately,  
10 while work elements associated with non-hazardous conditions have varying compliance  
11 schedules, not to exceed the next 3-year inspection cycle. This incremental work supports the  
12 safety and integrity of the system and adds a mitigation measure in support of the RAMP risks  
13 discussed above in Description of Costs and Underlying Activities.

14 **a. MSA Maintenance Activities**

15 The “riser” is the downstream end of the service line which extends above ground and  
16 connects to the customer MSA. Dependent upon design, some risers may be susceptible to  
17 corrosion. SoCalGas inspects for corrosion at the riser, during the MSA Inspection work as  
18 discussed above or any time a Company technician performs work at the MSA, and repairs or  
19 replaces the riser depending on the amount of corrosion found. Service valves are located on the  
20 riser, above ground, just before the meter. To address the continuing increase in maintenance  
21 work associated with riser and service valve work, SoCalGas anticipates addressing  
22 approximately 1,500 orders in 2017; 3,000 in 2018; and 8,500 in TY 2019. This section covers  
23 the labor cost for this activity, while the non-labor costs are found in the Tools, Fittings, and  
24 Materials section of this testimony. The incremental labor cost for this safety-related work is  
25 \$1,523,000 over the base forecast for TY 2019. Additional details may be found in supplemental

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<sup>29</sup> See 49 C.F.R. §192.481 (Atmospheric corrosion control: Monitoring).

1 workpaper SCG-04-GOM-O&M-SUP-007, located under Service Maintenance in Ex. SCG-04-  
2 WP.

3 In order to perform this incremental inspection work, SoCalGas is adding three  
4 incremental heavy-duty trucks in 2018 and five in TY 2019. The costs associated with these  
5 vehicles are discussed by Ms. Herrera (Ex. SCG-23).

6 **b. Meter Guard Activities**

7 Meter Guards (barricades) are installed to protect the MSA at existing customer locations  
8 from vehicular traffic in accordance with state and federal code.<sup>30</sup> The meter guards are initially  
9 installed at targeted sites where traffic is a consideration to protect MSAs susceptible to damage.  
10 Over time these meter guards may get damaged or deteriorate and require maintenance or  
11 replacement. To address the continuing increase in maintenance work associated with meter  
12 guard work, SoCalGas anticipates addressing approximately 500 orders in 2017, 1,000 in 2018,  
13 and 3,500 in TY 2019. This section covers the labor cost for this activity, while the non-labor  
14 costs are found in the Tools, Fittings, and Materials section of this testimony. The incremental  
15 labor cost for this safety-related work is \$1,109,000 over the base forecast for TY 2019.  
16 Additional details may be found in supplemental workpaper SCG-04-GOM-O&M-SUP-006,  
17 located under Service Maintenance in Ex. SCG-04-WP.

18 In order to perform this incremental inspection work, SoCalGas is adding one  
19 incremental heavy-duty trucks in 2018 and four in TY 2019. The costs associated with these  
20 vehicles are discussed by Ms. Herrera (Ex. SCG-23).

21 **ii. Chronically Inaccessible MSAs - Disconnect Services**

22 As discussed by Ms. Marelli (Ex. SCG-18), SoCalGas continues to face the issue of  
23 chronically inaccessible MSAs. This refers to meters that Company personnel are unable to  
24 access after multiple attempts. After Customer Services personnel attempts to reach the  
25 customer to gain access to the MSA using different communication options such as letter, phone,  
26 and in person; a final notification is sent notifying the customer that service will be cut in the  
27 street if SoCalGas is unable to access the meter to complete the inspection work. Gas  
28 Distribution crews cut and cap the gas service line at the service to main connection. SoCalGas  
29 anticipates addressing approximately 364 service disconnections in 2018 and 709 in TY 2019.

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<sup>30</sup> See GO 112-F and 49 C.F.R. § 192.353(a) (Customer meters and regulators: Location).

1 This section covers the labor, non-labor, and paving costs associated with this pending activity.  
2 This incremental safety-related work represents a TY 2019 increase of \$2,106,000 over the base  
3 forecast. Additional details may be found in supplemental workpaper SCG-04-GOM-O&M-  
4 SUP-011, located under Service Maintenance in Ex. SCG-04-WP.

5 In order to perform this incremental inspection work, SoCal gas is adding three  
6 incremental heavy-duty trucks in 2018 and three in TY 2019. The costs associated with these  
7 vehicles are discussed by Ms. Herrera (Ex. SCG-23).

8 **iii. Fueling Our Future**

9 A net FOF benefit savings of \$75,000 is included in the TY 2019 request for Service  
10 Maintenance. This benefit will be accomplished by implementing a new routing tool, with the  
11 purpose of providing better directions to a specific location, which in turn can reduce the drive  
12 time for the associated order. Table GOM-23 is a summary of the FOF ongoing benefit cost  
13 savings for Service Maintenance.

14 **Table GOM-23**  
15 **Southern California Gas Company**  
16 **FOF Ongoing Benefit Savings (-)**

<b>FOF (In 2016 \$) - Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
Service Maintenance – Benefit Savings	0	-75	-75

17  
18 **c. Cost Drivers**

19 The work completed in this workgroup is driven by the requirement to meet federal and  
20 state pipeline safety regulations and the objective to protect the integrity of the pipeline system  
21 through activities that extend its life. These activities support SoCalGas’ commitment to  
22 mitigate risks associated with hazards to public safety, infrastructure integrity, and system  
23 reliability. As outlined above, multiple factors influence the level of spending on service  
24 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. As discussed in Section III.A.2 – Leak Survey, SoCalGas will be accelerating the leak

1 survey cycles for high-pressure and pre-1986 pipes. This will likely result in finding  
2 additional leaks. In addition, changes in work practices and use of new more  
3 sensitive equipment can also impact the cost to complete a service leak repair as well  
4 as time required clear residual gas from house-line leaks.

- 5 • The level of customer requests to have their gas service lines and MSAs altered to  
6 accommodate property improvements. Such improvements to existing homes and  
7 businesses are often economy driven. This also includes removing abandon service  
8 pipe.
- 9 • SoCalGas is required to alter its gas service lines and MSAs to correct unsafe  
10 conditions or changes in customer load usage. This also includes the replacement of  
11 meter guards; work to change, raise, or lower service valves; and repairing or  
12 replacing curb valves or meter boxes.
- 13 • The level of repairs on facilities damaged by third parties, outside sources, or natural  
14 causes, such as fire or rain.
- 15 • Government regulations can also impact this work category as a result of more  
16 stringent requirements. As previously discussed, SoCalGas is taking action to  
17 significantly reduce leaks.
- 18 • Other drivers include the cost for materials, paving, permitting, and special  
19 municipality construction requirements. As these cost pressures increase, they impact  
20 the overall cost for this activity.

21 Furthermore, the RAMP Report identified the need to continue maintenance and  
22 operations activities to further address the risk of catastrophic damage involving a medium- or  
23 high-pressure pipeline failure. The incremental RAMP costs are identified above. Other costs  
24 associated with this RAMP activity are included in the Service Maintenance base forecast for  
25 TY 2019.

## 26 **7. Field Support**

27 Recorded to the Field Services workgroup are a variety of support services to  
28 successfully complete daily Gas Distribution O&M activities. Table GOM-24 below  
29 summarizes Gas Distribution O&M costs associated with Field Support activities.



**Table GOM-24**  
**Southern California Gas Company**  
**Field Support**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
7. Field Support	19,402	21,069	1,667

**a. Description of Costs and Underlying Activities**

A variety of support services 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 front-line 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 the Summary of Costs and 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' front-line 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

1 retention of local construction permits, maintenance work orders, customer requests, and many  
2 other critical documents. They are also responsible for maintaining payroll for the field and  
3 office workforce.

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

9 Off-production time refers to the hours that are paid while field employees are not  
10 actively involved in field operations and maintenance activities. An example of such time is  
11 time spent attending skills training classes. Employees attend training because they are new to  
12 their job, require operator qualification, receive ongoing refresher training, are promoted to a  
13 position requiring additional technical skills, or need additional training for new equipment, new  
14 technology, or changes in Company policies or external regulations. Other labor hours recorded  
15 to off-production time include participation in activities such as meetings on safety, customer  
16 satisfaction, general communications, completion of audits of base operations, and stocking  
17 trucks with tools and fittings. Off-production activities maintain a proficient and effective field  
18 workforce and meet regulatory requirements.

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

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

1 request. Often these requests to remove abandoned pipe are made well after the capital main  
2 abandonment project is completed, which results in an increase in O&M expense.

3 Several work elements covered in the Field Support workgroup, such as training,  
4 employee qualification and tools and materials, are mitigation measures supporting five top  
5 safety risks identified in the RAMP Report and discussed in Section II above: (1) Catastrophic  
6 Damage Involving Third-Party Dig-Ins; (2) Employee, Contractor, Customer, and Public Safety,  
7 (3) Catastrophic Damage Involving High-Pressure Pipeline Failure, and (4) Catastrophic  
8 Damage Involving Medium-Pressure Pipeline Failure. The Field Support cost supports the  
9 safety and reliability of SoCalGas' system by providing field support, supervision, and required  
10 employee training and qualification.

#### 11 **b. Forecast Method**

12 In developing the TY 2019 forecast, historical expenditures and work units for 2012  
13 through 2016 were evaluated. There are several activities covered in this area as well as multiple  
14 factors that influence costs for this workgroup. Generally, the services provided within the Field  
15 Support workgroup are driven by the amount of field work to be completed, the need for  
16 contractor support, the complexity of jobs, the number of employees, and incremental operations,  
17 compliance, and safety requirements that impact the Gas Distribution workforce.

18 SoCalGas is experiencing an increase in regulatory pressures, such as additional CPUC  
19 audits, GO 112-F, and SB 661 which result in more record-keeping and research activities. With  
20 the projected incremental work in Gas Distribution Field O&M categories; there will be an  
21 increase in work activities within this workgroup, such as clerical, dispatch, training and  
22 supervision.

23 Given these growing influences, SoCalGas determined that a five-year (2012 through  
24 2016) historical average forecast best reflects future requirements for this workgroup. Using a  
25 linear trend or base year forecasting method would not be appropriate for this work category as it  
26 would not provide sufficient funding for the level of work anticipated in the future. Therefore, a  
27 five-year average base forecast results in a \$1,178,000 increase over the 2016 adjusted recorded  
28 base in TY 2019.

29 In order to perform the incremental work associated with this work category, SoCalGas is  
30 adding six incremental heavy-duty trucks in 2017. The costs associated with these vehicles are  
31 discussed by Ms. Herrera (Ex. SCG-23).

1 Added to this base are incremental work elements not reflected in the base forecast to  
2 adequately fund Field Support activities in TY 2019. These work elements are described below.  
3 The total incremental funding for this workgroup, including the base forecast and incremental  
4 increases, is \$1,667,000 over the 2016 adjusted recorded base for TY 2019.

5 **i. Office Instructors**

6 SoCalGas will add an Office Instructor to support the development of Dispatch  
7 personnel. During the execution of many work elements, The Area Resource Scheduling  
8 Organization (ARSO), including the Dispatch group, remains the hub among the field personnel,  
9 technical experts, contractor representatives, and city officials for communication, coordination,  
10 and scheduling of work. Given the incremental work elements projected within this GRC period,  
11 work requirements within the ARSO will increase. A new Dispatcher must quickly become  
12 familiar with all Gas Standards, policies, and work processes required to support field personnel  
13 and meet compliance requirements. The new Office Instructor will coach and oversee the  
14 development of new dispatch employees as they return from completing formal training;  
15 including assessing how well they perform daily duties, monitoring learning effectiveness and  
16 knowledge retention, and curriculum relevance. The primary focus of the Office Instructor will  
17 be on compliance related tasks assigned to the ARSO dispatcher role. The funding needed for  
18 this incremental requirement is \$105,000 over the base forecast for TY 2019.

19 **ii. Field Operations Supervisors**

20 Given the incremental work elements discussed throughout the Field Operations and  
21 Maintenance section of my testimony and the associated growth in personnel needed to complete  
22 this work, it will be necessary to increase the number of field supervisors providing work  
23 direction, mentoring and on the job training. Field Supervisors also fulfill on-call responsibilities  
24 to respond along with field crews to off-hour emergencies such as gas line breaks, damaged gas  
25 facilities, and gas leak investigations. Supervisors encourage and counsel employees to work  
26 safely, follow Company procedures, deliver superior customer support, and build and maintain a  
27 safe and reliable natural gas delivery system. SoCalGas plans to hire three Field Supervisors in  
28 2017, three for 2018, and an additional three for TY 2019, resulting in a total of nine incremental  
29 full time Field Supervisors during TY 2019. The funding for the incremental requirement is  
30 \$945,000 over the base forecast for TY 2019.

1 In order to provide for the field supervisors, SoCalGas is adding six incremental light-  
2 duty trucks in 2018 and three in TY 2019. The costs associated with these vehicles are discussed  
3 by Ms. Herrera (Ex. SCG-23).

4 **iii. Hydraulic Valve Maintenance**

5 The PSEP Valve Enhancement Plan supports system safety by installing and upgrading  
6 valve infrastructure that provides automatic and remote isolation and depressurization of the  
7 distribution supply line system in 30 minutes or less in the event of a pipeline rupture. PSEP  
8 plans to install six valves in 2017 and four in 2018 on distribution supply lines. After the  
9 installation, Gas Distribution will handle the required annual maintenance of these hydraulic  
10 valves. This incremental safety-related work will require a combined labor and non-labor cost of  
11 \$5,000 for TY 2019.

12 **iv. RAMP – Risk ID 14/ SCG Employee, Contractor,  
13 Customer, and Public Safety - Confined Space Air  
14 Monitoring System for Field Personnel**

15 Age-related equipment failures currently present a potential risk to the safety of  
16 employees working in gaseous atmospheres. This risk warrants acquisition and deployment of  
17 new equipment. This program will involve replacement of the current confined space and  
18 Hydrogen Sulfide (H<sub>2</sub>S) monitoring equipment system-wide. The new equipment and associated  
19 training will encompass both regular and occasional users who have been identified as  
20 performing duties in confined spaces or where the potential for H<sub>2</sub>S exposure exists. This  
21 equipment and associated training is part of a mitigation measure in support of RAMP risk  
22 Employee, Contractor, Customer, and Public Safety. The non-labor incremental funding for this  
23 safety-related element is \$20,000 over the base forecast for TY 2019.

24 **v. Fueling Our Future**

25 A net FOF benefit savings of \$586,000 is included in the TY 2019 forecast for Field  
26 Support. These savings will be accomplished by implementing the following actions:

- 27 • Reduction in travel costs by utilizing video conferencing for a portion of meetings  
28 and training, especially in outlying operating bases;
- 29 • Development of time standards, metrics, exception reports and resources to monitor  
30 and follow up on key performance measures;

- Combining financial and operational data to build reports for supervisors and managers for a more effective and efficient management of cost;
- The implementation of more concentrated compliance training for Field Supervisors and technicians resulting in a more efficient and effective workforce;
- Creation of Virtual Training classes to reduce travel costs;
- Training at sites to save on travel costs;
- Development of an interface between Distribution Systems to eliminate manually moving data.

This effort will include the installation of video conferencing equipment at 27 out of the 52 Operating Bases at SoCalGas. The cost associated with the video conferencing equipment is covered by Mr. Rivera (Ex. SCG-05). Table GOM-25 is a summary of the FOF ongoing benefit savings.

**Table GOM-25**  
**Southern California Gas Company**  
**FOF Ongoing Benefit Savings (-)**

FOF (In 2016 \$) - Benefit Savings (-)	Estimated 2017 (000s)	Estimated 2018 (000s)	Estimated 2019 (000s)
Field Support – Benefit Savings	-53	-494	-586

**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 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 OpQual requirements.

