Company: Southern California Gas Company (U 904 G)
Proceeding: 2019 General Rate Case
Application: A.17-10-008
Exhibit: SCG-18-R

REVISED

SOCALGAS

DIRECT TESTIMONY OF GWEN R. MARELLI

(CUSTOMER SERVICES - FIELD AND METER READING)

December 2017

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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SUMMARY

CUSTOMER SERVICES - FIELD & METER READING O&M COSTS In 2016 $ (000s)			
	BY 2016 Adjusted Recorded	**TY 2019 Estimated**	**Change**
Non-Shared Customer Services Field	$ 155,943	$ 165,480	$ 9,537
Non-Shared Meter Reading	$ 10,064	$ 3,027	$ (7,037)
Total Non-Shared Services	$ 166,007	$ 168,507	$ 2,500
Total Shared Services	$ 1,194	$ 1,514	$ 320
Total O&M Costs	**$ 167,201**	**$ 170,021**	**$ 2,820**

CUSTOMER SERVICES FIELD & METER READING CAPITAL COSTS In 2016 $ (000s)			
	2017 Estimate	**2018 Estimate**	**2019 Estimate**
Total Capital Costs	**$ 6,838**	**$ 5,040**	**$ 3,472**

Summary of Requests:

Customer Services - Field – For Test Year (TY) 2019, Southern California Gas Company (SoCalGas) requests $165.480 million (an increase of $9.537 million above Base Year (BY) 2016 adjusted-recorded costs) for Customer Services - Field (CS-F) operations in order to complete customer and company generated work orders, including investigating reports of potential gas leaks and responding to other emergencies, establishing/terminating gas service, conducting customer appliance checks, shutting off and restoring gas service for fumigations, performing meter and regulator changes, inspecting meter sets for atmospheric corrosion and remediating conditions found during the inspections, and other related services at customer premises. SoCalGas' request reflects the following:

- CS-F work order forecast that reflects the effect of Advanced Metering Infrastructure (AMI) implementation and projected meter growth;

- Incremental funding for additional drive time for increased traffic congestion in SoCalGas' service territory;
- Incremental funding for meter changes in accordance to SoCalGas' Meter Performance Control Program which were not part of the accelerated meter changes completed as part of the AMI implementation;
- Incremental funding for the implementation of an Underset Regulator Remediation Program;
- Incremental funding to remediate Meter Transmission Unit (MTU)[1] failures;
- Incremental funding for the implementation of the Low Flow Meter (LFM) and five minute clock test method;
- Incremental funding to investigate abnormal consumption related to potential hot water leaks;
- Incremental funding to restore service for chronically inaccessible meter shut-offs associated with meter set assembly (MSA) inspections;
- Savings and ongoing costs and one time implementation costs from the Fueling Our Future (FOF) Initiative; and
- Incremental funding to ensure ongoing and enhanced compliance with Department of Transportation (DOT) required MSA inspections and remediate atmospheric corrosion and abnormal operating conditions identified during the MSA inspections.

Customer Services - Meter Reading – SoCalGas is requesting $3.027 million (a decrease of $7.037 million below BY 2016 adjusted-recorded costs) for Meter Reading operations. This request reflects the full effect of AMI implementation and manual meter reading costs for customers enrolled in the Opt-Out Program[2],

[1] An MTU is a communication device retrofitted to a SoCalGas' meter to securely transmit hourly gas meter readings wirelessly through SoCalGas' data communications network. For further discussion, refer to the Advanced Metering Infrastructure testimony of Rene Garcia (Exhibit SCG-17).
[2] Commission issued Decision (D.)14-02-019 approving SoCalGas' request to establish an advanced meter opt-out option for its residential customers.

customers located in AMI's escalated jurisdictions,[3] and for customers affected by AMI MTU failures.

Shared Services – SoCalGas is rquesting $1.514 million (an increase of $0.320 million above BY 2016 adjusted-recorded costs) for CS-F Staff functions that support both SoCalGas and San Diego Gas & Electric (SDG&E).

The requested funding support SoCalGas' goal of providing safe, reliable, and efficient gas service to customers.

[3] AMI's escalated jurisdictions refer to areas within SoCalGas service territory wherein SoCalGas has been unable to complete the installation of the AMI communication network. Information on impacted areas is discussed in Ex. 17 SCG/Garcia.

SOCALGAS REVISED DIRECT TESTIMONY OF GWEN R. MARELLI
(CUSTOMER SERVICES - FIELD AND METER READING)

I. INTRODUCTION

A. Summary of Proposals

1. Operations and Maintenance Costs

I sponsor the TY 2019 forecasts for operations and maintenance (O&M) costs, for both non-shared and shared services, for SoCalGas' CS-F and Meter Reading (CS-MR) operations. Table GRM-1 below summarizes my sponsored costs.

TABLE GRM-1

Test Year 2019 Summary of Total O&M Costs

CUSTOMER SERVICES - FIELD & METER READING In 2016 $ (000s)			
	BY 2016 Adjusted Recorded	**TY 2019 Estimated**	**Change**
Total Non-Shared	$ 166,007	$ 168,507	$ 2,500
Total Shared Services	$ 1,194	$ 1,514	$ 320
Total	**$ 167,201**	**$ 170,021**	**$ 2,820**

2. Capital Costs

Capital costs for the forecast years 2017, 2018, and 2019, for information technology systems that support CS-F and CS-MR operations (summarized in Table GRM-2 below), are sponsored by the Information Technology testimony of Chris Olmsted (Exhibit SCG-26). However, I will cover in my testimony the operating need for these costs.

Capital costs for meters, regulators, tools and equipment required for CS-F operations are covered in the Gas Distribution testimony of Gina Orozco-Mejia (Exhibit SCG-04).

TABLE GRM-2

Test Year 2019 Summary of Total Capital Costs

CUSTOMER SERVICES - FIELD & METER READING IT CAPITAL COSTS In 2016 $ (000s)			
	2017 Estimate	**2018 Estimate**	**2019 Estimate**
Total Capital	**$ 6,838**	**$ 5,040**	**$ 3,472**

B. Summary of Activities

CS-F consists primarily of residential, commercial, and industrial field technicians who perform services at customer premises, including meter work, establishing, and terminating gas service, lighting gas pilot lights, conducting customer appliance checks, investigating reports of potential gas leaks, investigating customer complaints of high bills, shutting off and restoring gas service for fumigations, responding to fires (e.g., to check for gas leakage/turn off gas service), and other emergency incidents and other related field services for customers. Field technicians work from 51 different operating base locations that are dispersed throughout SoCalGas' service territory, which has a total population of more than 20 million and spans across 20,000 square miles and 500 communities, from Visalia to the Mexico border.

CS-F MSA Inspection Program consists primarily of field technicians who perform physical, onsite inspections of each MSA to ensure ongoing and enhanced compliance with DOT required MSA inspections for atmospheric corrosion and identify conditions which require remediation by CS-F and Distribution organizations.