1 In addition, the rise in Employee turnover will increase costs as employees learn new  
2 jobs. Off-production time includes attending skills training classes; participation in  
3 activities such as meetings on safety, customer satisfaction, and general  
4 communications; completion of audits of base operations; and stocking trucks with  
5 materials, tools and fittings.

- 6 • The level of office materials, equipment and services needed to support personnel  
7 completing work described in the Field Operations and Maintenance workgroups  
8 discussed in this testimony. It encompasses such items as general office supplies,  
9 business forms, pagers, cell phones, trash collection, miscellaneous contract services,  
10 and employee expenses.
- 11 • Increase in regulatory pressures, such as additional CPUC audits and the requirement  
12 to increase supervisor visits to fire and police departments to comply with 49 C.F.R. §  
13 192.615 and SB 44, which require that SoCalGas maintains a liaison with fire, police  
14 and other public agencies. This requires additional support, such as supervisors and  
15 administrative advisors.

16 Furthermore, the RAMP Report identified the need to continue work associated with  
17 employee training, employee qualification, and required tools and materials, to further support  
18 the mitigation measures for the four top risks listed above in the Description of Costs and  
19 Underlying Activities. The incremental RAMP costs are identified above. Other costs  
20 associated with this RAMP activity are included in the Field Support base forecast for TY 2019.

## 21 **8. Tools, Fittings, and Materials**

22 Recorded to this workgroup is the purchase of small tools, small pipe fittings,  
23 miscellaneous pipeline materials, and miscellaneous installation materials used during  
24 construction and maintenance activities and those held in inventory as vehicle truck stock. These  
25 materials are necessary to obtain complete and safe work results. Table GOM-26 below  
26 summarizes Gas Distribution O&M costs associated with Tools, Fittings, and Materials.

**Table GOM-26**  
**Southern California Gas Company**  
**Tools, Fittings, and Materials**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>A. Field Operations &amp; Maintenance</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
8. Tools Fittings & Materials	8,601	10,307	1,706

**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, premixed 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 tools and materials required to safely perform field functions.

**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, increased regulatory pressures, as well as the Gas Distribution workforce, and an assessment of historical expense in this workgroup, SoCalGas used a five-year (2012 through 2016) historical linear trend to forecast future needs for tools, fittings and materials. This five-year trend base forecast results in a \$820,000 increase over the 2016 adjusted recorded base in TY 2019.

Added to this base are incremental cost elements not reflected in the base forecast for the Tools, Fittings and Materials workgroup in TY 2019. These work elements are described below.



1 The total incremental funding for this workgroup, including the base forecast and incremental  
2 increases, is \$1,706,000 over the 2016 adjusted recorded base for TY 2019.

3 **i. Calibrated Tools**

4 SoCalGas employs multiple tools that require calibration for accurate operation. When  
5 these tools are in need of maintenance or calibration they are sent to either internal or external  
6 shops creating the possibility that accurate calibrated tools are not available when needed by  
7 operations. This project will build up an adequate stock of tools available for immediate swap  
8 out when equipment is sent in for maintenance or calibration. The project will also replace tools  
9 that are at the end of their useful life or that are damaged and no longer useful. The impact from  
10 this incremental increase on Tools, Fitting, and Materials is \$500,000 over the base forecast in  
11 TY 2019.

12 **ii. OMD Cages**

13 This project encompasses the purchase and installation of protective cages around vehicle  
14 mounted Optical Methane Detectors (OMD). OMDs are sophisticated and expensive machines  
15 used for mobile leak survey. The cages that SoCalGas will purchase will be built specifically for  
16 OMDs to provide protection from damage in case of contact with objects or other vehicles while  
17 allowing easy access to the equipment. The cost impact on Tools, Fitting, and Materials is  
18 \$75,000 over the base forecast in TY 2019.

19 **iii. MSA Maintenance Activities**

20 As discussed in the Service Maintenance section earlier in this testimony, SoCalGas will  
21 address an increased amount of riser and service valve orders regenerated by the MSA Inspection  
22 program covered by Ms. Marelli (Ex. SCG-18). SoCalGas anticipates addressing approximately  
23 1,500 orders in 2017, 3,000 in 2018, and 8,500 in TY 2019. This section covers the non-labor  
24 cost for this activity, while the labor costs are found in the Service Maintenance section earlier in  
25 this testimony. The incremental non-labor cost for this safety-related work is \$85,000 over the  
26 base forecast for TY 2019.

27 **iv. Meter Guard Activities**

28 As discussed in the Service Maintenance section earlier in this testimony, SoCalGas will  
29 address an increased amount of meter guard orders regenerated by the MSA Inspection program  
30 covered by Ms. Marelli (Ex. SCG-18). SoCalGas anticipates addressing approximately 500  
31 orders in 2017, 1,000 in 2018, and 3,500 in TY 2019. This section covers the non-labor cost for

1 this activity, while the labor costs are found in the Service Maintenance section earlier in this  
2 testimony. The incremental non-labor cost for this safety-related work is \$130,000 over the base  
3 forecast for TY 2019.

4 **v. OMD Maintenance**

5 This project encompasses the regular maintenance of SoCalGas owned Optical Methane  
6 Detectors (OMD). OMDs are used for mobile leakage surveys and require regular professional  
7 maintenance to provide proper performance in identifying and locating leaks on the SoCalGas  
8 natural gas infrastructure. Regular maintenance is required every three months by a certified  
9 technician. SoCalGas intends to contract with the manufacturer to provide regular maintenance  
10 and services to loan OMDs in cases when unexpected repairs or maintenance is required. The  
11 cost impact on Tools, Fitting, and Materials is \$96,000 over the base forecast in TY 2019.

12 **c. Cost Drivers**

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

18 **B. Asset Management**

19 Reviewed in this section of the testimony are activities and associated O&M expenses  
20 incurred in the evaluation of the condition of the distribution system. This includes maintaining  
21 many asset records, identification of corrective maintenance solutions, and coordinating with  
22 field personnel on completion and recording of operations and maintenance activities. Table  
23 GOM-27 below summarizes Gas Distribution O&M costs associated with Asset Management  
24 activities.

**Table GOM-27**  
**Southern California Gas Company**  
**Asset Management**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>B. Asset Management</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
1. Asset Management	8,171	6,965	-1,206
<b>Total</b>	<b>8,171</b>	<b>6,965</b>	<b>-1,206</b>

**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 III.A (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

1 necessary work and recording of operations and maintenance activities. This work also furthers  
2 SoCalGas’ efforts to implement the directives of SB 705 to “...[i]dentify and minimize hazards  
3 and systemic risks in order to minimize accidents, explosion, fires, and dangerous conditions,  
4 and protect the public and the gas corporation workforce” and “[i]dentify the safety-related  
5 systems that will be deployed to minimize hazards, including adequate documentation of the  
6 commission-regulated gas pipeline facility history and capability.”<sup>31</sup>

## 7 **2. Forecast Method**

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

12 As the level of maintenance work, general construction, municipality work and customer-  
13 generated activity increases, so will the support provided by the Technical Offices. Given these  
14 incremental activities and a review of historical costs and underlying cost drivers, SoCalGas  
15 determined that a five-year (2012 through 2016) historical linear trend best reflects future  
16 requirements for this workgroup. Using an average or base year forecasting method would not  
17 be appropriate for this workgroup, as it would not properly fund future work demands. This  
18 forecast results in a \$387,000 increase over the 2016 adjusted recorded base in TY 2019.

19 Added to this base are incremental work elements and efficiency savings not reflected in  
20 the base forecast to adequately fund Asset Management activities in TY 2019. These work  
21 elements are described below. The total funding for this workgroup, including the base forecast  
22 and incremental increases and efficiency savings, is \$1,206,000 reduction over the 2016 adjusted  
23 recorded base in TY 2019. The reduction is due to FOF savings of \$2,305,000 in TY 2019. The  
24 associated ideas regarding FOF is later explained in this section.

### 25 **a. Administrative Control Clerks for Pipeline Records** 26 **Management**

27 SoCalGas anticipates increased coordination with cities and state agencies, to acquire  
28 permits, as construction work elements continue to increase. Furthermore, governmental  
29 agencies continue to place greater emphasis on the record-keeping practices of pipeline

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<sup>31</sup> Cal. Pub. Util. Code § 961(d)(1)-(2).

1 operators. As the expectation of increased record-keeping and document quality control  
2 management increases, SoCalGas is required to take greater action to safeguard the integrity of  
3 construction and maintenance records and related paper files, while making them easily  
4 accessible to employees that reference them as part of their normal work activities, as well as to  
5 regulators and auditors. SoCalGas is therefore committed to continuous improvement of its  
6 documentation practices that provide for the development and retention of reliable, traceable, and  
7 verifiable records. To adequately record work history and maintain these records, SoCalGas  
8 requests the addition of three administrative control clerks. These Administrative Control Clerks  
9 will be responsible for daily record filing, keeping track of records being checked out to verify  
10 those documents are returned to archives, and to provide support with new permit requests. The  
11 funding for this incremental requirement is \$217,000 over the base forecast for TY 2019.

12 **b. Administrative Control Clerk for Leak Survey and Repairs**

13 As previously discussed in the Leak Survey section earlier in this testimony, SoCalGas  
14 will be accelerating the leak survey cycles for high-pressure pipes and pre-1986 plastic pipe.  
15 Changes to these leak survey cycles will require additional support to provide maps to the field  
16 and updating pipeline compliance records. In addition, the increased leak survey will likely  
17 result in an increase in the number of leak indications found, which will lead to additional leak  
18 repairs; and therefore, the need to create additional leak repair orders. To adequately record  
19 work history and maintain these records, SoCalGas requests the addition of six Administrative  
20 Control Clerks. These Administrative Control Clerks will be responsible creating new leakage  
21 maps for the field, keeping track and updating leak repair orders, and updating compliance  
22 records. The funding for this incremental requirement is \$433,000 over the base forecast for TY  
23 2019.

24 **c. Resumption of Routine Operations**

25 Some employees in this workgroup provided customer support during the Aliso Incident,  
26 which required a reprioritization of company resources. In order to adequately resume routine  
27 asset management operations activities, \$61,000 over the base forecast was added for TY 2019.

28 **d. Fueling Our Future**

29 A net FOF benefit savings of \$2,305,000 is included in TY 2019 request for Field  
30 Support. The ideas associated with these savings include:

- Upgrading SoCalGas’ GIS system to provide a “Pending Leaks” view so that field personnel can visually see existing or pending leaks to avoid the creation of duplicate orders in the system;
- Enhancing the Enterprise Geographic Information System (EGIS) Search function for mobile field users to reduce the time spent locating facility map data;
- Provide contractors access to a portal into the Company’s work management system to improve the reconciliation process of construction and Cathodic Protection packages;
- The creation of an electronic version of a leak survey map with walking navigation of the facilities from point A to point B of the leak survey;
- Creating a customer portal to automate the new business process and reduce volume of calls or emails from customers seeking updates;
- Simplifying the planning process in SAP CPD to improve planner productivity;
- Enhancing the planning training module by removing high pressure from the initial Planning Associate training class and providing it as a follow up elective to enhance information retention; and
- Reduction of data entry required in the Graphic Work Design (GWD) application to post and publish service information to EGIS to improve efficiency and data for the field employees.

Table GOM-28 is a summary of the FOF ongoing benefit savings.

**Table GOM-28**  
**Southern California Gas Company**  
**FOF Ongoing Benefit Savings (-)**

<b>FOF (In 2016 \$) – Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
Field Support – Benefit Savings	-232	-663	-2,305

### 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 housing starts and local employment<sup>32</sup> 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.

**C. Operations and Management**

This section includes costs recorded to the Operations and Management workgroup. This workforce is a critical component of managing the integrity of the pipeline system to prevent and reduce risks, and 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.”<sup>33</sup> Table GOM-29 below summarizes Gas Distribution O&M costs associated with Operations and Management.

**Table GOM-29  
Southern California Gas Company  
Operations and Management**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>C. Operations and Management</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
1. Operations and Management	5,645	7,377	1,733
<b>Total</b>	<b>5,645</b>	<b>7,377</b>	<b>1,733</b>

<sup>32</sup> IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

<sup>33</sup> Cal. Pub. Util. Code § 961(d)(10).

1                                   **1.       Description of Costs and Underlying Activities**

2                   The activities completed within this workgroup are categorized as Operations Leadership  
3 and Field Management.

4                   Operations Leadership - Company leaders are responsible for setting the tone and  
5 direction of their organization. They provide a vision for the organization to succeed in meeting  
6 SoCalGas’ objectives. Gas Distribution’s goal is to continue to provide safe and reliable services  
7 for its customers at a reasonable cost. In order to succeed, this message must reach  
8 approximately 1,900 Gas Distribution employees located throughout SoCalGas’ large and  
9 diverse service territory. Leadership must communicate and reinforce this goal and instill a  
10 passion for success through interactions, such as regular dialog with managers, periodic dialog  
11 sessions with front-line supervisors and employees, participation in employee seminars, ongoing  
12 refresher training, and one-on-one employee meetings.

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

- 16                   • Implementing programs focused on meeting customer satisfaction and employee  
17                   safety.
- 18                   • Facilitating the acquisition and allocation of resources to complete work on time.
- 19                   • Working with supervisors on scheduling conflicts.
- 20                   • Reviewing compliance work for completeness.
- 21                   • Providing consultation to pipeline contractors regarding job requirements and  
22                   Company procedures.
- 23                   • Providing general leadership toward reaching Company goals and/or individual  
24                   performance management and improvements.

25                   These functions support the safety and reliability of SoCalGas’ system by providing the  
26 proper level of operations leadership and field management.

27                                   **2.       Forecast Method**

28                   In projecting the future expense requirements for these functions, SoCalGas reviewed the  
29 2012 through 2016 historical spending for this workgroup. In general, operations leadership,  
30 field management and operations support increase as levels of work and workforce increase; as  
31 new programs, processes and technologies are implemented; and as regulatory or compliance



1 requirements change. The review of the historical costs in this work category shows a generally  
2 consistent upward trend. As a foundational forecast, SoCalGas used the five-year (2012 through  
3 2016) linear trend expense as the forecast for the level of leadership, management, support, and  
4 associated non-labor to maintain current operations. Using an average or base year forecasting  
5 method would not be appropriate for this workgroup, as it would not properly fund future work  
6 demands. The five-year trend base forecast results in a \$911,000 increase over the 2016 adjusted  
7 recorded base in TY 2019.

8 Added to this base are incremental work elements not reflected in the base forecast to  
9 adequately fund Operations and Management activities in TY 2019. These work elements are  
10 described below. The total funding for this workgroup, including the base forecast and  
11 incremental increases, is \$1,733,000 over the 2016 adjusted recorded base in TY 2019.

12 **a. Project Advisors– Leak Repairs**

13 In order to adequately manage the leak inventory reduction effort previously discussed  
14 under main maintenance activities (Section III.A.5), SoCalGas is adding three project advisors  
15 responsible for implementing leak analysis and process strategy. They will schedule work and  
16 coordinate with field crews and contractors to verify that repairs and service replacements are  
17 completed on time. They will also develop reports to track cost, set up performance metrics,  
18 manage contractors, and coordinate material and fleet needs. SoCalGas is requesting an  
19 incremental \$298,000 over the adjusted base forecast for TY 2019.

20 **b. Project Manager – Leak Repairs**

21 In order to manage the leak inventory reduction effort referenced under main  
22 maintenance activities (Section III.A.5), SoCalGas is adding a project manager. This position  
23 will communicate with key stakeholders, provide work direction to the project advisors,  
24 implement best practices, negotiate contractual agreements, and work with the finance team to  
25 develop key financial metrics. SoCalGas is requesting an incremental \$101,000 over the  
26 adjusted base forecast for TY 2019.

27 **c. Director of Workforce Planning & Resource Management**

28 To better manage planning operations and local engineering, SoCalGas is adding a new  
29 director position that is responsible for directing and providing strategy, vision, and leadership  
30 for an organization accountable for the planning, scheduling, resource management,  
31 engineering, design, and special projects of the entire SoCalGas distribution pipeline

1 infrastructure. The director provides strategic direction and leadership in optimizing resource  
2 management across all distribution functions including pipeline maintenance, construction, and  
3 special project work across company and contractor crews. With the ongoing increased  
4 activities over the historical five-year period (2012 through 2016), this director position will  
5 help develop and implement strategies that align and support Gas Distribution goals. An  
6 incremental \$185,000 is being requested over the adjusted base forecast for TY 2019.

7 **d. Continuous Improvement Operations Manager**

8 SoCalGas is continuously looking for ways to improve the efficiency and effectiveness of  
9 Gas Distribution processes. The addition of a Continuous Improvement Operations Manager  
10 provides the focus to review work processes to determine efficiency, safety and compliance  
11 improvement opportunities. This position identifies and implements opportunities to reduce or  
12 avoid operating cost through efficiency initiatives and improvements that strengthen business  
13 processes and internal controls. For example, this individual is responsible for overseeing the  
14 implementation of the FOF ideas discussed throughout this testimony as well as for leading some  
15 of the FOF projects. SoCalGas is requesting an incremental \$125,000 over the adjusted base  
16 forecast for TY 2019.

17 **e. Resumption of Routine Operations**

18 Some management employees in this workgroup provided customer support during the  
19 Aliso Incident, which required a reprioritization of company resources. In order to adequately  
20 resume routine operations and management activities, SoCalGas is requesting an incremental  
21 \$112,000 over the base forecast for TY 2019.

22 **3. Cost Drivers**

23 In general, costs in Operations and Management increase as levels of work and workforce  
24 increase; new programs, processes and technologies are implemented; and regulatory or  
25 compliance requirements change. As such, the work environment within Operations and  
26 Management is increasingly influenced by, and evolving with multiple drivers resulting in the  
27 need for additional supervision and management:

- 28 • Government regulations can impact this work category as a result of more stringent  
29 requirements. SoCalGas has experienced increased regulatory pressure resulting in  
30 the need to establish enhanced compliance assurance practices.

- The need to support new field technologies and to facilitate the integration of these tools within the field processes.
- Increased turnover in workforce presents issues of knowledge transfer, skills development, and overall proficiency of the replacement workforce.
- Introduction of new construction and maintenance methods into office and field functions.

**D. Regional Public Affairs**

Regional Public Affairs’ (RPA) primary focus is supporting field operations through its work with regional and local governments and municipal districts on issues regarding permitting, proposed regulations, franchises, and emergency preparedness and response. Table GOM-30 below summarizes O&M costs associated with RPA activities in support of Gas Distribution.

**Table GOM-30  
Southern California Gas Company  
Regional Public Affairs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>E. Regional Public Affairs</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
1. Regional Public Affairs	3,460	4,420	960
<b>Total</b>	<b>3,460</b>	<b>4,420</b>	<b>960</b>

**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 and municipal districts on issues regarding permitting, proposed regulations, franchises and emergency preparedness and response. RPA also informs county, city officials and special districts about SoCalGas issues that could impact customers. To a somewhat 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.

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

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

### 9 Regional Public Affairs Organization

10 The Regional Public Affairs Director is responsible for supervising the four Regional  
11 Affairs Director to affirm that regional staff is consistently and effectively supporting operations,  
12 while addressing the concerns and issues of local elected officials and community organizations,  
13 as well as their respective constituents, across SoCalGas' service regions. The Regional Public  
14 Affairs Director is also an integral part of SoCalGas' incident command structure and acts as the  
15 Public Information Officer on a rotating on-call basis.

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

19 The Public Affairs Managers serve as the primary SoCalGas representatives to the 223  
20 municipalities within 12 counties of Southern California. In addition, within a large city, there  
21 are often multiple communities with unique political, economic, and demographic  
22 characteristics. For example, within the City of Los Angeles, Hollywood and San Pedro are  
23 distinct communities. This holds true for unincorporated communities within a given county,  
24 such as East Los Angeles and Rowland Heights in Los Angeles County. Public Affairs  
25 Managers engage with these cities and communities so that Field Operations can complete  
26 necessary work in a timely and cost-effective manner. There are also two Governmental Affairs  
27 Managers who serve as the primary liaison between SoCalGas and the County and City of Los  
28 Angeles on operational issues.

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

1 Supporting Operations by Working with Governments

2 In order to achieve SoCalGas' goal of maintaining a safe and reliable system at a  
3 reasonable cost, RPA works with local governments on issues including proposed regulations,  
4 fees, permitting, distribution and transmission construction, maintenance and relocation  
5 activities, and emergency preparedness. This most often involves not only SoCalGas bringing  
6 information to those officials' attention, but conveying local concerns of those officials back to  
7 SoCalGas.

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

16 RPA also coordinates and resolves local government permitting requirements by helping  
17 to obtain unique and difficult-to-negotiate locally-mandated permits that enable operations to  
18 construct, maintain, replace or relocate facilities in a timely, cost-efficient manner, thereby  
19 maintaining SoCalGas' high level of safety and reliability.

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

25 RPA plays a critical role in coordinating emergency planning and response activities  
26 between SoCalGas and cities and counties in SoCalGas' service territory. RPA serves as a  
27 member of the Los Angeles, Orange and San Bernardino County Emergency Operations Centers,  
28 as well as the Los Angeles City Emergency Operations Center. RPA participates in Emergency  
29 Operations Center drills and is required to report to the centers during an emergency. RPA is on  
30 call for this duty 24 hours a day, seven days a week. RPA similarly performs a vital function in  
31 SoCalGas' internal Emergency Operations Centers. In the event of an emergency that could  
32 impact the pipeline system or other SoCalGas facilities, designated RPA personnel are deployed

1 to SoCalGas’ central Emergency Operations Center and regional Gas Emergency Centers to  
2 provide support to operations and to city and county Emergency Operations Centers. In addition,  
3 RPA hosts a number of first responder workshops each year, bringing together fire and police  
4 personnel for briefings on SoCalGas’ pipeline system, system safety and system security issues.  
5 These activities support SoCalGas’ compliance with SB 44, which states that “[o]wners or  
6 operators of intrastate transmission and distribution lines shall establish and maintain liaison with  
7 appropriate fire, police, and other public officials...”<sup>34</sup>

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

#### 13 Supporting Operations by Working with Communities

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

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

24 Although SoCalGas’ Media and Employee Communications department has primary  
25 responsibility for interacting with news media, RPA’s presence in the field and knowledge of  
26 local issues sometimes puts RPA personnel on the front-line as the Company’s spokesperson  
27 when a media representative is not immediately available and newsworthy events occur, this may  
28 also include deployment to the scene of an incident. In this capacity, RPA presents Company  
29 positions, answers media inquiries, and provides important information to customers and  
30 customer groups.

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<sup>34</sup> See Natural Gas Pipeline Safety Act of 2011, *codified at* Cal. Pub. Util. Code § 956(c)(3).

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

4 This cost supports the Company's goals of maintaining a safe and reliable system. As  
5 previously stated, RPA's primary focus is supporting field operations through its work with  
6 regional and local governments and special districts on issues regarding proposed regulations,  
7 permitting, franchises, and emergency planning and response. These activities support three top  
8 safety risks identified in the RAMP Report and discussed in Section II above: (1) Employee,  
9 Contractor, Customer, and Public Safety, (2) Catastrophic Damage Involving High-Pressure  
10 Pipeline Failure, and (3) Catastrophic Damage Involving Medium-Pressure Pipeline Failure. In  
11 the absence of RPA's work with local governments, Field Operations could experience increased  
12 operating costs and work delays that may put upward pressure on customer rates and also impact  
13 SoCalGas' ability to provide safe and reliable service.

## 14 **2. Forecast Method**

15 SoCalGas used the five-year (2012 through 2016) historical average to represent the  
16 ongoing requirements to provide support to Gas Distribution. Therefore, the five-year (2012  
17 through 2016) historical average results in a \$673,000 increase over the 2016 adjusted recorded  
18 base in TY 2019. Using a 2016 base year or five-year linear trend would not provide the proper  
19 ongoing support for RPA activities.

20 Added to this base are incremental work elements not reflected in the base forecast to  
21 adequately fund Regional Public Affairs activities in TY 2019. These work elements are  
22 described below. The total incremental funding, including incremental increases, for this  
23 workgroup is \$960,000 over the base forecast in TY 2019.

### 24 **a. Regional Public Affairs Resumption of Routine Operations**

25 Some management employees in this workgroup provided customer support during the  
26 Aliso Incident, which required a reprioritization of company resources. In order to adequately  
27 resume routine operations support activities to address the increased level of construction, repair,  
28 and maintenance activities projected for the rate case period, \$378,000 over the base forecast for  
29 TY 2019 is needed.

### 30 **b. Fueling Our Future**

1 A net Fueling Our Future (FOF) benefit savings of \$91,000 is included in TY 2019  
 2 request for Regional Public Affairs. The idea of reducing travel expenses for staff by increasing  
 3 the use of video conferencing and outsourcing agenda reading to monitor legislation. Table  
 4 GOM-31 a summary of the FOF ongoing benefit cost efficiencies, respectively.

5 **Table GOM-31**  
 6 **Southern California Gas Company**  
 7 **FOF Ongoing Benefit Savings (-)**

<b>FOF (In 2016 \$) – Benefit Savings (-)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
Regional Public Affairs – Benefit Savings	-35	-91	-91

8  
 9 **3. Cost Drivers**

10 The level of construction, repair and maintenance activities drives costs for this  
 11 workgroup. RPA’s focus is facilitating these activities in a timely and cost-effective manner so  
 12 SoCalGas can maintain safe and reliable service for its customers. As the level of these activities  
 13 increase over the rate case period, the need for increased interaction with regional and local  
 14 governments to facilitate these activities will increase accordingly. For example, through 2019  
 15 SoCalGas will be repairing approximately 9,000 small, non-hazardous leaks, plus incremental  
 16 leaks forecasted from the increase in leak survey cycles, necessitating an increase in permit  
 17 requests, which RPA facilitates. Similarly, SoCalGas is projecting an increase of approximately  
 18 41 advanced meter data collection units (DCUs) per calendar year to cover customer growth and  
 19 another 25 DCUs per year for replacement of existing units, further increasing permit requests  
 20 and RPA involvement. Additionally, Gas Distribution has several incremental projects (*e.g.*  
 21 Chronic Shut off’s, Leak Repairs) mentioned above in Sections III.A.5, III.A.6 that require RPA  
 22 assistance. Consequently, RPA will have to increase notification and outreach efforts to local  
 23 governments, as well as facilitate an increase in permitting to help ensure the above activities are  
 24 completed in a timely manner.

25 Since operational activities impact the communities SoCalGas serves, an increase in these  
 26 activities will similarly require increased RPA interaction with community groups, chambers of  
 27 commerce, businesses, local media, and individual customers about operational matters. RPA is  
 28 not only providing stakeholders with information about project details, timelines and community  
 29 impacts. Increasingly, RPA finds itself addressing heightened stakeholder concerns about



1 environmental impacts related to SoCalGas' operations. These stakeholders, as well as  
2 emergency responders, also have heightened natural gas safety concerns that RPA must address.  
3 For example, RPA has become increasingly engaged in outreaching to stakeholders regarding all  
4 four of the company's storage facilities.

5 Further driving costs for this workgroup are the actions of local governments as they  
6 propose new and often more stringent and costly operating conditions, such as engineered traffic  
7 control plans, additional paving requirements, increasing requests to remove instead of abandon  
8 pipelines, increasing requests to eliminate or minimize above-ground facilities, and restricted  
9 working hours. Local governments are also drawing out franchise negotiations, hoping to secure  
10 concessions from SoCalGas. During the rate case period, RPA will support franchise  
11 negotiations with the cities of La Canada-Flintridge, Long Beach, Los Angeles, Pasadena, and  
12 Redondo Beach, as well as Riverside and Los Angeles counties. Negotiations with larger cities,  
13 such as Los Angeles, Long Beach and Pasadena, as well as with counties, such as Riverside and  
14 Los Angeles, tend to be more complex and time-intensive.

15 When local governments attempt to impose conditions that increase operating costs, RPA  
16 must increasingly engage with local governments to help mitigate these costs. Consequently,  
17 SoCalGas expects to see costs in this workgroup increase.  
18

1 **IV. SHARED COSTS**

2 The majority of expense requirements in direct support of SoCalGas' Gas Distribution  
3 operations are discussed within the Non-Shared Services portion of this testimony. However,  
4 there is an activity in which expenditures are incurred on behalf of both SoCalGas and SDG&E,  
5 and therefore, this expense is considered Shared Services. This falls under the workgroup Field  
6 Services Leadership & Support. This activity is necessary for the Company to provide  
7 customers with safe, clean, and reliable service.

8 Table GOM-32 summarizes the total shared O&M forecasts for the listed cost categories.

9 **Table GOM-32**  
10 **Southern California Gas Company**  
11 **Shared O&M Summary of Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>Incurred Costs (100% Level)</b>			
<b>Categories of Management</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
A. Operations Leadership & Support	689	275	-414
<b>Total Shared Services (Incurred)</b>	<b>689</b>	<b>275</b>	<b>-414</b>

12  
13 I am sponsoring the forecasts on a total-incurred basis, as well as the shared services  
14 allocation percentages related to those costs. Those percentages are presented in my shared  
15 services workpaper (Ex. SCG-04-WP), along with a description explaining the activities being  
16 allocated. The dollar amounts allocated to affiliates are presented by Mr. Vanderhye (Ex. SCG-  
17 34/SDG&E-32).

18 **A. Field Services Leadership & Assessment**

19 **1. Description of Costs and Underlying Activities**

20 This section includes costs recorded to the category Field Services Leadership &  
21 Assessment. Similar to the O&M Non-Shared Services workgroup, Operations and Management  
22 (Section III.C), the activities completed within this category are related to operations leadership  
23 and support for SoCalGas' ability to provide customers with safe, clean, and reliable service.

24 Table GOM-33 summarizes the costs for the Operations Leadership and Support category.

**Table GOM-33  
Southern California Gas Company  
Operations Leadership and Support**

<b>GAS DISTRIBUTION (In 2016 \$)</b>			
<b>Incurred Costs (100% Level)</b>			
<b>A. Operations Leadership &amp; Support</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>TY 2019 Estimated (000s)</b>	<b>Change (000s)</b>
1. Field Services Leadership & Operations Assessment	689	275	-414
<b>Incurred Costs Total</b>	<b>689</b>	<b>275</b>	<b>-414</b>

Field Services Leadership

Recorded to this cost center are the salary and employee non-labor expenses for the Vice President of Gas Operations distribution. Also charged are one-time expenses that benefit the entire organization.

**2. Forecast Method**

In projecting the future expense requirements for these functions, SoCalGas reviewed the 2012 through 2016 historical spending for this workgroup. A zero-based forecast represents the most accurate base level funding needed to support the level of leadership and management provided in this workgroup. The 2016 base year and five-year (2012 through 2016) historical linear trend were also considered, however the level from these methodologies would have significantly overstated the funding for this activity as previous spending in this workgroup no longer applied. Therefore, SoCalGas anticipates that a zero-based forecast would adequately fund the level of operations through the forecasted years (2017-2019).

The allocation methodology and calculation for this cost center can be found in the supplemental workpaper SCG-04-GOM-USS-SUP-001, located under Field Services Leadership & Operations Assessment workpaper, Ex. SCG-04-WP.

The total funding for this workgroup is \$414,000 less from the 2016 adjusted recorded base for TY 2019.

**3. Cost Drivers**

The cost driver behind this forecast includes leadership support. As discussed above, Company leaders are responsible for setting the tone and direction of their organization. Gas Distribution's goal is to continue to provide safe, clean, and reliable service for its customers at

1 reasonable rates. In order to succeed, this message must reach approximately 2,300 Gas  
2 Distribution employees located throughout SoCalGas' and SDG&E's service territory.  
3 Leadership must communicate and reinforce this goal through interactions, such as regular  
4 dialogue sessions with managers, front-line supervisors, and employees.