CS-MR consists primarily of meter readers who complete manual meter reads at customer premises so that gas consumption can be measured and bills generated for customers who do not get an AMI automated meter read. The absence of an automated read is the result of: (1) customers enrolled in the Opt-Out Program; (2) customers located in AMI's escalated jurisdictions; or (3) customers affected by AMI MTU failures. Like CSF field technicians, meter readers are geographically dispersed across SoCalGas' operating base locations.

C. Summary of Safety and Risk-Related Costs

Certain of the costs supported in my testimony are driven by activities described in SoCalGas and SDG&E's November 30, 2016 Risk Assessment Mitigation Phase (RAMP) report.[4] The RAMP report presented an assessment of the key safety risks of SoCalGas and SDG&E and proposed plans for mitigating those risks. As discussed in the Risk Management testimony chapters of Diana Day and Jamie York (Exhibit SCG-02/SDG&E-02, Chapters 1 and 3, respectively), the costs of risk-mitigation projects and programs were translated from that RAMP report into the individual witness areas. The forecasts for mitigation costs included in the

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

RAMP report are not for funding purposes, but rather to provide a range of estimated cost impacts for the TY 2019 GRC filing. Therefore, the final GRC representation of RAMP costs may differ from the ranges shown in the original RAMP report.

Table GRM-3 below provides a summary of the RAMP-related costs by RAMP Risk in TY 2019 supported by my testimony. Refer to Section II for additional details on RAMP-related mitigation costs.

TABLE GRM-3

Summary of Safety Related Risk Mitigation Costs

In 2016 $ (000s)

RAMP Risk Chapter	BY 2016 Embedded Base Costs	TY 2019 Estimated Incremental	TY 2019 Estimated Total
SCG-2 - Employee, Contractor, Customer, and Public Safety	**$ 48,102**	**$ 9,350**	**$ 57,452**
SCG-7 - Workforce planning			

D. Summary of Benefits and Costs from Fueling Our Future (FOF) Initiative Projects

SoCalGas strives to continuously improve the efficiency of its operations. As described in the joint FOF testimony of Hal Snyder and Randall Clark (Exhibit SCG/SDG&E-03), the utilities kicked off the FOF initiative in May 2016 to identify and implement efficient operational improvements.

The FOF team examined all operations across the company and a list of FOF ideas was generated, reviewed, analyzed, and targeted for implementation for 2016 through TY 2019. Savings realized as a result of implementing FOF operational improvements for CS-F are primarily related to labor cost savings. The total FOF ongoing savings reflected in TY 2019 is approximately $6.231 million. There is also an additional $0.109 million for FOF implementation costs expected in TY 2019.

Table GRM-4 below provides a summary of the FOF costs and benefits shown in my testimony:

TABLE GRM-4

Summary of FOF Costs/(Benefits) By Cost Category

In 2016 $ (000s)

FOF-Implementation	**Estimated 2017**	**Estimated 2018**	**Estimated 2019**
2FC001.000, CS-F - Operations	$ 0	$ 0	$ 34
2FC004.000, CS-F- Support	$ 55	$ 305	$ 75
Total	**$ 55**	**$ 305**	**$ 109**
FOF-Ongoing Costs or (Benefits)	**Estimated 2017**	**Estimated 2018**	**Estimated 2019**
2FC001.000, CS-F - Operations	$ (569)	$ (3,996)	$ (6,623)
2FC002.000, CS-F - Supervision	$ 26	$ 114	$ 135
2FC003.000, CS-F - Dispatch	$ (157)	$ (493)	$ (531)
2FC004.000, CS-F - Support	$ (10)	$ (143)	$ 788
Total	**$ (710)**	**$ (4,518)**	**$ (6,231)**

E. Summary of Aliso-Related Costs

In compliance with the Commision's Decision (D.)16-06-054[5], the Aliso Incident Expenditure Requirements testimony of Andrew Steinberg (Exhibit SCG-12) describes the process undertaken so the TY 2019 forecasts do not include the additional costs from the Aliso Canyon Storage Facility gas leak incident (Aliso incident), and demonstrates that the itemized recorded costs are removed from the historical information used by the impacted GRC witnesses.

As a result of removing historical costs related to the Aliso incident from CS-F and CS-MR adjusted recorded data, and in tandem with the forecasting method(s) employed and described herein, additional costs of the Aliso incident are not included as a component of my TY 2019 funding request. Historical CS-F and CS-MR costs that are related to the Aliso incident are removed as adjustments in my workpapers, Exhibit SCG-18-WP – CS - Field & Meter Reading, and also identified in Table GRM-5 below.

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

TABLE GRM-5

Summary of Excluded Aliso-Related Costs

CUSTOMER SERVICES - FIELD & METER READING In 2016 $ (000s)			
Workpaper	**2015 Adjustment**	**2016 Adjustment**	**Total Adjustment***
2FC001.000, CS-F - Operations	$ (10)	$ (18)	$ (27)
2FC002.000, CS-F - Supervision	$ 0	$ (87)	$ (87)
2FC003.000, CS-F - Dispatch	$ 0	$ (15)	$ (15)
2FC004.000, CS-F - Support	$ (11)	$ (5,371)	$ (5,381)
2FC006.000, CS-MR - Operations	$ 0	$ (220)	$ (220)
2FC009.000, CS-MR - Support	$ 0	$ (31)	$ (31)
Total Non-Shared*	**$ (20)**	**$ (5,740)**	**$ (5,761)**
2200-0942.000, CS-F - Staff Manager	$ 0	$ (195)	$ (195)
Total Shared Services	**$ 0**	**$ (195)**	**$ (195)**
Total O&M*	**$ (20)**	**$ (5,935)**	**$ (5,955)**

*Total includes rounding differences.

F. Summary of Advanced Metering Infrastructure Integration into TY 2019

By TY 2019, SoCalGas' AMI deployment will be completed and therefore the costs associated with the deployment and post-deployment phases, including the related O&M benefits, will no longer be recorded to the AMI Balancing Account. In this GRC, AMI operating impacts will be integrated into base business operations for the first time. Accordingly, I have incorporated forecasts and explanations for the associated on-going benefits and any incremental costs for CS-F and CS-MR into my testimony. In addition, as discussed in the AMI testimony of Mr. Garcia (Ex. SCG-17), SoCalGas is proposing an ongoing maintenance and operations team required to monitor, operate, maintain, and optimize the AMI system (Advanced Meter Operations).