5

6

1 **V. CAPITAL**

2 The driving philosophy behind SoCalGas' capital investments is to provide safe, clean,  
3 and reliable delivery of natural gas to customers at reasonable rates. This commitment requires  
4 that SoCalGas invests in its infrastructure and support services to mitigate risks associated with  
5 the safety of the public/customers and employees/contractors, service reliability, and gas system  
6 integrity. SoCalGas installs new pipeline mains, service lines, and MSAs to meet the needs of  
7 the growing population in the service territory. To maintain system reliability and safety,  
8 SoCalGas makes a variety of other capital improvements, including pressure betterment projects  
9 to improve areas of low pressure, pipeline renewals to replace deteriorated pipelines or obsolete  
10 equipment, installations and replacements of cathodic protection systems, and the purchase of  
11 electronic monitoring devices for pressure tracking and monitoring. Other improvements include  
12 pipeline relocations to accommodate public infrastructure improvements, such as street and  
13 highway widening, and relocations caused by the construction of new water, sewer, and electric  
14 facilities. To accomplish these activities, SoCalGas continuously monitors the condition of  
15 approximately 100,586 miles of main and service pipelines. By using technology and the  
16 professional judgment of experienced, skilled, and well-trained employees, SoCalGas utilizes  
17 capital in a prudent, responsible manner, consistent with local, state, and federal codes and  
18 regulations.

19 In preparing the forecast for capital expenditures, SoCalGas Gas Distribution Operations  
20 reviewed historical spending levels, including work units, and developed an assessment of future  
21 requirements, and associated risks. This analysis entailed a review of the historical 2012 through  
22 2016 spending and consideration of the underlying cost drivers to determine if a historical  
23 pattern of spending should be expected to continue into the future, considering the mitigation of  
24 associated risks. Gas Distribution also evaluated future work requirements that are incremental  
25 to levels of historical spending and necessary to maintain the safe and reliable operations of the  
26 distribution system while mitigating risks. Thus, the forecasting methodologies varied  
27 depending on the type of activity being analyzed and the expectations of future system needs.  
28 These methods included forecasts of future spending based on: historical averages; historical  
29 growth and estimated future growth; identified projects or materials; and a combination of  
30 project-specific justification and analysis of historical spending. Thus, SoCalGas' Gas  
31 Distribution capital expenditure forecasts are rooted in a historical review of spending adjusted,

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

5 To continue to provide safe, clean, and reliable service, while mitigating associated risks,  
 6 Gas Distribution requests the Commission adopt its forecast for capital expenditures of  
 7 \$278,473,000, \$324,801,000, and \$347,842,000 in 2017, 2018, and 2019, respectively. Table  
 8 GOM-34 provides a summary of the total capital costs for the forecast years.

9 **Table GOM-34**  
 10 **Southern California Gas Company**  
 11 **Capital Expenditures Summary of Costs**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>Categories of Management</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
A. New Business	44,220	36,632	45,313	50,393
B. Pressure Betterments	29,370	23,088	23,088	23,088
C. Supply Line Replacements	3,067	4,209	4,209	4,209
D. Main Replacements	32,282	33,711	33,711	33,711
E. Service Replacements	26,314	28,538	31,470	34,403
F. Main & Service Abandonments	8,662	9,256	10,522	11,787
G. Regulator Stations	8,635	8,636	14,636	19,436
H. Cathodic Protection Capital	5,462	6,320	8,434	9,511
I. Pipeline Relocations - Freeway	6,550	7,837	7,837	7,837
J. Pipeline Relocations - Franchise	13,319	17,894	17,894	17,894
K. Other Distribution Capital Projects & Meter Guards	4,781	3,656	11,596	11,596
L. Measurement & Regulation Devices	37,736	22,266	29,547	37,037
M. Capital Tools	9,665	14,386	14,220	12,322
N. Field Capital Support	66,609	61,317	70,292	74,618
O. Remote Meter Reading	4,664	727	2,032	0
<b>Total</b>	<b>301,336</b>	<b>278,473</b>	<b>324,801</b>	<b>347,842</b>

12 The following sections provide, by activity, a description of the specific work to be  
 13 completed, the benefits of such work, the forecast methodology, expected expenditures, and cost

1 drivers. These expenditures are necessary to maintain regulatory compliance and the continued  
2 safe, clean, and reliable delivery of natural gas.

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

5 **A. New Business**

6 This work category provides for changes and additions to the existing gas distribution  
7 system to connect new residential, commercial, and industrial customers. These costs for New  
8 Business are summarized below in Table GOM-35.

9 **Table GOM-35**  
10 **Southern California Gas Company**  
11 **New Business**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>A. New Business</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. New Business Construction	44,220	36,632	45,313	50,393
<b>Total</b>	<b>44,220</b>	<b>36,632</b>	<b>45,313</b>	<b>50,393</b>

12  
13 **1. Description of Costs and Underlying Activities**

14 The New Business forecasted capital expenditures support the Company's goals of  
15 providing a safe and reliable gas distribution system and in response to its obligation to serve the  
16 projected growing customer base, thus mitigating the risk of reduced service reliability. This  
17 includes installations of gas mains and services, MSAs, and the associated regulator stations to  
18 provide service to the customer.

19 The materials cost of meters and regulators are addressed under the M&R Devices  
20 category discussed later in this testimony.

21 **2. Forecast Method**

22 **a. New Business Construction**

23 The base forecast for New Business expenditures was developed using the projected new  
24 meter sets added to the gas distribution system multiplied by the cost per meter set. The cost per  
25 meter set is reflective of the mix of work that is anticipated to construct new main extensions and

1 associated service laterals. These activities account for the use of contractor services, third-party  
 2 services, municipal permit fees, and the proportionate use of plastic and steel materials.  
 3 SoCalGas chose the latest five-year (2012 through 2016) recorded history to forecast the cost per  
 4 meter set. The resulting base forecast for 2017, 2018, and 2019 is \$42,244,000, \$50,925,000,  
 5 and \$54,534,000, respectively. Refer to supplemental workpaper SCG-04-GOM-CAP-SUP-001,  
 6 in Ex. SCG-04-CWP for additional details. Table GOM-36 below shows the quantity of new  
 7 meter sets SoCalGas installed in the period 2012 through 2016 and the new meter installation  
 8 forecast for the years 2017 to 2019.

9 **Table GOM-36**  
 10 **Southern California Gas Company**  
 11 **New Business Meter Installation History and Forecast**

<b>Year</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Number of New Meter Set Installations	21,898	26,787	33,249	33,594	37,708	39,807	47,987	51,388

12  
 13 For additional details on the forecast of calculation of new meter set installations, refer to  
 14 the workpaper of Ms. Payan, Ex. SCG-39-WP.

15 In order to perform the incremental work associated with the new business growth  
 16 forecasted in this area, SoCalGas is adding five incremental crew trucks in 2017, twelve in 2018,  
 17 and four in 2019. The costs associated with these vehicles are discussed by Ms. Herrera (Ex.  
 18 SCG-23).

19 **b. Advanced Metering Infrastructure (AMI)**

20 As new homes and communities are constructed, the Data Collector Unit (DCU) footprint  
 21 required to collect and transmit meter reading data will continue to expand. SoCalGas projects  
 22 that by the end of 2018, approximately 4,600 DCUs will be required to provide AMI network  
 23 coverage to the Company’s nearly six-million customers.<sup>35</sup> The installation of DCUs includes  
 24 performing land acquisition, processing and submitting ministerial and coastal commission  
 25 permits in public right of way (PROW), utility easements, new pole and co-location construction,  
 26 and commissioning DCUs. During the AMI deployment, SoCalGas learned that multi-family

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<sup>35</sup> This projection includes the DCUs being refuted in the “escalated jurisdictions.” Please refer to the testimony of Mr. Garcia (Ex. SCG-17).



1 dwellings, constructed with subterranean meter rooms, may require indoor DCUs, which  
2 increases the overall requirement for DCUs in a community.

3         Given the anticipated customer growth and unit replacements, SoCalGas is projecting an  
4 increase of approximately 41 DCUs per calendar year in the service territory to cover customer  
5 growth and an additional 25 DCUs per year for replacement of existing units. This will require  
6 funding for non-labor and labor resources, including two project managers to coordinate new  
7 business and replacement DCU construction, including oversight of the process from site  
8 acquisition to DCU construction and activation; and one engineer to evaluate the need for  
9 additional DCUs and support the testing and design for the DCU network.

10         SoCalGas is forecasting a requirement of \$1,471,000 for 2019 to adequately fund the  
11 activities needed for AMI growth stated above. See supplemental workpaper SCG-04-GOM-  
12 CAP-SUP-012 in Ex. SCG-04-CWP for calculation details.

13                     **c.         New Business Trench Reimbursements**

14         In accordance with CPUC Rules 20 and 21, new customers who provide their own trench  
15 receive reimbursement for this contribution. The estimate of expenditures in this budget  
16 category includes reimbursement costs based on the five-year (2012 through 2016) average  
17 historical cost. The forecast includes reimbursement cost of \$697,000 for each of the years 2017  
18 through 2019. SoCalGas chose a five-year average methodology due to the generally  
19 unpredictable nature of customers' decisions to provide their own trenches. Although new  
20 business is projected to continue on an upward growth rate, the recorded cost for this work  
21 category does not reveal a historical pattern that can suggest the use of an alternative  
22 methodology.

23                     **d.         New Business Forfeitures**

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

28         Forfeiture amounts are dependent on customer gas throughput levels incurred over a  
29 three- to ten-year period after commencement of service. Due to the high volume of activity and  
30 the inherent complexity of tracking each customer's construction job and the associated  
31 throughput over a period of time, SoCalGas forecasted forfeitures based on the historical five-

1 year (2012 through 2016) average. This methodology allows SoCalGas to capture years of high,  
2 as well as years of low, forfeiture activity. SoCalGas is forecasting forfeiture credits of  
3 \$6,309,000 for each of the years 2017, 2018, and 2019. See supplemental workpaper SCG-04-  
4 GOM-CAP-SUP-002 in Ex. SCG-04-CWP for calculation details.

### 5 **3. Cost Drivers**

6 Underlying cost drivers for this capital category relate to the volume and type of new  
7 construction required to provide service to new residential, commercial, and industrial  
8 customers, thus mitigating the risk of reduced service reliability and complying with the  
9 Company's obligation to serve. As described above, this includes the installation of new mains,  
10 services, and MSAs as well as header pipe (larger-diameter, medium-pressure pipe that can carry  
11 gas longer distances) to bring gas to new developments as well as installations of the new  
12 advanced metering system infrastructure. In some cases, it is also necessary to build high-  
13 pressure supply lines and associated regulator stations.

14 It is SoCalGas' experience that new construction increases as the economy improves.  
15 Since SoCalGas is forecasting new business growth due to an expected increase in housing starts  
16 and local employment in the next several years, it is reasonably anticipated that demand for  
17 construction resources and material will increase. The underlying cost drivers for this capital  
18 category relate to Company labor, contractor services, third-party services, paving services, and  
19 materials such as pipe and fittings. All or a combination of these construction elements are  
20 necessary for performing New Business facility installations.

### 21 **B. Pressure Betterment**

22 This work category records expenditure for Gas Distribution pressure betterment projects  
23 performed on a continuing basis to maintain system reliability and service to all customers.  
24 Table GOM-37 below summarizes the expenditures forecast for the Pressure Betterment work  
25 category.

**Table GOM-37**  
**Southern California Gas Company**  
**Pressure Betterment**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>B. Pressure Betterments</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Pressure Betterments	29,370	23,088	23,088	23,088
<b>Total</b>	29,370	23,088	23,088	23,088

**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.

Pressure Betterment projects 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, city, county, and state agencies. In addition, SoCalGas collects data from 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.

1                                   **2.      Forecast Method**

2                    Pipeline Pressure Betterment requirements are identified during the year, as part of the  
3 regular course of maintenance activities and system testing and evaluation. SoCalGas’ gas  
4 infrastructure is a large, dynamic system of pipelines exposed to continual changes in customer  
5 load demand, which makes it difficult to identify and estimate specific routine pressure  
6 betterment projects more than a year into the future. Hence, the latest load and growth  
7 information is used. Furthermore, the timing to complete each project can be unpredictable due  
8 to the need for detailed planning requirements, acquiring required permits, and coordination and  
9 scheduling of resources. Given the complexities in identifying specific pressure betterment  
10 projects, SoCalGas used the historical five-year (2012 through 2016) average of recorded  
11 Pressure Betterment expenditures to forecast the cost requirement for the years 2017 through  
12 2019. Although other forecast methods were considered, including the five-year historical trend  
13 and base year, which resulted in higher forecast amounts, the five-year average was chosen as it  
14 more accurately captures yearly variations in system Pressure Betterment requirements. The  
15 resulting base forecast is \$23,088,000 for each of the years 2017 through 2019.

16                                   **3.      Cost Drivers**

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

23                    As previously discussed a driver of new customer growth is economic conditions.  
24 Therefore, as housing starts and local employment continue to increase over the forecast period,  
25 so will the need for Pressure Betterment improvements.<sup>36</sup>

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

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<sup>36</sup> IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

### C. Supply Line Replacements

The Supply Line Replacements work category includes expenditures to replace high-pressure distribution pipelines, known as supply lines. The forecasted costs for this work category are summarized in Table GOM-38 below.

**Table GOM-38**  
**Southern California Gas Company**  
**Supply Line Replacements**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>D. Supply Line Replacements</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Supply Line Replacements	3,067	4,209	4,209	4,209
<b>Total</b>	<b>3,067</b>	<b>4,209</b>	<b>4,209</b>	<b>4,209</b>

#### 1. Description of Costs and Underlying Activities

The distribution supply line system comprises approximately 3,700 miles of pipeline constructed between the early 1920s and present date, which range in diameter from 2 to 30 inches. These supply lines normally operate at pressures higher than 60 psi. Gas pressure from these lines is regulated to 60 psi 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 a replacement, 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 Line Replacement activity is a mitigation measure supporting a top safety risks identified in the RAMP Report and discussed in Section II above: Catastrophic Damage

1 Involving High-Pressure Pipeline Failure. The supply lines capital expenditures forecast  
2 supports the mitigation of safety and loss of service risks, thereby supporting the Company's  
3 goals of maintaining system integrity and reliability.

## 4 **2. Forecast Method**

5 In developing the supply line replacements forecast, historical expenditures for 2012  
6 through 2016 were evaluated. SoCalGas recognizes that the timing to complete each supply line  
7 replacement project is difficult to predict due to the need for: review of operating conditions,  
8 detailed planning requirements, acquisition of required permits, risk assessment, and  
9 coordination and scheduling of resources. Therefore, SoCalGas estimated the expenditures for  
10 the years 2017 through 2019 based on the historical average of recorded expenditures of the  
11 years 2012 through 2016. Based on the number of variables involved in these larger-scale  
12 projects, this average is more representative of future work requirements and expected  
13 expenditures, as it captures typical fluctuations in supply line project costs from year to year.  
14 The resulting base forecast is \$4,209,000 per year in 2017, 2018, and 2019.

## 15 **3. Cost Drivers**

16 The main driver for supply line replacements is the need to correct a pipeline condition  
17 that could pose a safety risk. The potential loss of service also presents a reliability risk that  
18 drives mitigation costs. Another driver may be the age of the pipeline and location in relation to  
19 population density, where a failure presents a greater potential risk to public safety. In addition,  
20 supply line replacements can be driven by the need to maintain service continuity to customers in  
21 geographically-isolated areas.