SoCalGas' request for TY 2019 for CS-F and CS-MR reflect the full effects of AMI implementation. As a result of AMI's automated meter reading capabilities, AMI will greatly decrease certain types of fielded orders in CS-F in TY 2019 such as manual reads for "Gas-on Turn-on" and "Change of Account" orders. In addition, SoCalGas customers receive monthly bills based on AMI's automated meter reads; hence, manual meter reading will no longer be required for most customers, except for customers enrolled in the Opt-Out Program, customers

located in AMI's escalated jurisdictions, and customers affected by AMI's MTU failures. The majority of the costs associated with the manual meter reading function, such as meter readers, meter reading equipment and meter reading management staff, will be eliminated. See Ex. 17 SCG/Garcia.

To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs were compared to SoCalGas' TY 2019 estimated cost which reflects full AMI implementation (Post-AMI). For CS-F, this cost comparsion was made by estimating the volume and costs for those order types impacted by AMI implementation. For CS-MR, if AMI was not deployed at SoCalGas, the TY 2019 estimate was based on retaining a pre-AMI CS-MR organization which consists of meter readers and meter reading technicians to manually read and inspect over 5.8 million active meters, supervision, clerical support, technology and analytical support, and associated non labor expenses. In contrast, TY 2019 post-AMI estimated cost for CS-MR is significantly less since it only includes manual meter reading costs for customers located in AMI's escalated jurisdictions and customers affected by AMI's MTU failures.

Table GRM-6 below summarizes estimated AMI benefits comparing the TY 2019 estimated pre-AMI costs and TY 2019 estimated post-AMI costs. Refer to SCG-18-WP - 2FC001 CS - Field Operations Supplemental Workpaper 2, Exhibit SCG-18-WP, SCG-18-WP – 2FC002 CS – Field Supervision Supplemental Workpaper 2, Exhibit SCG-18-WP, and SCG-18-WP- 2FC006 CS-MR Operations Supplemental Workpaper 2, Exhibit SCG-18-WP, for detailed calculations of TY 2019 estimated AMI benefits and costs. The specific CS-F and CS-MR benefits attributed to SoCalGas' AMI implementation are identified by line items in each applicable workpaper group.

TABLE GRM-6

Summary of TY 2019 Estimated AMI Costs and Benefits

In 2016 $ (000s)

Organization Impacted by AMI	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated AMI Cost & Benefit (C = B – A)
Benefit			
CS-F[6]	$ 57,149	$ 13,099	$ (44,050)
CS-MR	$ 39,780		$ (39,780)
Total Benefit	**$ 96,929**	**$ 13,099**	**$ (83,830)**
Cost			
CS-F[7]	$ 0	$ 1,982	$ 1,982
CS-MR[8]	$ 0	$ 1,543	$ 1,543
Total Cost	**$ 0**	**$ 3,525**	**$ 3,525**
Total AMI Net Benefit[9]	**$ 96,929**	**$ 16,624**	**$ (80,305)**

G. Organization of Testimony

My cost forecasts support SoCalGas'goal of providing safe, reliable, and efficient gas service to customers, as well as complying with all federal, state, and local regulations. The CS-F and CS-MR cost forecasts also support SoCalGas' focus on continuous improvement from not only a safety perspective, but from a cost efficiency and customer experience perspective as well.

All requested O&M and capital expenses are described in detail in the remaining sections of my testimony which include the following:

- Section II describes the Risk Assessment Mitigation Phase and Safety Culture;

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[6] Includes costs for CS-F order types affected by AMI implementation .
[7] Includes cost for remediation work (new order type) due to MTU failures.
[8] Includes cost for two clerical employees to handle facility record updates, i.e., new business meters, administrative support, and costs for manually reading meters pending remediation of MTU failures, as well as costs for manually reading meters in the escalated jurisdictions, as described in Ex. 17 SCG/Garcia. For comparison to the AMI Business Case benefit assumptions, "TY 2019 Estimated Post-AMI" costs exclude meter reading costs associated with customers enrolled in SoCalGas' Opt-Out program. The ongoing costs for the Opt-Out program were separately addressed by the Commission in D.14-12-078.
[9] "Total AMI Net Benefit" excludes avoided capital cost associated with the replacement of the meter reading handheld equipment.

- Section III describes *non-shared* CS-F and CS-MR expenses, including the forecasting methodology used for each cost category;
- Section IV provides the rationale for *shared* CS-F services and associated O&M expenses; and
- Section V provides the business justification for CS-F IT Capital projects.

H. Support To/From Other Witnesses

The CS-F and CS-MR costs set forth in my testimony are impacted by meter counts and projected meter growth. Forecasted meter growth is covered in the Gas Customer Forecast testimony of Rose-Marie Payan (Exhibit SCG-39). Forecasted AMI MTU annual failure rate, the Opt-Out program and escalated jurisdictions issue which affect CS-F and CS-MR expenses are covered by Mr. Garcia (Ex. SCG-17). Forecasted capital for costs associated with AMI meter module installations on curb meters because the existing curb meters are incompatible with AMI technology is discussed by Ms. Orozco-Mejia (Ex. SCG-04). Capital costs for meters associated with planned and routine meter changes and regulators required for the underset regulator remediation program are discussed by Ms. Orozco-Mejia (Ex. SCG-04). CS-F labor costs associated with restoring service for customers that are shut off at at the street due to chronically inaccessible meters for MSA inspections are included in the O&M costs set forth in my testimony; however, the labor costs for performing the street cut shut-off are discussed by Ms. Orozco-Mejia (Ex. SCG-04). Information Technology (IT) costs for systems and technology that supports CS-F and CS-MR operations are discussed by Mr. Olmsted (Ex. SCG-26). Costs associated with company fleet vehicles used by the CS-F and CS-MR field workforce are covered in the Fleet Services & Facility Operations testimony of Carmen Herrera (Exhibit SCG-23). Lastly, CS-F-related miscellaneous revenues, including the basis for the forecasted revenues and the projected revenues, are covered in the Miscellaneous Revenues testimony of Annette Steffen (Exhibit SCG-41). CS-F costs to achieve applicable miscellaneous revenues are embedded as historical and forecast CS-F costs covered in my testimony.

II. RISK ASSESSMENT MITIGATION PHASE AND SAFETY CULTURE

A. RAMP

As discussed in Section I.C of my testimony, CS-F and CS-MR operations costs include activities to mitigate the safety-related risks included in the RAMP report. The costs for these activities are found in my workpapers and shown as adjustments to my forecasted costs. In my

workpapers, RAMP mitigation costs are broken down between "RAMP-Base" to represent BY 2016 embedded costs and "RAMP-Incremental" to represent TY 2019 estimated incremental costs. These risks are further described in Table GRM-7 below.

TABLE GRM-7

RAMP Risk Chapter Description

SCG-2 - Employee, Contractor, Customer, and Public Safety	This addresses the risk of conditions and practices which may result in severe harm to employee, contractor, customer, and/or public safety such as driving, customer premises conditions, and appliance conditions, as well as non-adherence to company safety policies, procedures, and programs.
SCG-7 - Workforce Planning	This addresses the risk of not having an appropriate workforce with the right skills to meet business needs due to the acceleration of workforce attrition and changing business needs.

CS-F and CS-MR costs are primarily based on activity levels (i.e., order volume, number of inspections, number of meter reads). Therefore, the TY 2019 estimated incremental costs for RAMP do not refer to new projects or programs, but rather, these estimated incremental costs represent the change in activity levels as compared to BY 2016 embedded levels. This change in activity levels impacts workforce requirements, which affects RAMP-related mitigation costs. For example, one of CS-F's safety related field orders is a "Gas Leak - CSO Leak" order. In BY 2016, CS-F completed 269,460 "Gas Leak - CSO Leak" orders. The TY 2019 forecast for this order type is 275,102, an increase of 5,642 orders over BY 2016 embedded cost levels.[10] Consequently, the RAMP mitigation costs are reflected as incremental to TY 2019 as compared to BY 2016 embedded costs but pertain to the same mitigation activity.

Table GRM-8 below summarizes the TY 2019 forecast to mitigate safety-related risks included in the RAMP report. Additionally, each risk mitigation item identified in the table is further described below.

[10] CS-F Operation costs are primarily driven by order volume. The order volume forecast is broken down by each order type and "Gas Leak - CSO Leak" is one of the order types included in the forecast. Refer to Appendix C, 2012 – 2016 Historical Volume by Order Type & 2017 – 2019 Estimated Volume by Order Type.

TABLE GRM-8

Summary of Safety Related Risk Mitigation Costs

In 2016 $ (000s)

CS – Field & Meter Reading	BY 2016 Embedded Base Costs	TY 2019 Estimated Incremental	TY 2019 Estimated Total
SCG-2 – Employee Contractor, Customer and Public Safety			
Policy, Procedures, Standards, and ESCMP	$ 961	$ 0	$ 961
Employee Skills & Refresher Training	$ 7,780	$ 1,159	$ 8,939
QA, Job Observations, Field Rides and Job Monitoring	$ 2,306	$ 261	$ 2,567
Personal Protective Equipment (PPE) and Safety Equipment	$ 852	$ 153	$ 1,005
Safety-related field Orders (leaks, appliance check, unusual consumption, fumigations, etc.)	$ 29,496	$ 1,750	$ 31,246
Gas Facility and Pipeline Inspections	$ 6,707	$ 6,027	$ 12,734
SCG-7 – Workforce Planning			
Training - Technical Non-HR (Costs are already included in Employee Skills & Refresher Training)	$ 0	$ 0	$ 0
Total Safety Related Risk Mitigation Costs	**$ 48,102**	**$ 9,350**	**$ 57,452**

Policy, Procedures, Standards, and ESCMP: CS-F and CS-MR Operations have formal procedures, processes, and standards each group maintains to provide guidance to employees and document the manner in which work is to be performed safely. For example, SoCalGas' policy on all MSA work requires employees to test for electricity before performing any work on the MSA. This policy promotes employee safety by mitigating risk of injury due to electric shock. Further, systems are in place to track employee training, Operator Qualification certification (OpQual), facility site inspections, and administration of the company

Environmental and Safety Compliance Management Program (ESCMP).[11] Collectively, these policies, procedures and standards contribute to SoCalGas' risk mitigation efforts.

Employee Skills & Refresher Training: Training is an integral part of how CS-F and CS-MR mitigates safety risks to employees, contractors, customers, and the public. New hires, transfers, or newly assigned employees must complete and pass initial mandatory training. Smith System defensive driver's training is included in the requirement for positions where the employee is expected to drive more than 3,000 miles per year on company business. Additionally, safety and environmental meetings are important, and therefore, are scheduled on a regular basis. Weekly review of relevant policies and procedures, safety tailgates to discuss workplace hazards, work plans and responsibilities, safety stand-downs to discuss safety incidents, close calls, bulletins or other safety topics, and dialogue meetings with company and department leadership are also included.

QA, Job Observations, Field Rides, and Job Monitoring: CS-F and CS-MR maintain a Quality Assurance (QA) program to assess the work quality of many of its field personnel. Job observations and field rides are conducted by management personnel based upon Behavior Based Safety (BBS) principles. SoCalGas' BBS program is a proactive approach to safety and health management focusing on principles that recognize at-risk behaviors as a frequent cause of both minor and serious injuries. The purpose of job observations and field rides is to reduce the occurrence of at-risk behaviors by modifying an individual's actions through observation, feedback and positive interventions aimed at developing safe work habits. Employees are also provided feedback and coaching so that their work conforms to policy and procedure.

Personal Protective Equipment (PPE) and Safety Equipment: CS-F and CS-MR provides its employees with PPE required to safely perform work (e.g., eye protection, gloves, boot allowance, etc.). Additionally, job-specific small tools are provided as required to perform work safely. In addition to the existing standard PPE and safety equipment, SoCalGas CS-F has implemented the use of a drop test tool for low flow measurements. This tool was fully deployed during the last quarter of 2016. Refer to Section III.B.1.e, item (4) for more information.

[11] ESCMP is an environmental, health, and safety management system to plan, set priorities, inspect, educate, train, and monitor the effectiveness of environmental, health, and safety activities in accordance with the internationally accepted standard, ISO 14001.

Safety-related field orders (leaks, appliance check, unusual consumption, fumigations, etc.): Customers call SoCalGas' customer contact center for many reasons. Some of those reasons are safety related such as: 1) gas leaks when customers report smelling a gas odor; 2) request to check appliances for operational safety; 3) read and verify orders for those associated with unusual gas usage; 4) fumigations; 5) carbon monoxide (CO) testing; and 6) energy diversion investigations, i.e., meter tampering and meter bypass investigation and remediation. These calls generate field orders that are handled by CS-F Operations. By responding to these safety-related field orders, SoCalGas mitigates risk to employees, customers and the public.

Gas Facility and Pipeline Inspections: SoCalGas maintains and operates its pipelines pursuant to applicable safety regulations. For example, CS-F and CS-MR perform inspections of each MSA to comply with DOT-required MSA inspections for atmospheric corrosion. Compliance with these safety regulations identify and mitigate abnormal operating conditions before such conditions become potentially hazardous.

Alternatives Considered for RAMP implementation: Due to the nature of CS-F and CS-MR activities, SoCalGas is proposing to continue with its baseline activities as described above. For example, there are no alternatives to promoting skills development and training of our field employees. The TY 2019 estimated incremental costs for RAMP do not refer to new projects or programs, but rather, these estimated incremental costs represent the change in activity levels as compared to BY 2016 embedded levels. This change in activity levels impacts workforce requirements, which affects RAMP-related mitigation costs.