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

26 Furthermore, the RAMP Report identified the need to continue maintenance and  
27 operations activities to further address the risk of catastrophic damage involving a high-pressure  
28 pipeline failure. As discussed above, maintenance and operations work can identify the need to  
29 replace supply line segments found to have deteriorating conditions, which drive costs in this  
30 work category. The costs associated with this RAMP activity are included in the Supply Line  
31 Replacements base forecast for the years 2017 through 2019.

1 **D. Main Replacements**

2 Expenditures recorded to this work category are for routine capital pipeline replacements  
3 critical to sustained operational reliability and mitigate risks associated with public safety. Table  
4 GOM-39 below summarizes forecast Main Replacement expenditures for the forecast period.

5 **Table GOM-39**  
6 **Southern California Gas Company**  
7 **Main Replacements**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>E. Main Replacements</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Main Replacements	32,282	33,711	33,711	33,711
<b>Total</b>	<b>32,282</b>	<b>33,711</b>	<b>33,711</b>	<b>33,711</b>

8  
9 **1. Description of Costs and Underlying Activities**

10 SoCalGas' distribution pipeline system consists of approximately 51,070 miles of steel  
11 and plastic main supporting the delivery of gas to more than 5.9 million customers. Activities in  
12 the Main Replacements work category include:

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

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

1 The Main Replacement activity is a mitigation measure supporting a top safety risks  
2 identified in the RAMP Report and discussed in Section II above: Catastrophic Damage  
3 Involving Medium-Pressure Pipeline Failure. These forecasted capital expenditures support the  
4 Company's goals of maintaining the integrity and reliability of the natural gas system, thus  
5 mitigating risks associated with public safety and infrastructure integrity.

6 Additional main replacement funding required in response to the federal DIMP  
7 regulations governing distribution pipeline integrity, is addressed by Ms. Martinez (Ex. SCG-  
8 14).

## 9 2. Forecast Method

10 In developing the main replacements forecast, historical expenditures and work units for  
11 2012 through 2016 were evaluated. SoCalGas replaced an average of 32 miles of pipe per year  
12 under this work category during the period 2012 through 2016. As discussed above, the main  
13 drivers for pipeline replacement are leakage and corrosion. In general, older pipelines and pipe  
14 without cathodic protection tend to have higher levels of leakage. As of the end of 2016,  
15 SoCalGas had approximately 2,354 miles of pre-1940 main and approximately 3,287 miles of  
16 bare cathodically-unprotected main. Although these pipe categories are not the only pipelines  
17 where replacements occur, they highlight the need to continue to focus on pipeline replacements.  
18 SoCalGas forecasts continuing main replacements at the five-year (2012 through 2016) historical  
19 average to mitigate potential risks associated with pipeline integrity, system reliability, and  
20 public safety. This approach also allows SoCalGas to capture historical spending under a variety  
21 of conditions that reflect fluctuations in labor and non-labor expenditures associated with this  
22 work category. Furthermore, the timing of individual projects is based on a number of factors,  
23 including the need for review of operating conditions, detailed planning requirements,  
24 acquisition of required permits, and coordination and scheduling of resources. This forecast  
25 methodology best represents the cyclical volume of work qualified on an annual basis, depending  
26 on the condition of the pipe as observed during maintenance activities, and captures the various  
27 challenges encountered during the construction of main replacements. The resulting forecast is  
28 \$33,711,000 per year in 2017, 2018, and 2019.

29 In order to perform the incremental work associated with this work category, SoCalGas is  
30 adding 12 crew trucks in 2017. The costs associated with these vehicles are discussed by Ms.  
31 Herrera (Ex. SCG-23).



1                   **3. Cost Drivers**

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

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

13                  Furthermore, the RAMP Report identified the need to continue maintenance and  
14 operations activities to further address the risk of catastrophic damage involving a medium-  
15 pressure pipeline failure. As discussed above, maintenance and operations work can identify the  
16 need to replace main pipe segments found to have deteriorating conditions, which drive costs in  
17 this work category. The costs associated with this RAMP activity are included in the Main  
18 Replacements base forecast for the years 2017 through 2019.

19                   **E. Service Replacements**

20                  The work represented in the Service Replacements category includes expenditures  
21 associated with routine replacement of isolated distribution service pipelines to maintain system  
22 reliability and to safely deliver gas to the customer, thus mitigating the risks associated with loss  
23 of service and public safety. The capital costs associated with this work category are  
24 summarized in Table GOM-40.

**Table GOM-40**  
**Southern California Gas Company**  
**Service Replacements**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>F. Service Replacements</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Service Replacements	26,315	28,538	31,470	34,403
<b>Total</b>	26,315	28,538	31,470	34,403

**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 49,516 miles of service pipe. This figure consists of approximately 17,767 miles of steel, and approximately 31,749 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. 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 Service Replacement activity is a mitigation measure supporting a top safety risks identified in the RAMP Report and discussed in Section II above: Catastrophic Damage Involving Medium-Pressure Pipeline Failure. 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 2012 through 2016 were evaluated. SoCalGas replaced an average of 7,574 service lines per year under this work category during the period 2012 through 2016. 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 2016, SoCalGas had approximately 58,168 pre-1940 service lines and approximately 853,405

1 service lines without cathodic protection. Although these service line categories are not the only  
2 pipelines where replacements occur, they highlight the need to continue to focus on service  
3 replacements. Furthermore, SoCalGas' effort to significantly reduce the non-hazardous leak  
4 inventory will result in the need to replace more service lines with the purpose of mitigating  
5 further leakage.

6 The level of spending for routine service replacements is highly dependent on the  
7 condition of the pipe, as observed during maintenance activities. With the increase in leak  
8 survey and leak inventory reduction activities previously discussed, as well as an increasingly  
9 aging infrastructure, SoCalGas forecasts service line replacements at the five-year (2012 through  
10 2016) trend to mitigate potential risks associated with pipeline integrity, system reliability, and  
11 public safety. This forecast methodology best represents the increasing requirements of service  
12 line replacement work qualified on an annual basis and captures the various challenges  
13 encountered during the construction activity. Furthermore, the timing of individual projects is  
14 based on a number of factors, including the need for review of operating conditions, detailed  
15 planning requirements, acquisition of required permits, and coordination and scheduling of  
16 resources. Consideration is also given to customer needs, as a service replacement will often  
17 require a temporary shut-off of gas service, which could have a negative effect on certain  
18 customers if service is interrupted. Equally important, it is sometimes necessary to excavate on  
19 private property in order to install the new service line, and thus, permission needs to be secured  
20 from the landowner before work commences.

21 Based on the increasing need for service replacements, SoCalGas chose the five-year  
22 (2012 through 2016) trend to forecast the funding requirement for the years 2017 through 2019.  
23 The resulting base forecast for 2017, 2018, and 2019 is \$28,538,000, \$31,470,000 and  
24 \$34,403,000, respectively.

25 In order to perform the incremental work associated with this work category, SoCalGas is  
26 adding one crew truck in 2017, one in 2018, and one in 2019. The costs associated with these  
27 vehicles are discussed by Ms. Herrera (Ex. SCG-23).

### 28 **3. Cost Drivers**

29 The main driver for service replacement is leakage and pipe corrosion that can impact the  
30 integrity of the pipeline system. Other drivers include: compliance with cathodic protection  
31 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.

Furthermore, the RAMP Report identified the need to continue maintenance and operations activities to further address the risk of catastrophic damage involving a medium-pressure pipeline failure. As discussed above, maintenance and operations work can identify the need to replace service pipe segments found to have deteriorating conditions, which drive costs in this work category. The costs associated with this RAMP activity are included in the Service Replacements base forecast for the years 2017 through 2019.

**F. 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 GOM-41 below.

**Table GOM-41  
Southern California Gas Company  
Main and Service Abandonments**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>G. Main &amp; Service Abandonments</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Main & Service Abandonments	8,663	9,256	10,522	11,787
<b>Total</b>	8,663	9,256	10,522	11,787

**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

1 may result from a hazardous condition due to the potential for third-party damage, and to  
2 eliminate unnecessary continued maintenance activities, thus mitigating a public safety risk.  
3 Main abandonments are typically driven by city and state requests involving the vacating and  
4 demolition of public property, at which point there is no opportunity for replacement. Service  
5 lines are deactivated upon cancellation of gas service due to building demolition, or when  
6 temporary service is terminated. When a service line becomes inactive, it is evaluated to  
7 determine if it will be left in place or if abandonment is required. If it is not abandoned, it is re-  
8 evaluated at least every five years to verify that a safe condition remains. A service line is left in  
9 place when it appears the service may be used again without alteration.

10 Service lines are normally abandoned when:

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

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

## 22 **2. Forecast Method**

23 The level of spending in this routine abandonment category is highly dependent on the  
24 demand for demolition and grading on private and public property. This work is often driven by  
25 economic conditions and, as the economy continues to trend in a positive direction over the  
26 forecast period,<sup>37</sup> so will the need for main and service abandonments. Furthermore, the timing  
27 of individual projects is based on a number of factors including the need for review of operating  
28 conditions, detailed planning requirements, acquisition of required permits, and coordination and  
29 scheduling of resources. Due to the level of work and continued housing starts and local

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<sup>37</sup> IHS Global Insight 2017 Regional Report –Total Employment for SoCalGas 12-county area growth rate is used as a directional indicator for general economic conditions and potential economic growth.

1 employment increase, SoCalGas used the five-year (2012 through 2016) trend to forecast the  
2 expenditures for this work category.

3 Other forecast methods considered included the five-year historical (2012 through 2016)  
4 average and the 2016 base year. SoCalGas' assessment determined that both of these options  
5 would not adequately fund this work activity. This forecast methodology best represents the  
6 increasing requirements of main and service abandonment work and captures the various  
7 challenges encountered during the construction activity. The resulting base forecast for 2017,  
8 2018, and 2019 is \$9,256,000, \$10,522,000, and \$11,787,000, respectively.

9 In order to perform the incremental work associated with this work category, SoCalGas is  
10 adding one crew truck in 2017, one in 2018, and one in 2019. The costs associated with these  
11 vehicles are discussed by Ms. Herrera (Ex. SCG-23).

### 12 **3. Cost Drivers**

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

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

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

1           **G.     Regulator Stations**

2           Represented in this work category are expenditures for the upgrade, relocation, and  
3 replacement of regulator stations. Capital cost estimates associated with the Regulator Stations  
4 workgroup are summarized in Table GOM-42 below.

5   **Table GOM-42**  
6   **Southern California Gas Company**  
7   **Regulator Stations**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>H. Regulator Stations</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Regulator Stations	8,635	8,636	14,636	19,436
<b>Total</b>	8,635	8,636	14,636	19,436

8  
9           **1.     Description of Costs and Underlying Activities**

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

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

21           As part of maintenance activities, the field workforce inspects and records the condition  
22 of each station. These inspection evaluation elements are used to prioritize station replacement  
23 work. For example, single-vault regulator stations may contain equipment that is no longer  
24 available in the industry. In such circumstance, replacement becomes necessary due to  
25 equipment obsolescence. Additionally, more modern two-vault stations may require replacement  
26 due to system reinforcement or growth. SoCalGas operates and maintains approximately 1,975

1 regulator stations, of which, on average, 23 stations are replaced or added to the system each  
2 year. The average life expectancy of a regulator station is approximately 35 years. While  
3 SoCalGas' operating and maintenance practices allow stations to exceed their useful lives, it is  
4 prudent to continue to replace these aged facilities prior to failure. Failure of a regulator station  
5 could result in over-pressurization of the gas distribution system, which may compromise the  
6 integrity of medium-pressure pipelines and/or jeopardize public safety.

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

12 The Regulator Stations activity is a mitigation measure supporting two top safety risks  
13 identified in the RAMP Report and discussed in Section II above: (1) Catastrophic Damage  
14 Involving High-Pressure Pipeline Failure, and (2) Catastrophic Damage Involving Medium-  
15 Pressure Pipeline Failure. These forecasted capital expenditures support the Company's goals of  
16 maintaining the safety, reliability, and integrity of the system, thus mitigating risks associated  
17 with public safety, system reliability, and infrastructure integrity.

## 18 **2. Forecast Method**

19 In developing the Regulator Station forecast, historical expenditures and units of work for  
20 2012 through 2016 were evaluated. As indicated previously, SoCalGas has approximately 1,975  
21 regulator stations system-wide, with an average age of 29 years. The estimated average life  
22 expectancy of a regulator station is 35 years. While SoCalGas has approximately a third of its  
23 regulator stations with components that exceed 35 years, prudent operating and maintenance  
24 practices have allowed these stations to remain in service. Given that these facilities continue to  
25 age, have a finite service life, and are critical pieces of control equipment, it is prudent to  
26 continue the replacement of this infrastructure at an increasing rate prior to failure.

27 Adding to the design complexity of regulator station construction is the challenge of  
28 finding a suitable installation location in a public or private right-of-way for the installation of  
29 the two six-foot by six-foot underground vaults normally required for a standard design.  
30 SoCalGas is committed to the safety of its employees, and for this reason, the Company has  
31 steered away from placing these stations in the streets where technicians are exposed to traffic



1 hazards. It is SoCalGas' preference to place new stations on sidewalks and/or parkways, where  
2 annual maintenance and inspections can be conducted under safer conditions. Furthermore, the  
3 timing of individual projects is based on a number of factors, including the need for review of  
4 operating conditions, detailed planning requirements, acquisition of required permits, and  
5 coordination and scheduling of resources.

6 Given the need to continue the replacement of regulator stations at an increasing rate,  
7 SoCalGas used the 2016 base plus incremental forecast to capture the expenditures for this work  
8 category. Other forecast methods considered included the five-year linear and five-year (2012  
9 through 2016) historical average; however, SoCalGas' assessment is that these options would not  
10 appropriately fund the needs in the Regulator Stations work category. The selected forecast  
11 approach allows SoCalGas to capture the spending needed to address the aging infrastructure and  
12 associated safety and reliability concerns, particularly in light of the estimated average life  
13 expectancy of these assets. The resulting base forecast is \$8,636,000 in each of the years 2017,  
14 2018, and 2019.

15 **a. Regulator Station Replacement Program**

16 Given the large number of regulator stations that are beyond their average life  
17 expectancy, SoCalGas plans to accelerate the rate at which it replaces regulator stations by  
18 replacing an incremental eight stations in 2018 and 18 in 2019 in addition to the base forecast.  
19 SoCalGas will rank the replacement of district regulator stations across its operating regions  
20 based on criteria that prioritize station that have outdated designs, are prone to corrosion, have  
21 limited capacity, and have single run designs that create labor intensive routine maintenance. At  
22 the current replacement rate, 68% of the regulator stations in the system will be above the  
23 expected useful life of 35 years. By performing this incremental work starting in 2018,  
24 SoCalGas is taking steps towards reducing the number of outdated designs and reducing its  
25 safety risk. Additional details can be found in supplemental workpaper SCG-04-GOM-CAP-  
26 SUP-011 located under Regulator Stations in Ex. SCG-04-CWP.

27 For this incremental activity, SoCalGas is asking for an incremental \$6,000,000 in 2018  
28 and \$10,800,000 in 2019 over the base forecast in TY 2019.

29 In order to perform the incremental work associated with this work category, SoCalGas is  
30 adding one crew truck in 2018 and two in 2019. The costs associated with these vehicles are  
31 discussed by Ms. Herrera (Ex. SCG-23).

1                   **3. Cost Drivers**

2                   Work activities within the Regulator Stations work category are driven by regulatory  
 3 requirements as well as the need to safeguard the safety and integrity of the pipeline system and  
 4 mitigate risks associated with customer/public and employee/contractor safety, system reliability,  
 5 and infrastructure integrity. Regulator station replacements are driven by several factors  
 6 including: the condition of the station, such as equipment obsolesce; the need to support system  
 7 reinforcement or growth; and the need to address aging infrastructure, such as stations that have  
 8 known maintenance, reliability, or design obsolescence issues.