Table GRM-9 below summarizes the TY 2019 estimated costs by workpaper associated with the mitigation activities described above. For more detailed calculations on the following:

- CS-F Operations, refer to SCG-18-WP - 2FC001 CS - Field Operations, Supplemental Workpaper 3, Exhibit SCG-18-WP;
- CS-F Supervision, refer to SCG-18-WP - 2FC002 CS - Field Supervision Supplemental Workpaper 1, Exhibit SCG-18-WP;
- CS-F MSA Inspections, refer to SCG-18-WP - 2FC005 CS - Field MSA Inspections Program Supplemental Workpaper 1, Exhibit SCG-18-WP; and
- CS-MR Operations, refer to SCG-18-WP - 2FC006 CS – Meter Reading Operations Supplemental Workpaper 1, Exhibit SCG-18-WP.

TABLE GRM-9

Summary of Safety Related Risk Mitigation Costs by Workpaper

In 2016 $ (000s)

Workpaper	Cost Category	BY 2016 Embedded Base Costs	TY 2019 Estimated Incremental	TY 2019 Estimated Total
2FC001.000	CS-F - Operations	$ 36,304	$ 3,062	$ 39,366
2FC002.000	CS-F - Supervision	$ 798	$ 75	$ 873
2FC004.000	CS-F - Support	$ 3,292	$ 186	$ 3,478
2FC005.000	CS-F - MSA Inspections	$ 5,621	$ 6,027	$ 11,648
2FC006.000	CS - MR Operations	$ 1,126	$ 0	$ 1,126
2200-0942.000	CS-F - Shared Service	$ 961	$ 0	$ 961
	Total	**$ 48,102**	**$ 9,350**	**$ 57,452**

B. Safety Culture

SoCalGas' 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.

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

III. NON-SHARED COSTS

A. Introduction

Table GRM-10 below summarizes the total non-shared O&M expense forecasts for CS-F and CS-MR operations which include the forecasted costs of field technicians and meter readers, as well as costs for other supporting activities to enable CS-F and CS-MR services to customers.

TABLE GRM-10

Non-Shared O&M Summary of Costs

CS - FIELD & METER READING In 2016 $ (000s)			
Categories	**BY 2016 Adjusted-Recorded**	**TY 2019 Estimated**	**Change**
CS-F	$ 155,943	$ 165,480	$ 9,537
CS-MR	$ 10,064	$ 3,027	$ (7,037)
Total Non-Shared Services	**$ 166,007**	**$ 168,507**	**$ 2,500**

B. Customer Services - Field

Table GRM-11 below summarizes the total non-shared O&M forecasts for the listed CS-F cost categories, each of which will be described more fully below.

TABLE GRM-11

Non-Shared O&M Summary of Costs by CS-F Cost Category

CUSTOMER SERVICES - FIELD In 2016 $ (000s)			
CS-F Cost Category	**BY 2016 Adjusted Recorded**	**TY 2019 Estimated**	**Change**
CS-F - Operations	$ 112,435	$ 111,576	$ (859)
CS-F - Supervision	$ 11,400	$ 11,070	$ (330)
CS-F - Dispatch	$ 9,806	$ 8,689	$ (1,117)
CS-F - Support	$ 16,435	$ 17,443	$ 1,008
CS-F - MSA Inspection Program	$ 5,867	$ 16,702	$ 10,835
Total	**$ 155,943**	**$ 165,480**	**$ 9,537**

Explanation of all adjustments to BY 2016 recorded costs are provided in the workpapers supporting this testimony, Exhibit SCG-18-WP – CS - Field & Meter Reading.

1. CS-F Operations Cost Category

a) Description of Costs and Underlying Activities

The CS-F Operations cost category consists of labor and non-labor expenses for field technicians to provide service at customer premises, including both customer and company-generated work orders. Examples of customer-generated work orders include requests to establish/remove gas service, light gas pilots, check gas appliances, shut off and restore gas

service for fumigation, investigate the potential causes of high gas bills, respond to emergency incidents, investigate potential gas leaks, and other services. Examples of company-generated work include meter and regulator changes and other meter work necessary to maintain company assets, and collecting customer payments for delinquent bills. Non-labor costs include items such as uniform expenses, small tools and miscellaneous supplies used on the job.

RAMP-related costs for CS-F operations include the costs for the following mitigation activities: (1) employee skills and refresher training; (2) PPE and safety equipment; and (3) safety-related field orders which includes gas leak orders, read and verify orders, fumigations, CO test orders and a percentage of customer service orders (CSOs).

Table GRM-12 below summarizes total labor and non-labor expenses requested for the CS-F Operations cost category.

TABLE GRM-12

Non-Shared O&M Summary of Costs by CS-F Operations

CS-F OPERATIONS In 2016 $ (000s)			
Expense Item	**BY 2016 Adjusted Recorded**	**TY 2019 Estimated***	**Change**
Labor	$ 103,615	$ 105,018	$ 1,403
Non-Labor	$ 8,820	$ 6,558	$ (2,262)
Total*	**$ 112,435**	**$ 111,576**	**$ (859)**

*Of the $111,576,000 total TY 2019 estimated costs, approximately $39,366,000 or 35.3% are RAMP-related costs (refer to Section II for additional details on RAMP mitigation activities).

b) AMI Integrated in TY 2019

As a result of AMI implementation, AMI will greatly decrease certain types of fielded orders in CS-F. To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs were compared to CS-F's TY 2019 estimated cost which reflects full AMI implementation (Post-AMI).

Table GRM-13 below summarizes TY 2019 estimated AMI cost and benefit for CS-F Operations comparing TY 2019 estimated pre-AMI cost and TY 2019 estimated post-AMI cost

for those order types affected by AMI. See Ex. 18-WP SCG/Marelli (SCG-18-WP- 2FC001 CS - Field Operations, Supplemental Workpaper 2).

TABLE GRM-13

Summary of Estimated AMI Cost and Benefit – CS-F Operations

In 2016 $ (000s)

CS-F Order Types	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated AMI Cost & Benefit (C = B – A)
Decrease in Fielded Orders:			
Change of Accounts (Turn On Not Entered & Soft Close)	$ 35,239	$ 7,031	$ (28,208)
High Bill Investigation (HBI)	$ 1,118	$ 638	$ (480)
Read & Verify	$ 5,991	$ 4,320	$ (1,671)
Planned Meter Changes (PMC)	$ 9,958	$ 0	$ (9,958)
New Order Type:			
Remediation Work due to AMI MTU failures	$ 0	$ 1,814	$ 1,814
Total	**$ 52,306**	**$ 13,804**	**$ (38,502)**

c) Forecast Method

CS-F Operations costs are primarily driven by work order volumes. Work order volumes, in turn, are largely driven by factors outside of SoCalGas' control, including customer growth, weather, the state of the economy, customer turnover, the price of natural gas, customer appliance/equipment choices, emergency incidents such as fires and earthquakes, and changes to applicable laws and regulations. BY 2016 order volume per active meter by order type and forecasted meter growth for 2017 through 2019 is the methodology applied to most order types (37 of the 50 order types), excluding those incremental funding requests discussed in Section III.B.1.e. As of the end of BY 2016, nearly 5.8 million meters have been retrofitted with a MTU, representing 98% of the total connected meters to be upgraded, so using the BY 2016 reflected the effects of AMI implementation on work order volumes. For the remaining thirteen order types impacted by internal policies or other variables, such as collections related orders and meter work, different assumptions other than BY 2016 were used. A description of each of the 50 order types is provided in Appendix B.

Table GRM-14 below provides a summary of the thirteen CS-F work order types that used forecasting assumptions other than BY 2016.

TABLE GRM-14

Forecasting Assumptions Different from BY 2016 by CS-F Work Order Type

Order Type		Forecasting Assumptions
1	Change of Account – Turn On (Not Entered)	Forecast reflects the full impact of AMI implementation
2	Credit/Collections – 48 Hour (1st Call)	BY 2016 (orders to active meters) was adjusted to avoid duplication of cost included in FOF initiative.
3	Credit/Collections – Collect/Close (2nd Call)	
4	Credit/Collections – Returned Check	
5	Credit/Collections – Tenant Notification	
6	Credit/Collections - Other	
7	Meter Work (Capital) – Meter Set – Turn On	Follows capital forecast and growth in new meter set work completed by CSF. Volumes are driven by the forecasted growth in new business capital construction and associated meter sets.
8	Meter Work (Capital) – Meter Set – Left Off	
9	Meter Work (Capital) – Meter Set (PSI)	
10	Meter Work (O&M) – Meter Change – Entered	Forecast is based on the following: (1) BY 2016 (orders to active meters) associated with routine meter changes; and (2) planned meter changes in accordance to SoCalGas' Meter Performance Control Program.
11	Meter Work (O&M) – Meter Change – Not Entered	
12	Meter Work (O&M) – Meter Change (Size)	
13	Non Pay Turn On – Turn On	BY 2016 (orders to active meters) was adjusted to avoid duplication of cost included in FOF initiative

As explained by Ms. Payan (Ex. SCG-39), SoCalGas' meter growth is expected to increase by a total of 2.1% from BY 2016 to TY 2019, to approximately 5.8 million active meters in TY 2019. In almost all cases, CS-F work order volumes are forecasted on a "number of orders per active meter" basis, by order type. The TY 2019 forecasted order volumes for each order type are the product of the forecasted number of orders per active meter and the number of forecasted active meters in TY 2019.

A table showing actual historical volume by order type from 2012 through 2016 and estimated volume by order type for 2017 through TY 2019 is provided in Appendix C. I believe SoCalGas' estimates of TY 2019 CS-F work order volumes are reasonable and represent a typical year of CS-F activity including the effects of AMI implementation.

d) Cost Drivers

In addition to order volumes and customer growth, CS-F field technician costs are driven by the length of time it takes to travel to customer premises or "drive time"; the length of time it takes to complete each type of work order or "on premises time"; the amount of "non-job" time (e.g., for start of day and end of day non-order work, breaks, one-on-one discussions with supervisors, and other non-order activities); training time; and vacation and sick time. With the exception of the drive time, BY 2016 data was used to determine the forecast for these various cost components. This consistent methodology reflects the same assumption as is used in order count forecasts: that BY 2016 is the most indicative year of current experience, policies, and procedures, as well as reflecting the impacts of AMI implementation.

(1) Drive Time

Each CS-F order has an associated average drive time per order to allow the field technician time to travel to the customer's premise (between orders). Historical and forecast average drive times per order are summarized in Table GRM-15 below. Based on a five year average from 2012 to 2016, the forecasted 2017-2019 average drive time per order assumes a 4% increase per year due to increased traffic congestion, resulting in a total increase of 1.6 minutes in drive time per order by TY 2019.

TABLE GRM-15

Average Drive Time per CS-F Order (In Minutes)

Historical Average Drive Time Per Order					Forecast Average Drive Time Per Order		
2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
11.3	11.5	12.3	12.9	13.1	13.6	14.2	14.7

Table GRM-16 below shows 2016 traffic congestion data from Tom Tom[12] showing percentage increase from 2015.

TABLE GRM-16

2016 Traffic Congestion Data from Tom Tom[13]

World Rank In Terms Of Most Congestion	City	2016 Congestion Level	Percentage Increase From 2015	Extra Travel Time Per Day (Minutes)
12	Los Angeles *	45%	4%	44
30	San Francisco	39%	3%	39
65	San José	32%	2%	38
131	Sacramento	22%	3%	28
132	Riverside *	22%	2%	26
148	Fresno	19%	2%	17
154	Bakersfield *	18%	3%	16
156	Oxnard-Thousand Oaks-Ventura *	18%	1%	17

* Indicates cities within SoCalGas' service territory

Table GRM-17 shows the average daily time spent in congestion for the Los Angeles area from 2012 to 2016 from INRIX.[14]

TABLE GRM-17

2012 to 2016 Traffic Congestion Data from INRIX[15]

Los Angeles Area Traffic Congestion Data From INRIX					
	2012	**2013**	**2014**	**2015**	**2016**
Average Annual Hours Spent in Congestion	59	64	80	81	104
Annual Percentage Change		8.5%	25.0%	1.3%	28.4%

[12] Tom Tom is a global leader in navigation and mapping products. The company also provides tools and services for telematics, fleet management, congestion, and parking density analysis.
[13] Tom Tom Traffic Index: https://www.tomtom.com/en_gb/trafficindex/list?citySize=LARGE&continent=NA&country=ALL
[14] INRIX, Inc. provides traffic information services. INRIX offers congestion alerts, journalistic incident data, traffic maps, and cameras, as well as delivers directions and driver services including routing and road weather conditions and forecasts.
[15] INRIX Annual Traffic Index and Press Releases

(2) On Premises Time

Each CS-F order type has an associated on premises average order completion time. On premises times can change over time to the extent changes in procedures or new safety requirements are implemented for a particular order type. On premises times are also affected by the interest and involvement level of the customer at the premises, increasing the time spent on the order because of customer questions. BY 2016 average on premises times per order type were used because the most current procedures and safety requirements are reflected in BY 2016 on premises times for each order type. Refer to SCG-18-WP- 2FC001 CS – Field Operations, Supplemental Workpaper 1, Exhibit SCG-18-WP, for BY 2016 average on premises time per order type.

(3) Non-job Time, Training Time, Vacation and Sick, Wage Rate, and Non-Labor Expense

In addition to drive time and on-premises time being converted to hours and then full-time equivalents (FTEs), the appropriate non-job time,[16] meetings/training time, and the SoCalGas vacation and sick factors were applied to compute forecasted FTEs by year. BY 2016 non-job time was used to determine the forecast non-job time per FTE and BY 2016 meetings/training time was used to determine the forecast meetings/training time FTEs.