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

13                  Furthermore, the RAMP Report identified the need to continue maintenance and  
 14 operations activities to further address the risks of catastrophic damage involving a high-pressure  
 15 or a medium-pressure pipeline failure. As discussed above, maintenance and operations work  
 16 can identify the need to replace regulator stations found to have deteriorating conditions, which  
 17 drive costs in this work category. The costs associated with this RAMP activity are included in  
 18 the Regulator Stations base forecast and incremental increase discussed above for the years 2017  
 19 through 2019.

20                  **H. Cathodic Protection Capital**

21                  The Cathodic Protection Capital work category includes expenditures associated with  
 22 new installation and replacement of CP systems and equipment. The capital forecast associated  
 23 with this workgroup is summarized in Table GOM-43 below.

24   **Table GOM-43**  
 25   **Southern California Gas Company**  
 26   **Cathodic Protection Capital**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>I. Cathodic Protection Capital</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Cathodic Protection Capital	5,462	6,320	8,434	9,511
<b>Total</b>	5,462	6,320	8,434	9,511

1                                   **1.       Description of Costs and Underlying Activities**

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

11                   49 C.F.R. § 192, Subpart I, and GO 112-F set forth the regulatory standards that govern  
12 pipeline corrosion control. SoCalGas utilizes both impressed current and magnesium anode  
13 (galvanic) systems to provide CP to existing pipelines. Impressed current systems utilize a  
14 rectifier for the generation of the direct current. Both systems utilize sacrificial anodes as a  
15 primary component in the system. Anodes are installed in wells drilled into the surrounding soil  
16 by third-party drilling contractors. Each protected pipe segment requires multiple anodes,  
17 collectively referred to as an “anode bed.” The number of anodes needed to achieve the desired  
18 level of protection and the average life of the anode bed can vary based on pipeline length,  
19 coating effectiveness, soil conditions and interference that may occur on the system.

20                   The Cathodic Protection Capital activity is a mitigation measure supporting two top  
21 safety risks identified in the RAMP Report and discussed in Section II above: (1) Catastrophic  
22 Damage Involving High-Pressure Pipeline Failure, and (2) Catastrophic Damage Involving  
23 Medium-Pressure Pipeline Failure. These forecasted capital expenditures support the  
24 Company’s goal of preserving the integrity of steel pipelines by protecting them from external  
25 corrosion, thus supporting the mitigation of risks associated with public safety, system reliability,  
26 and infrastructure integrity. These projects comply with federal and state pipeline safety  
27 regulations and provide for required cathodic protection of Company facilities.

28                                   **2.       Forecast Method**

29                   SoCalGas has approximately 18,198 miles of steel main and approximately 736,654 steel  
30 services that are cathodically protected. Expenditures in this work category are associated with

1 new installation and replacement of major CP components and equipment to maintain the  
2 integrity of the CP system on these mains and services.

3 Expenditures for this capital work category vary from year to year due to a variety of risk  
4 factors that impact the effectiveness and productivity of a cathodic protection system, such as  
5 infrastructure age, rate of anode depletion, soil moisture and type, electric current interference  
6 system damages, customer actions, and pipe coating effectiveness. As the system continues to  
7 age and deteriorate, the need to replace major CP system components will increase. In order to  
8 maintain a cathodically-protected area, it is often necessary to convert magnesium anode-  
9 protected areas into impressed-current areas, which are better able to deliver more current to the  
10 pipeline system. This is normally done for magnesium anode areas with chronic maintenance  
11 issues. SoCalGas plans to expand this approach by increasing the number of areas converted  
12 from magnesium anodes to impressed current to provide more CP to areas that require additional  
13 protection.

14 SoCalGas selected a five-year (2012 through 2016) linear trend plus incremental for its  
15 forecast as this allows the Company to capture the increased activity to respond to an aging CP  
16 system requiring increased rates of infrastructure renewal. Other forecast methods considered  
17 included the 2016 base and the 2016 five-year (2012 through 2016) historical average.  
18 SoCalGas' assessment was that using either of these methods would not provide sufficient  
19 funding to address the routine and incremental work anticipated for this work category, thus  
20 placing the integrity of the CP and pipeline systems at risk. The five-year trend results in a base  
21 forecast in 2017, 2018, and 2019 of \$5,490,000, \$6,054,000, and \$6,619,000, respectively.

22 In order to perform the incremental work associated with this work category, SoCalGas is  
23 adding three crew trucks in 2017. The costs associated with these vehicles are discussed by Ms.  
24 Herrera (Ex. SCG-23).

25 Added to this base is an incremental work element not reflected in the base forecast. This  
26 work element is described below. The total incremental funding for this work category,  
27 including the base forecast and incremental increase, is \$6,320,000, \$8,434,000, and \$9,511,000  
28 in 2017, 2018, and 2019, respectively.

29 **a. Remote Monitoring Units (RMU)**

30 SoCalGas utilizes RMUs to monitor the level of cathodic protection provided by rectifier  
31 units to steel pipelines. These units allow employees to complete mandated bi-monthly

1 inspections to verify that the level of current from the rectifiers is adequately protecting steel  
2 pipelines. Similar to electronic pressure monitoring units, RMUs send out alarm notifications to  
3 the department monitoring these devices when the current levels are below or above a pre-set  
4 tolerance. This allows SoCalGas to send personnel to determine what triggered the alarm and  
5 address the issue. Current RMUs rely on cellular connections to communicate with software and  
6 was built with a 2G technology that will be shut down by the end of 2019. SoCalGas will  
7 replace these units with new access technology to maintain communication with these devices  
8 and continue monitoring rectifiers. In order to replace and install new units throughout its  
9 service territory, SoCalGas is requesting incremental funding in 2017, 2018, and 2019 over the  
10 base forecast of \$499,000, \$ \$1,999,000, and \$2,462,000, respectively. Additional details can be  
11 found in supplemental workpaper SCG-04-GOM-CAP-SUP-013 located under Cathodic  
12 Protection Capital in Ex. SCG-04-CWP.

### 13 **3. Cost Drivers**

14 As previously discussed, the primary drivers for cathodic protection work is compliance  
15 with DOT regulation 49 C.F.R. § 192, Subpart I, and GO 112-F, which set forth the standards for  
16 corrosion control as well as the need to safeguard the integrity of the pipeline system and  
17 mitigation of risks associated with public safety, system reliability, and infrastructure integrity.

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

25 The underlying cost drivers for this capital work category relate to Company labor,  
26 contractor services, third-party services, paving services, and materials. This includes: the  
27 additions of new rectifier (impressed current) sites along with associated anode installations,  
28 including the necessary CP instrumentation and remote monitoring equipment; anode bed well  
29 replacements for existing rectifier systems; as well as installation and replacement of larger  
30 surface bed magnesium anode systems. All or a combination of these construction elements are  
31 necessary for cathodic protection projects.

1 Furthermore, the RAMP Report identified the need to continue CP activities to further  
 2 address the risks of catastrophic damage involving a high-pressure or a medium-pressure  
 3 pipeline failure. As discussed above, CP infrastructure is installed or replaced to protect the steel  
 4 pipe system, which drive costs in this work category. The costs associated with this RAMP  
 5 activity are included in the Cathodic Protection Capital base forecast and incremental increase  
 6 discussed above for the years 2017 through 2019.

7 **I. Pipeline Relocations – Freeway**

8 The work in the Pipeline Relocations – Freeway category includes expenditures  
 9 associated with relocating or altering SoCalGas facilities in response to external requests, as  
 10 specified under the provisions of utility agreements with state and local agencies. The capital  
 11 forecast for the Pipeline Relocations – Freeway work category is summarized in Table GOM-44  
 12 below.

13 **Table GOM-44**  
 14 **Southern California Gas Company**  
 15 **Pipeline Relocations - Freeway**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>J. Pipeline Relocations - Freeway</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Pipeline Relocations - Freeway	6,551	7,837	7,837	7,837
<b>Total</b>	6,551	7,837	7,837	7,837

16  
 17 **1. Description of Costs and Underlying Activities**

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

25 Gas facility projects and work initiated to accommodate freeway enhancements include  
 26 altering pipeline crossing over and under a freeway bridge span, any gas facility interfering with

1 construction within the agency’s right-of-way, or any gas facility in the general vicinity that  
2 interferes with the freeway project construction. Freeway relocation projects include all sizes of  
3 distribution pipeline work, supply line alterations, service alterations, and MSA alterations. The  
4 exact timing and number of freeway pipeline projects is driven by the schedules and budgets of  
5 outside agencies. Therefore, expenditures in this category are dependent on the number, extent,  
6 and timing of these requests, which are largely outside of SoCalGas’ control. When projects do  
7 occur, however, SoCalGas must promptly complete its portion of the work to minimize schedule  
8 delays for the agency.

9         These forecasted capital expenditures support compliance with the provisions of third-  
10 party agreements.

## 11                   **2.         Forecast Method**

12         Freeway pipeline projects are driven by the level of funds available to transportation  
13 agencies, primarily to CalTrans. In developing the forecast for this work category, SoCalGas  
14 reviewed historical (2012 through 2016) expenditures as well as available data on future projects.  
15 As positive economic conditions continue<sup>38</sup> and the demand on the overall public infrastructure  
16 continues to grow, SoCalGas anticipates that more projects will be added. Therefore, SoCalGas  
17 expects future levels of expenditures to continue based on the five-year historical average.  
18 Furthermore, SoCalGas recognizes that the timing to complete each project is difficult to predict,  
19 due to the need for review of operating conditions, detailed planning requirements, acquisition of  
20 required permits, risk assessment, and coordination and scheduling of resources.

21         Therefore, expenditures for this work category were forecasted using the five-year (2012  
22 through 2016) historical average. This average is most representative of future work  
23 requirements and expected expenditures, as it captures typical fluctuations in project costs from  
24 year to year and provides for special projects taking place during the forecast period. Other  
25 forecast methods considered include the five-year (2012 through 2016) linear trend and 2016  
26 Base, however, these forecasts would not provide sufficient funding to complete anticipated level  
27 of freeway projects as required by state, county and city agency agreements.

28         SoCalGas’ five-year (2012 through 2016) historical average forecast results in a funding  
29 requirement of \$7,837,000 for each year 2017 through 2019.

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<sup>38</sup> IHS Global Insight –Southern California non-farm employment growth rate is used as a directional indicator for general economic conditions and potential economic growth.

**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.

**J. 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 GOM-45 below.

**Table GOM-45  
Southern California Gas Company  
Pipeline Relocations - Franchise**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>K. Pipeline Relocations - Franchise</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Pipeline Relocations - Franchise	13,319	17,894	17,894	17,894
<b>Total</b>	<b>13,319</b>	<b>17,894</b>	<b>17,894</b>	<b>17,894</b>

**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



1 railway systems. The work in this category includes expenditures associated with relocating or  
2 altering SoCalGas facilities in response to these external requests, as specified under the  
3 provisions of SoCalGas' franchise agreements with city and county agencies. Some examples of  
4 the type of municipality work that drives SoCalGas franchise pipe relocations include street  
5 widening, resurfacing, or repairs, storm drain work, and municipality water and sewer work.

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

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

## 12 **2. Forecast Method**

13 Franchise pipeline replacements are driven by the level of construction activity from  
14 municipalities, who are generally responding to a need for upgrading an aging infrastructure or  
15 expansion requirements. This work is normally driven by the availability of funds for  
16 municipalities. Long term forecasting of franchisee work is difficult, given the changes in  
17 governmental project funding, the large number of governmental jurisdictions involved and  
18 limited long-term information on upcoming specific projects. However, in SoCalGas'  
19 observation, municipality work generally fluctuates with economic conditions. Gas Distribution  
20 has chosen non-farm employment growth, as reported by IHS Global Insight, as a directional  
21 indicator for general economic conditions and potential economic growth. This IHS Global  
22 Insight employment forecast is shown in the workpaper of Ms. Payan, Ex. SCG-39-WP. In  
23 general, IHS Global Insight forecasts that the non-farm employment growth rate in Southern  
24 California will continue trending in a positive direction.

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

1 activity necessary for the aging streets and water pipes. This activity generates additional  
2 requests for SoCalGas pipe relocations and alterations.

3 In projecting the future requirements for this activity, SoCalGas reviewed the 2012  
4 through 2016 historical spending for this work category. As economic conditions continue to  
5 thrive, municipalities will continue to improve their infrastructure. Thus, to reflect the  
6 anticipated rate of pipeline replacements related to franchise work and to account for the  
7 historical fluctuations in project costs from year to year, SoCalGas projects expenses for this  
8 workgroup will follow the five-year (2012 through 2016) historical average. The resulting  
9 forecast is \$17,894,000 for each year in 2017, 2018, and 2019.

### 10 **3. Cost Drivers**

11 As discussed above, franchise work is driven by the volume and type of construction  
12 work required in response to requests from external agencies, such as cities and counties. These  
13 agencies submit requests for SoCalGas to relocate pipe that would, if maintained in its current  
14 location, interfere with the construction or reconstruction of roads or railway systems. Some  
15 examples of the type of municipality work that drives SoCalGas franchise pipe relocations  
16 include street widening, resurfacing, or repairs, storm drain work, and municipality water and  
17 sewer work.

18 Population growth and density also drive municipality work. As an area's population  
19 grows or expands, there is a need for street widening, increased street maintenance, and  
20 increased capacity of the water and sewer systems. Another driver is the age of the  
21 municipality's infrastructure. Generally, as infrastructure ages, there is an increase in the level  
22 of replacement activity.

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

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

### 29 **K. Other Distribution Capital Projects and Meter Guards**

30 The Other Distribution Capital Projects and Meter Guards work category covers the  
31 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 GOM-46 below.

**Table GOM-46**  
**Southern California Gas Company**  
**Other Distribution Capital Projects and Meter Guards**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>L. Other Distribution Capital Projects &amp; Meter Guards</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Other Distribution Capital Projects	4,424	3,297	3,297	3,297
2. Meter Guards	358	359	8,299	8,299
<b>Total</b>	<b>4,782</b>	<b>3,656</b>	<b>11,596</b>	<b>11,596</b>

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 for 2017, 2018, and 2019 is \$3,656,000, \$11,596,000, and \$11,596,000.

**1. Other Distribution Capital Projects**

The capital forecast for the Other Distribution Capital Projects work category is summarized in Table GOM-47 below.

**Table GOM-47**  
**Southern California Gas Company**  
**Other Distribution Capital Projects**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>L. Other Distribution Capital Projects</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Other Distribution Capital Projects	4,424	3,297	3,297	3,297

1 **a. Description of Costs and Underlying Activities**

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

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

15 This activity is generally unpredictable, due to its nature, as the vast majority of the costs  
16 are driven by property owners requesting SoCalGas to move its facilities from their property.  
17 When projects do occur, SoCalGas must promptly complete its portion of the work to minimize  
18 schedule delays for the landowner or agency.

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

22 **b. Forecast Method**

23 The level of spending in this work category is highly driven by the volume of external  
24 construction activity. Given the generally unpredictable nature of this activity, SoCalGas used  
25 the historical five-year (2012 through 2016) average to forecast expenditures. This forecast  
26 methodology best represents the cyclical volume of work completed on an annual basis and  
27 captures the various challenges encountered during construction, which tend to require a higher  
28 level of coordination with external parties. Projects in this work category are heavily dependent  
29 on the schedules and permitting constraints of third parties. The parties that generate this type of

1 work for SoCalGas range in size from small clients to large corporations, which trigger a varying  
2 degree of scope of work for each construction job.

3 Other forecast methods considered included the five-year trend (2012 through 2016) and  
4 the 2016 base year. Both of these options result in a higher base forecast than the five-year  
5 (2012 through 2016) average. However, given the degree of variability observed in the historical  
6 expenses for this work category, SoCalGas chose the more conservative five-year average  
7 approach. The five-year (2012 through 2016) average results in a base forecast of \$3,297,000  
8 per year in 2017, 2018, and 2019.