Table GRM-18 below provides a summary of the applicable non-work factors applied to determine the total number of FTEs required for completing the forecast order volumes.

TABLE GRM-18

Non-Work Factors Used to Determine FTE Requirement

Non-Work Factor Type	Factor %
Non-job time (e.g., start and end of day non-order work, breaks, etc.)	19.76%
Training (meetings/classes)	7.62%
Vacation and Sick	16.92%

A blended wage rate for the various CS-F job classifications is used to compute total labor expense. An associated non-labor expense per FTE for related small tools, uniforms, and

[16] E.g., for start/end of day non-order work, breaks, one-on-one discussions with supervisors, stand-by time, vehicle breakdown time, and other non-work order time.

miscellaneous supplies used on the job is also added to compute total non-labor expenses for TY 2019. The non-labor expense is based on BY 2016 average non-labor expense per FTE.

e) Incremental Funding Requests

In addition to the order volume forecast based on BY 2016 order volume (orders per active meter) and projected meter growth forecast and increase in drive time, SoCalGas is also requesting incremental funding for the activities listed below. Refer to SCG-18-WP- 2FC001 CS - Field Operations Supplemental Workpaper 1, Exhibit SCG-18-WP, for detailed calculations of the TY 2019 forecast.

(1) Planned Meter Changes (PMCs)

Pursuant to CPUC Resolution No. G-1123 approved in 1960, SoCalGas established a Meter Performance Control Program (MPCP). The objective of the MPCP is to evaluate the accuracy of SoCalGas' meter population based on performance rather than length of time in service and identify meter families that should be removed in accordance with the MPCP. As part of the MPCP, meters are separated into "meter families" based on the set year, manufacturer, case type, diaphragm type, and repair. The accuracy of each meter family is monitored each year through statistical sampling. This methodology ensures SoCalGas complies with the requirements of CPUC General Order 58-A Rule 13.

SoCalGas is requesting $3.958 million to replace several meter families that are failing the accuracy parameters and subject to removal in accordance to the MPCP. This meter change request is separate and not part of the accelerated meter changes that were performed as a result of SoCalGas' AMI implementation. With the exception of the meter changes done as part of the AMI project, CS-F has always performed meter changes, whether part of the MPCP or routine meter changes.

Table GRM-19 shows the list of meter families subject to removal based on the MPCP and the estimated volume remaining in service.

TABLE GRM-19

Meter Families Subject for Removal per Meter Performance Control Program

Meter Family	Meter Model	Remaining in Service
323	R-415	1,738
400	AL-425	29,244
401	AL-425	2,265
406	AC-250	77,836
407	AC-250	4,336
408	AT-210	101,942
410	AT-250	6,718
Total Meters Subject for Removal per MPCP		**224,079**

SoCalGas plans to complete 224,079 meter changes to comply with the MPCP. These meter changes will take place during a three year period, 2018 through 2020, at a uniform rate of approximately 74,693 PMCs each year. SoCalGas and its customers are best served by levelizing meter replacements, rather than having large yearly fluctuations of replacements, which enables a steady purchase of meters and work for the employee workforce. SoCalGas' request for funding of $3.958 million is the estimate to complete 49,795 PMCs, which represents one-third of the total PMCs planned in 2019 and 2020 as shown in Table GRM-20 below.[17]

TABLE GRM-20

Proposed Annual PMC Plan for Meter Subject for Removal

	2018	2019	2020	2021	Total
Annual PMC Count	74,693	74,693	74,693	0	224,079
		2019 through 2020 Total		149,386	
		2019 TY GRC (Request is 1/3 of Total)		**49,795**	

[17] If the four year GRC cycle is adopted, as proposed in the testimony of Jawaad Malik (Exhibit SCG-44), then this calculation will need to be revised to reflect such adoption.

(2) Underset Regulator Remediation Program

Typically, most regulators are located outdoors. However, some regulators are located in confined spaces, i.e., undersets, which are installed under homes with raised foundations, in basements and parking garages. Over the years, customer changes to facilities or other external factors could affect the proper venting of underset regulators. These inadequate venting conditions are identified as part of the MSA Inspection Program (Refer to Section III.B.5). The remediation for inadequately vented regulators falls under three types of underset regulator work: (1) some regulators will need to be replaced with a slam-shut regulator; (2) some regulators will need to have the regulators relocated from the underside to the outside of the house, basement, or parking garage; and (3) some regulators will need to have venting reinstalled through an existing hole or screen.

This is a new program to address the remediation of inadequately vented regulators on MSAs in underset (under house, in basements, or parking garages) locations due to the June 2017 implementation of the Occupational Safety and Health Administration (OSHA) Regulation 29 Code of Federal Regulations (CFR) § 1926.1153, Crystalline Silica Standard for Construction. This new OSHA regulation sets standards for drilling in concrete to limit silica exposure and impacts SoCalGas' ability to remediate inadequately vented regulators where drilling through stucco would be required. As part of preparation to respond to the new requirements of this regulation, SoCalGas realized that the building industry incorporated asbestos in stucco products produced from 1920s to 1980s to increase fire resistance, reducing options to drill through stucco to provide proper regulator vent extensions.

With new OSHA regulations for drilling in concrete due to the silica exposure and the potential for stucco to contain asbestos, a new method of regulation for underset MSA installations is required. Slam shut regulators work in a similar manner to regulators currently in service, stopping the flow of gas until the pressure condition is corrected. Unlike the existing regulators in service, slam shut regulators do not require a large vent opening and are not susceptible to vibration when used with extended vent lengths. Up to 40 feet of one-fourth inch tubing can be used to operate the slam shut regulator without detriment, which would be adequate to reach foundation vent screens typically found on raised foundation homes. This allows for venting the slam-shut regulator without drilling in stucco.

Between now and TY 2019, SoCalGas will be evaluating and testing slam-shut regulators from vendors to determine the optimal regulator of this type for our service territory. SoCalGas will conduct a vendor selection process, create installation procedures and a program framework, and finally, hire and train employees to do this work. Thus, SoCalGas is requesting funding to support this program, beginning in TY 2019, to remediate regulators in underset locations which are identified as having inadequately installed vent extensions.

The Underset Regulator Remediation Program costs are driven by the following: (1) the estimated number of underset MSA locations across the SoCalGas service territory and (2) change-out costs associated with the estimated labor time for a field technician including on premises time to complete the remediation, drive time, non-job time, meetings/training time, vacation and sick time, and associated non-labor expense.

SoCalGas is requesting $2.574 million labor and associated non-labor to perform this underset regulator work. These new underset regulator remediation program costs are primarily driven by inadequately vented regulator conditions identified in the MSA Inspection Program as described in Section III.B.5 of this testimony. In BY 2016, based on 819,305 MSA inspections completed, 7,718 or 0.942% of the meters were undersets. Using the same factor on over 2 million MSA inspections to be performed annually, the estimated volume of MSAs which are undersets is 19,863. Of these underset installations, SoCalGas estimates that approximately 42% or 8,342 will need to be replaced with the slam-shut regulator, 48% or 9,534 will need to have the regulators relocated from the underside to the outside of the house, garage or basement and 10% or 1,986 will need to have venting reinstalled through an existing hole or screen.