### 9 c. Cost Drivers

10 Costs in the Other Distribution Capital Projects work category are primarily driven by the  
11 volume and type of construction required to address the needs of property owners requesting  
12 SoCalGas to move facilities from their property. The degree of complexity of each relocation  
13 request varies, and often, the customers' construction schedules are unpredictable, direct impacts  
14 SoCalGas' costs. It is SoCalGas' observation that customers' work is generally driven by  
15 economic conditions. As economic conditions improve,<sup>39</sup> this category of work has the potential  
16 to increase.

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

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

## 26 2. Meter Guards

27 The capital forecast for the Meter Guards work category is summarized in Table GOM-  
28 48 below.

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

**Table GOM-48**  
**Southern California Gas Company**  
**Meter Guards**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>L. Other Distribution Capital Projects &amp; Meter Guards</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
2. Meter Guards	358	359	8,299	8,299

**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 GO 112-F and with 49 C.F.R. § 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 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.

The meter guard work discussed in Section III.A.6, Service Maintenance, is for the replacement or repair of existing infrastructure, while this capital category covers meter guards installed at a facility for the first time.

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.

1 **b. Forecast Method**

2 As discussed by Ms. Marelli (Ex. SCG-18), in 2016 SoCalGas implemented a focused  
3 MSA inspection program. As Customer Services increases the number of MSA inspections, the  
4 amount of work orders generated for follow up will continue to increase. This includes  
5 identifying MSAs that require the installation of a new meter guard. Given the significant  
6 increase in meter guard orders the MSA inspection team is identifying and the anticipated  
7 increase in the next few years, SoCalGas forecasted this work category using a zero-based  
8 approach. For the year 2017, SoCalGas used the Base Year 2016 to forecast the level of  
9 expenditure in this capital category. During 2017, SoCalGas will develop a plan to address the  
10 installation of the incremental meter guards, for implementation starting in 2018. SoCalGas  
11 forecasts installing meter guards at approximately 13,000 MSA locations each year in 2018 and  
12 2019.

13 Using a five-year (2012 through 2016) historical average or linear trend would not be  
14 appropriate as it would not address the funding needed for the incremental activity. In order to  
15 address the work under this capital category, SoCalGas is requesting \$359,000 in 2017 and  
16 \$8,299,000 in each of the years 2018 and 2019. Additional details can be found in supplemental  
17 workpaper SCG-04-GOM-CAP-SUP-014 located under Other Distribution Capital Projects and  
18 Meter Guards – Meter Guards in Ex. SCG-04-CWP.

19 **c. Cost Drivers**

20 SoCalGas installs meter guards in response to the need to protect its gas distribution  
21 assets and to promote public safety as well as to comply with state and federal regulations.  
22 Meter guard installation work is driven by conditions surrounding the location of an existing  
23 meter set assembly. Meter guards are installed to protect the MSA when it is apparent that  
24 activity on the property creates or encourages a potentially hazardous environment to the MSA.  
25 This work supports the Company’s commitment to mitigate the risks associated with public  
26 safety, system reliability, and infrastructure integrity.

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

1           **L.     M&R Devices**

2           The M&R Devices work category includes expenditures for the purchase of gas meters,  
3 regulators, electronic gas pressure and temperature correction equipment, and electronic pressure  
4 monitors. The capital forecast for this work category is summarized in Table GOM-49 below.

5   **Table GOM-49**  
6   **Southern California Gas Company**  
7   **M&R Devices**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>M. Measurement &amp; Regulation Devices</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Meters	27,685	16,290	22,206	29,838
2. Regulators	8,415	3,733	4,963	5,128
3. Gas Energy Measurement Systems	1,059	1,415	1,470	1,494
4. Electronic Pressure Monitors	577	829	909	577
<b>Total</b>	<b>37,736</b>	<b>22,266</b>	<b>29,547</b>	<b>37,037</b>

8           The forecast for M&R Devices for 2017, 2018, and 2019 are \$22,266,000, \$29,547,000,  
9 and \$37,037,000, respectively. These expenditures are necessary to safeguard public safety,  
10 comply with applicable rules and regulations governing gas metering (GOs 58-A and 112-F), and  
11 meet SoCalGas’ obligation to accurately measure gas consumption and to serve new customers.

12   **1.     Meters**

13           The expenditures included in the Meters work category are for materials, warehouse  
14 handling, technical evaluations, and quality assurance for the purchase of small meters, typical of  
15 residential and small business applications, and larger meters, typical of non-residential  
16 applications. The capital forecast for this work category is summarized in Table GOM-50  
17 below.



**Table GOM-50**  
**Southern California Gas Company**  
**Meters**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>M. Measurement &amp; Regulation Devices</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Meters	27,685	16,290	22,206	29,838

**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, M&R).

New business meters are purchased for installation at new customer premises. Meter purchases in this category are consistent with installations discussed in Section V.A (New Business). For additional details on the forecast of calculation of new meter set installations, refer to the workpaper of Ms. Payan, Ex. SCG-39-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 M&R 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 by Ms. Marelli (Ex. SCG-18).

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.

1 Furthermore, these forecasted capital expenditures support the Company’s obligation to  
2 serve and the commitment to effectively respond to new customer demand and to provide safe  
3 and reliable service at reasonable cost.

4 **b. Forecast Method**

5 A zero-based forecasting methodology was used to forecast the expenditures of this  
6 capital work category. This methodology was based on the projected number of new meter sets  
7 and the forecasted replacement meter sets. Additional details on the forecast methodology for  
8 new meter sets can be found in the workpaper of Ms. Payan, Ex. SCG-39-WP. The details of the  
9 number of forecasted replacement meter sets can be found in the accompanying supplemental  
10 workpaper SCG-04-GOM-CAP-SUP-007 in Ex. SCG-04-CWP. This unit forecast was  
11 multiplied by the weighted average cost per meter type, based on historical meter purchases.  
12 The zero-based calculation yields the most accurate forecast for this capital category, as it  
13 incorporates the projected customer growth and forecasted meter replacements, while utilizing  
14 the historical proportional cost per meter type. See supplemental workpaper SCG-04-GOM-  
15 CAP-SUP-007 for the unit forecast and calculation details. The capital funding for meter  
16 purchases in years 2017, 2018, and 2019 is \$16,290,000, \$22,206,000, and \$29,838,000,  
17 respectively.

18 **c. Cost Drivers**

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

1 class performance. Furthermore, starting in 2019, AMI Meter Transmission Unit (MTU)  
2 purchases needed to replace malfunctioning units, will be part of Gas Distributions routine work.

3 **2. Regulators**

4 The expenditures included in the Regulators capital work category are for the purchase of  
5 new installation and replacement regulator materials and technical evaluations. Associated  
6 installation expenses are covered in other applicable work categories (e.g., New Business,  
7 M&R). The capital forecast for the Regulators work category is summarized in Table GOM-51  
8 below.

9 **Table GOM-51**  
10 **Southern California Gas Company**  
11 **Regulators**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>M. Measurement &amp; Regulation Devices</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
2. Regulators	8,415	3,733	4,962	5,128

12  
13 **a. Description of Costs and Underlying Activities**

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

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

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

3                           **b.       Forecast Method**

4           The methodology used to calculate the required funding for regulator purchases was  
5 based on a weighted average of the regulator contract prices multiplied by the new business  
6 installation and replacement requirements. To determine the number of regulators needed,  
7 SoCalGas used as a basis the historical five-year ratio between purchased meters to purchased  
8 regulators (2009 through 2013). The determined five-year ratio represented the regulator factor  
9 used to forecast the number of regulators to be purchased. SoCalGas used the ratio from the  
10 historical period (2009 through 2013) as it best represents the true ratio between meters to  
11 purchased regulators (51%). Due to the Advanced Metering Infrastructure (AMI) project,  
12 SoCalGas purchased meters at a higher rate during the current five-year (2012 through 2016)  
13 period. Using the period 2012 through 2016 would reflect a ratio lower (37%) than what is  
14 required for the forecasted period 2017 through 2019. By multiplying the regulator to meter  
15 ratio from the (2009 through 2013) historical period with the projected number of forecasted  
16 meter set purchases, it yielded the projected number of regulators for each of the forecast years.  
17 The labor expenditure was then calculated by taking the projected number of regulators  
18 multiplied by the historical 2016 average labor cost per regulator. See supplemental workpaper  
19 SCG-04-GOM-CAP-SUP-007 in Ex. SCG-04-CWP for calculation details.

20           In summary, the capital funding required for the Regulators work category is forecasted  
21 to be \$3,733,00, \$4,962,000, and \$5,128,000 in the years 2017, 2018, and 2019, respectively.

22                           **c.       Cost Drivers**

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

1                   **3. Gas Energy Measurement Systems**

2                   The capital expenditures included in the Gas Energy Measurement Systems (GEMS)  
3 work category are for the purchase of GEMS devices, other associated material, warehouse  
4 handling, technical evaluations, quality assurance, and costs for the initial installation of the  
5 GEMS devices. The capital forecast for the Gas Energy Measurement Systems work category is  
6 summarized in Table GOM-52 below.

7   **Table GOM-52**  
8   **Southern California Gas Company**  
9   **Gas Energy Measurement Systems**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>M. Measurement &amp; Regulation Devices</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
3. Gas Energy Measurement Systems	1,059	1,415	1,470	1,494

10  
11                   **a. Description of Costs and Underlying Activities**

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

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

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

4                           **b.       Forecast Method**

5           A zero-based forecasting methodology was used to forecast the expenditures of this  
6 capital work category. This methodology incorporates the new business growth factor to project  
7 new GEMS installations using 2016 recorded new installations as a basis.

8           In general, gas measurement instruments are routinely replaced due to age, failed  
9 components, or damaged devices. It is necessary to replace these devices before they fail to  
10 avoid customer measurement errors and related increases in O&M expenses. In preparing the  
11 forecast for the new installations and the replacement units discussed above, the annual costs  
12 were based on the 2016 average cost per unit for each device type, multiplied by the number of  
13 units forecasted. See supplemental workpaper SCG-04-GOM-CAP-SUP-009 in Ex. SCG-04-  
14 CWP for calculation details. The resulting capital forecast for GEMS for 2017, 2018, and 2019  
15 is \$1,415,000, \$1,470,000, and \$1,494,000, respectively.

16                           **c.       Cost Drivers**

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

24           The underlying cost drivers for this capital work category relate to the purchase of GEMS  
25 devices to meet the projected number of new installations and the projected replacement count.  
26 Although contractual unit prices for the GEMS devices stay relatively fixed, there are small  
27 fluctuations in price due to varying shipping and handling costs. It is SoCalGas’ experience that  
28 new customer-driven installations increase as the economy improves. Units purchased for  
29 replacements are in response to Company or customer-identified problems, such as technical  
30 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 GOM-53 below.

**Table GOM-53  
Southern California Gas Company  
Electronic Pressure Monitors**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>M. Measurement &amp; Regulation Devices</b>	<b>2016 Adjusted-Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
4. Electronic Pressure Monitors	577	829	909	577

**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 C.F.R. § 192.741 (Pressure limiting and regulating stations: Telemetry or recording gauges).

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 C.F.R. § 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 2016 base forecast methodology plus incremental cost was used to forecast the expenditures of this capital work category. The number of new electronic pressure monitor (EPM) installations includes the replacement of 350 units that are incompatible with the new advance meter system. SoCalGas will also continue installing new electronic pressure monitors in zones where system pressure is under-monitored. SoCalGas considered using a historical (2012 through 2016) five-year average or five-year linear trend, which would result in a higher

1 forecast; however, this would overstate the funding requirement as SoCalGas completed its  
2 replacement of terminal gauges during the previous five years (2012 through 2016) increasing  
3 spending during that period. Using a 2016 base forecast method plus incremental is a better  
4 representation of future needs as it captures the rate of replacement and new installations needed  
5 to continue to monitor the system safely and efficiently. See supplemental workpaper SCG-04-  
6 GOM-CAP-SUP-009 in Ex. SCG-04-CWP for calculation details. The resulting forecast for the  
7 base work in electronic pressure monitors for 2017, 2018, and 2019 is \$577,000 in each year.  
8 Added to this base forecast is the incremental increase described below.

9 **i. Incremental EPM Installations**

10 The implementation of the (AMI) communication system, used to transmit meter  
11 consumption data, has allowed SoCalGas to move towards consolidating the communication of  
12 its electronic devices, including the EPMs, into this wireless communication network.

13 In order to synchronize the new AM communication system with the current electronic  
14 pressure monitoring system, SoCalGas evaluated their compatibility. During this evaluation, 350  
15 unique units were identified as incompatible and therefore requiring replacement. SoCalGas  
16 plans to replace 199 units in 2017 and 151 units in 2018 to attain proper communication with the  
17 new AMI system and sustain ongoing monitoring of the gas distribution system. See  
18 supplemental workpaper SCG-04-GOM-CAP-SUP-009 for the units forecast and calculation  
19 details. The resulting forecast over the base in 2017 and 2018 is \$252,000 and \$332,000,  
20 respectively.

21 **c. Cost Drivers**

22 The cost drivers for this capital category include the need to replace the obsolete EPM  
23 devices that are not compatible with the new advanced metering system; the need to replace  
24 existing EPMs due to electronic component malfunctions; the need to install EPMs in areas  
25 without pressure monitors or that are currently under-monitored.

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

29 **M. Capital Tools**

30 The Capital Tools work category includes capital expenditures associated with the  
31 purchase of tools and equipment used by Gas Distribution field personnel for the inspection,



1 maintenance and repair of gas pipeline systems. The capital forecast for the Capital Tools work  
2 category is summarized in Table GOM-54 below.

3 **Table GOM-54**  
4 **Southern California Gas Company**  
5 **Capital Tools**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>N. Capital Tools</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Capital Tools & Equipment	9,665	8,919	10,620	12,322
2. Capital Tools – RAMP	-	5,467	3,600	-
<b>Total</b>	<b>9,665</b>	<b>14,386</b>	<b>14,220</b>	<b>12,322</b>

6  
7 **1. Description of Costs and Underlying Activities**

8 The main drivers of this category include the need to replace existing tools that are  
9 damaged, broken, outdated technologically, or have outlived their useful lives; and the need  
10 stock crew vehicles with new tools and equipment. In addition, SoCalGas invests in new tools  
11 that provide innovative ways of completing the maintenance and repair of its facilities in order to  
12 lessen customer disruptions, improve pipeline facility documentation, improve gas system safety,  
13 and improve employee safety.

14 The Capital Tools category covers mitigation measures in support of two top safety risk  
15 identified in the RAMP Report and discussed in Section II above: (1) Catastrophic Damage  
16 Involving Third Party Dig-Ins, and (2) Employee, Contractor, Customer and Public Safety.  
17 Specifically, it includes costs for implementing RAMP activities related to employee safety and  
18 implementation of modernized tools.

19 **2. Forecast Method**

20 Routine tool purchase requirements are identified during the year, as part of the regular  
21 course of maintenance and construction activities. SoCalGas expects routine tool purchases to  
22 continue on an increasing trend as existing tools and equipment reach their useful life  
23 expectancies and the level of construction and maintenance activities increases, adding to the  
24 number of new employees that must be equipped with tools and equipment. Some tools are  
25 exposed to rigorous use. Due to safety risks, such tools must be replaced before breaking.  
26 Otherwise, they could potentially cause injury to an employee. The increases of other work

1 activities as stated throughout my testimony add to the number of new employees that must be  
2 equipped with tools and equipment. SoCalGas evaluates field tools and equipment based on  
3 safety, functionality, cost and quality. Costs are minimized by encouraging sharing between  
4 employees and crews, and by repairing tools when it is safe to do so.

5 A five-year (2012 through 2016) historical linear trend forecast methodology was used to  
6 forecast the expenditures of routine tool purchases. Historical expenditures indicate that there  
7 has been an increase in expenditures every year starting in 2014 through 2016, as reflected in the  
8 historical figures. Although use of the three-year trend would result in a higher forecast,  
9 SoCalGas chose the more conservative five-year trend forecast for routine tool expenditures. A  
10 five-year (2012 through 2016) average would not provide sufficient funding for this category  
11 given the increasing work requirements driving the need for tools. Therefore, SoCalGas used the  
12 five-year (2012 through 2016) trend, which results in a base forecast in 2017, 2018, and 2019 of  
13 \$8,919,000, \$10,620,000, and \$12,322,000, respectively.

14 Added to this work category are three incremental elements not reflected in the routine  
15 base forecast to adequately fund equipment and tools in 2017 and 2018: locate and mark tools,  
16 air space monitoring, and upgrading Nomex Coveralls. These three incremental activities are  
17 part of mitigation measures in support of two RAMP-related risks.

18 **a. RAMP – Risk ID 14/ SCG Catastrophic Damage Involving**  
19 **Third Party Dig-Ins – Standardize Locate and Mark Tools**

20 The Company currently uses a variety of locating equipment to find the location of  
21 Company buried facilities in an area scheduled for excavating. Having different locating units  
22 presents the potential risk that an employee may not fully understand the function of each unit  
23 and can potentially mis-mark a gas facility in the field. SoCalGas will be standardizing the  
24 locate and mark equipment to improve locator knowledge and experience with the equipment.  
25 This effort will improve training, marking accuracy, and create a best practice of utilizing only  
26 one approved tool. The forecast for this activity is \$3,800,000 in 2017 and \$2,500,000 in 2018.

27 **b. RAMP – Risk ID 14/ SCG Employee, Contractor, Customer,**  
28 **and Public Safety - Confined Space Air Monitoring System for**  
29 **Field Personnel**

30 SoCalGas will replace the current confined space and H<sub>2</sub>S monitoring equipment system-  
31 wide to address age-related equipment failures that currently present a potential risk to the safety  
32 of employees working in gaseous atmospheres. The new equipment and associated training will

1 encompass both regular and occasional users who have been identified as performing duties in  
2 confined spaces or where the potential for H<sub>2</sub>S exposure exists. Non-labor expenses for this  
3 activity are estimated to be \$1,100,000 in 2018.

4 **c. RAMP – Risk ID 14/ SCG Employee, Contractor, Customer,**  
5 **and Public Safety - Upgrade Nomex Coveralls and Fresh Air**  
6 **Equipment**

7 Field personnel working in Immediately Dangerous to Life or Health (IDLH)  
8 environments or in flammable atmospheres must wear gas extraction suits and a Supplied Air  
9 Respirator (SAR) with an escape bottle or a Self-Contained Breathing Apparatus (SCBA). The  
10 manufacturer of the currently used SAR kits no longer supports the equipment. SoCalGas will  
11 implement a system-wide replacement of the SAR kits with SCBA kits prior to failure which  
12 will also create consistency among operating groups. In addition, the fire-resistant gloves  
13 currently used with the gas extraction suits provide minimal dexterity making it difficult for field  
14 personnel to handle small tools and equipment. Replacement of these gloves will reduce the  
15 risks associated with working in potentially hazardous atmospheres for extended periods of time.  
16 The forecast for this activity is \$1,667,000 in 2017.

17 **3. Cost Drivers**

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

26 The main driver of this plant category is the need to replace existing tools that are broken,  
27 outdated, or have outlived their useful lives. The underlying cost drivers for this capital work  
28 category include expenditures associated with the purchase of capital tools and equipment used  
29 by Gas Distribution field personnel for the maintenance and construction of gas pipeline systems.  
30 In addition, SoCalGas invests in new tools that provide innovative ways of completing field  
31 work in order to lessen customer disruptions, improve pipeline facility documentation, and  
32 improve gas system and employee safety.

1 Furthermore, the RAMP Report identified the need to provide personnel the proper tools  
 2 and equipment to safety complete work. This measure further mitigates the risks of Catastrophic  
 3 Damage Involving Third Party Dig-Ins; and Employee, Contractor, Customer and Public Safety.  
 4 The costs associated with this RAMP activity are included in the Capital Tools incremental  
 5 increases discussed above as well as in the base forecast.

6 **N. Field Capital Support**

7 This work category provides the labor and non-labor funding for a broad range of  
 8 services to support Gas Distribution field capital asset construction. The forecast for the Field  
 9 Capital Support work category is summarized in Table GOM-55 below.

10 **Table GOM-55**  
 11 **Southern California Gas Company**  
 12 **Field Capital Support**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>O. Field Capital Support</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Field Capital Support	66,609	61,317	70,292	74,618
<b>Total</b>	66,609	61,317	70,292	74,618

13  
 14 **1. Description of Costs and Underlying Activities**

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

19 Support activities recorded to this budget include:

20 Technical Planning

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

- 24 • Planning the Project – Conducting field visits to assess job site requirements;  
 25 retrieving available sub-structure drawings from multiple sources for the proposed  
 26 site to determine construction options; selecting materials; job specifications and

1 method of installation; job specific gas control instructions; developing traffic control  
2 procedures; and obtaining permits.

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

#### 18 Local Engineering

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

#### 24 Clerical

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

1 Scheduling and Dispatch

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

5 Field Management and Supervision

6 Field management and supervision of SoCalGas and contractor field crews is covered by  
7 this area. This includes the inspection of Company and contractor work to verify that  
8 construction follows job specifications, construction and safety standards, employee safety  
9 procedures, and compliance with OpQual requirements. This also includes the management of  
10 front-line supervisors and technical planning office supervisors.

11 Off-Production Time

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

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

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

25 **2. Forecast Method**

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

1 Over the past five years (2012 through 2016), the percentage has ranged from 29% to  
2 37%, with 2015 experiencing the highest ratio and 2014 the lowest. This variation is due in part  
3 to the mix of projects in each year as some capital work requires more labor support as a  
4 percentage of the project's cost. Given this variation in work and associated labor support costs,  
5 SoCalGas chose the five-year (2012 through 2016) historical average support ratio of 32.7% to  
6 determine the base forecast for the Field Capital Support work category. SoCalGas applied this  
7 labor ratio of 32.7% to the overall projected capital construction cost to determine the future  
8 needs of this workgroup. The non-labor forecast for this workgroup was determined using the  
9 historical (2012 through 2016) five-year average.

10 The resulting forecast for Field Capital Support for 2017, 2018, and 2019 is \$61,317,000,  
11 \$70,292,000, and \$74,618,000, respectively. See supplemental workpaper SCG-04-GOM-CAP-  
12 SUP-010 in Ex. SCG-04-CWP for calculation details.

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

20 In order to perform the incremental work forecasted in this area, SoCalGas is adding one  
21 incremental light-duty truck in 2017, five in 2018, and five in 2019. The costs associated with  
22 these vehicles are discussed by Ms. Herrera (Ex. SCG-23).

### 23 **3. Cost Drivers**

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

1 construction related work categories, as described in the Capital section in this testimony, will  
2 also impact the Field Capital Support work category.

3 **O. Remote Meter Reading**

4 This cost category consists of Customer Services Field (CSF) labor and non-labor capital  
5 expenses for curb meter replacements as part of the Planned Meter Changeouts (PMC)  
6 associated with the AMI implementation. The capital forecast associated with this workgroup is  
7 summarized in Table GOM-56 below.

8 **Table GOM-56**  
9 **Southern California Gas Company**  
10 **Remote Meter Reading**

<b>GAS DISTRIBUTION (In 2016 \$)</b>				
<b>O. Remote Meter Reading</b>	<b>2016 Adjusted- Recorded (000s)</b>	<b>Estimated 2017 (000s)</b>	<b>Estimated 2018 (000s)</b>	<b>Estimated 2019 (000s)</b>
1. Remote Meter Reading	4,664	727	2,032	-
<b>Total</b>	4,664	727	2,032	-

11  
12 **1. Description of Costs and Underlying Activities**

13 Beginning in 2013, the AMI project assumed responsibility for above-ground Planned  
14 Meter Changeouts (PMCs), including both planned and accelerated meter changes; and  
15 Customer Services Field (CSF) shifted its focus to curb meter changes. This trade-off (the AMI  
16 project team focusing on above-ground meters and CSF focusing on curb meters) enabled a  
17 better match between the work and employee skill sets. My testimony covers the capital costs  
18 associated with CSF's curb meter changeout effort. Costs for all AMI modules and meters for  
19 the curb meter installations are not included in this cost category since these costs are funded by  
20 the AMI project implementation. Refer to the testimony of Mr. Garcia (Ex. SCG-17) for more  
21 information.

22 **2. Forecast Method**

23 A zero-based forecasting methodology was used to forecast the expenditures for this  
24 capital work category. Costs are primarily driven by work order volumes. The forecast is based  
25 on remaining curb meters totaling 26,600 meters that have not been advanced as part of AMI



1 implementation. Refer to supplemental workpaper SCG-04-GOM-CAP-SUP-015 in Ex. SCG-  
2 04-CWP for calculation details.

3 Costs are split 50/50 between O&M and Capital for curb meter replacements because the  
4 existing curb meters are incompatible with AMI technology. The O&M forecast for 2017 and  
5 2018 are covered in the workpapers of Ms. Marelli, Exhibit SCG-18-WP. The resulting capital  
6 forecast for 2017 and 2018 for Remote Meter Reading is \$727,000 and \$2,032,000, respectively.

### 7 **3. Cost Drivers**

8 Costs are driven by the order volumes, the average number of orders completed per  
9 employee based on 2016 base year, vacation and sick time, and training time. Incremental labor  
10 from higher-skilled field employees are required to provide support which includes, but is not  
11 limited to, restoring gas service to customer's premise due to unforeseen interruption; replacing  
12 broken, frozen or leaking service valves; and testing for leakage on company or customer gas  
13 piping. Costs are driven by number of employees to support these activities and applicable wage  
14 rates.

15 For the management staff, costs are driven by number of employees needed to support  
16 and applicable wage rates. The management staff consists of supervisors to manage the work  
17 and performance of the field technicians. Supervision costs are based on maintaining a  
18 reasonable span of control and taking into consideration the geographical dispersion of  
19 employees across SoCalGas' territory as supervision needs to be able to respond to employees in  
20 case of emergencies. It also includes other management staff to support work order scheduling,  
21 planning and general coordination of the project and day to day operations. Non-labor costs are  
22 driven by the vehicles needed based on number of employees and applicable lease costs for these  
23 vehicles.

1  
2 **VI. CONCLUSION**

3 SoCalGas requests the Commission adopt its TY 2019 forecast of \$148,154,000 for Gas  
4 Distribution O&M expenses, which is composed of \$147,879,000 for non-shared service  
5 activities and \$275,000 for shared service activities. This increase is driven by increased agency  
6 regulations and requirements, economic conditions, system expansion, infrastructure renewal,  
7 field technical skills training and qualification, risk mitigation activities, and integration and  
8 support of new tools.

9 SoCalGas further requests the Commission adopt its capital forecast of \$278,473,000,  
10 \$341,801,000, and \$347,842,000 in 2017, 2018, and 2019, respectively. The primary factors  
11 influencing the capital forecast are anticipated increases in new business-related activity and  
12 pipeline system infrastructure renewal work.

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

- 16
- 17 • The activities are necessary to maintain the delivery of safe and reliable service that  
18 SoCalGas has been providing customers for many years;
  - 19 • The activities are consistent with operational codes and standards established by  
20 local, state, and federal agencies;
  - 21 • The activities respond to operations, maintenance, and construction needs associated  
22 with projected customer and system growth and demands of city, county, and state  
23 agencies under the Company's franchise agreements; and
  - 24 • The forecast amounts are reasonable in light of historical spending and anticipated  
25 work increases.

26 SoCalGas faces a number of challenges affecting both the physical operation of the  
27 pipeline system and cost management aspects of its business. Operations and maintenance  
28 requirements increase as the system expands. Additional maintenance and replacement work is  
29 required to continue to maintain reliability of an aging infrastructure. Agencies and regulatory  
30 bodies continue to impose operating conditions that increase the cost of doing business. To  
31 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.

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

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

11           Accordingly, SoCalGas' TY 2019 forecast is a reasonable estimate of future requirements  
12 and should be adopted by the Commission.

13           This concludes my prepared direct testimony.  
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**VII. WITNESS QUALIFICATIONS**

My name is Gina Orozco-Mejia. My business address is 555 West Fifth Street, Los Angeles, California, 90013-1011. I am employed by SoCalGas as Vice President - Gas Operations, with dual responsibility for the SoCalGas and SDG&E gas distribution systems. I have been employed by SoCalGas since 1990. I have 27 years of experience in the utility industry. While at SoCalGas, I have held various staff and line positions in the functional areas of Gas Distribution Field Operations and Technical Services, Gas Engineering, Gas Operations Services, Gas System Operations and Human Resources.

My present responsibilities include providing leadership to a team of professionals responsible for the safe and reliable delivery of gas energy through the distribution pipeline network, including the operation, maintenance, installation, and replacement of the gas distribution system at SoCalGas and SDG&E. I also provide leadership for a group that provides technical support for gas distribution project management and construction activities. This includes gas distribution planning and system design; emergency preparedness, response and recovery; the preparation and management of O&M and capital budgets; and implementing large-scale distribution integrity projects.

I earned a Bachelor of Science Degree in Electrical Engineering from California State University, Los Angeles and an Executive Masters of Business Administration from Claremont Graduate University.

I sponsor the TY 2019 GRC testimony for SoCalGas' Gas Distribution O&M expenses and capital spending plan.

I have previously testified before the Commission.

## LIST OF ACRONYMS

AMI	Advanced Metering Infrastructure
ARSO	The Area Resource Scheduling Organization
CalTrans	California Department of Transportation
C.F.R.	Code of Federal Regulations
CP	Cathodic Protection
CPD	Construction Planning Design
CPUC	California Public Utilities Commission
CSF	Customer Service Field
DCU	Data collection unit
DIMP	Distribution Integrity Management Program
DOT	Department of Transportation
EDF	Environmental Defense Fund
EGIS	Enterprise Geographic Information System
EPM	Electronic pressure monitor
EVC	Electronic volume corrector
FOF	Fueling our Future
GEMS	Gas Energy Measurement Systems
GIS	Geographic Information System
GO	General Order
GRC	General Rate Case
GWD	Graphic Work Design
H <sub>2</sub> S	Hydrogen sulfide
IDLH	Immediately Dangerous to Life or Health
IP	Intellectual Property
M&R	Measurement and Regulation
MDT	Mobile Data Terminal
MSA	Meter Set Assembly
MTU	Meter Transmission Unit
mV	Millivolt
NGLAP	Natural Gas Leak Abatement Program

O&M	Operations and Maintenance
OMD	Optical Methane Detectors
OP	Ordering Paragraph
OpQual	Operator Qualification
PHMSA	Pipeline Safety and Hazardous Materials Administration
PMC	Planned Meter Changeouts
PPE	Personal Protective Equipment
PROW	Public right of way
PSEP	Pipeline Safety Enhancement Plan
psi	Pounds per square inch
RAMP	Risk Assessment Mitigation Phase
RMU	Remote Monitoring Unit
RPA	Regional Public Affairs
SAP	Systems, Applications, and Products in Data Processing
SAR	Supplied Air Respirator
SB	Senate Bill
SCBA	Self-Contained Breathing Apparatus
SDG&E	San Diego Gas & Electric Company
SED	Safety and Enforcement Division
SMYS	Specified Minimum Yield Strength
SoCalGas	Southern California Gas Company
TY	Test Year
USA	Underground Service Alert

**SCG 2019 GRC Testimony Revision Log –December 2017**

<b>Exhibit</b>	<b>Witness</b>	<b>Page</b>	<b>Line or Table</b>	<b>Revision Detail</b>
SCG-04	Gina Orozco-Mejia	GOM-37	2-8	Clarifying that SoCalGas will propose a risk-assessment based, more cost-effective alternative to a system-wide three-year leak survey cycle in its SB 1371 Compliance Plan filing in March 2018.