In most cases, SoCalGas can complete the remediation on the first field visit. However, in certain instances, additional attempts after the first field visit are required for all "Can't Get In" (CGI) facilities. The average CGI rate for customer services field work during BY 2016 was 9.7%. Consequently, SoCalGas estimates an additional 1,934 annual field visits will be required over the 19,863 first field visits annually to remediate all the underset regulators.

The capital equipment, which is the cost for the slam shut regulators, is reflected in the testimony of Ms. Orozco-Mejia (Ex. SCG-04).

(3) Remediation of MTUs due to Annual Failure Rate

As indicated by Mr. Garcia (Ex. SCG-17), TY 2019 is SoCalGas's first opportunity to integrate the impacts of the AMI implementation into SoCalGas' continuing operations and associated GRC forecast.

With the the deployment of AMI technology, CS-F will be required to replace MTUs with new ones when they need replacement. SoCalGas is requesting $1.814 million for the remediation of MTUs due to the expected annual failure rate. The annual failure rate is estimated at 0.68% of total connected meter forecast for TY 2019. The basis for the MTU annual failure rate is covered by Mr. Garcia (Ex. SCG-17). The total connected meter forecast is covered by Ms. Payan (Ex. SCG-39).

(4) Low Flow Meter (LFM) and Five Minute Clock Test

SoCalGas is requesting $0.475 million for the incremental on premises time associated with the LFM test method and industry standard[18] five minute clock test performed on orders requiring a houseline leak test.

With the added MTUs on gas meters, accurate low flow can be hard to detect using the meter test dials during SoCalGas standard visual two minute clock test. In BY 2016, SoCalGas updated its policy and procedures and adopted the use of a Rotameter, also referred to as a LFM, to assess low flow detection in customer gas piping. The LFM was fully deployed during the last quarter of 2016 and is utilized most of the time (i.e., 70% of the time) for orders requiring a houseline leak test. Utilizing the LFM increases the on premises time for orders requiring a houseline leak test, such as a new occupant turn-on or initial gas turn-on orders, for new construction or houseline leak investigations. When the LFM cannot be used, such as on undersets, a five minute clock test (instead of the two minute clock test) is performed.

SoCalGas is also requesting $0.077 million incremental non-labor for maintenance costs associated with the use of the LFM tool. This amount is based on an estimated annual 5% of 1200 units needing replacement and 20% of the 1200 units requiring maintenance or repair during the TY 2019 GRC cycle period.

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[18] Industry Standards are based on NFPA54 National Fuel Gas Code Annex C, Table C.2 Observation Times for Various Meter Dials and American Gas Association (AGA) survey performed with Gas and Gas/Electric Utilities, October 2014.

(5) Field Investigation for Potential Hot Water Leaks

With the implementation of AMI, SoCalGas is developing a new means of determining if there is abnormal gas consumption on the account. Instead of monitoring gas usage based upon a single manually-obtained meter read each month, SoCalGas uses electronic hourly AMI meter reads to monitor gas consumption. Advanced Meter Operations monitors AMI-enabled facilities for higher than usual consumption based on specific criteria parameters. Any potential safety related issues are investigated and resolved. See Ex. 17 SCG/Garcia.

Contingent upon SoCalGas receiving funding in this proceeding and beginning in TY 2019, SoCalGas is proposing to enhance our customer service capabilities by investigating those facilities identified through consumption data as potential non-hazardous hot water leaks for verification and notification to the customer. SoCalGas is requesting $0.350 million for CS-F technicians to perform a field investigation on an estimated volume of 7,044 potential leads for hot water leaks identified by Advanced Meter Network Operations.

(6) Restore Service associated with Chronically Inaccessible Meter Shut-offs

As part of the MSA Inspection Program (refer to Section III.B.5), the MSA Inspection Representative (MIR) is required to physically get access to the meter to perform a comprehensive inspection of the MSA. In most cases, the MIR is able to gain access to the meter and complete the inspection. However, in certain situations, the MIR is unable to complete the inspection due to access issues, so the employee leaves a CGI tag at the premises informing the customer to contact the MSA Inspection Organization's toll-free 877 number to schedule the inspection. SoCalGas makes multiple attempts by phone and letter to schedule an appointment with the customer, as well as several field visits, in an effort to gain access to the MSA to complete the inspection. When these attempts fail, the last and final step in the process is to discontinue service at the street. Based on BY 2016 inspection data, SoCalGas experienced 0.4% chronically inaccessible rate associated with the mandated MSA inspections.

SoCalGas is requesting $0.047 million for CS-F technicians to perform 709 incremental restore orders associated with chronically inaccessible meters for MSA inspections (based on approximately 2.1 million inspections annually as indicated in Section III.B.5.d). The labor and associated non-labor costs to discontinue service at the street are covered by Ms. Orozco-Mejia (Ex. SCG-04). Labor and associated non-labor costs to reinstate service to the MSA once access is granted and the inspection is completed are also covered by Ms. Orozco-Mejia (Ex. SCG-04).

The labor and associated non-labor to restore service to customer facilities is performed by CS-F technicians and is the basis for this request, and this workload is incremental to the BY 2016 (orders to active meters) plus projected active meter growth volume.

f) Vehicles

The additional field technicians and associated field supervisors are provided with company fleet vehicles to perform their jobs. Vehicle costs are covered by Ms. Herrera (Ex. SCG-23), and are not included in the costs set forth in my testimony.

g) FOF Savings

A net FOF benefit of ($6.623) million and one time implementation cost of $0.034 million are included in the 2019 TY estimated request for the CS-F Operations cost category.

h) Summary of CS-F Operations Costs

In summary, SoCalGas TY 2019 funding request of $111.576 million for the CS-F Operations cost category (a decrease of $0.859 million compared to BY 2016 adjusted-recorded costs) consists of the elements summarized in Table-GRM-21 below:

TABLE GRM-21

Summary of TY 2019 Incremental O&M Expenses for CS-F Operations

CS-F OPERATIONS	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
BY 2016 Adjusted Recorded	$ 103,615	$ 8,820	$ 112,435
Reduction due to the Order Forecast Methodology	$ (4,939)	$ (3,076)	$ (8,015)
TY 2019 4% Increase in Drive Time Due to Increasing Traffic Congestion	$ 4,205	$ 245	$ 4,450
Incremental Funding Request from III.B.1.e			
Planned Meter Changes	$ 3,740	$ 218	$ 3,958
Underset Regulator Remediation Program	$ 2,432	$ 142	$ 2,574
Remediation of AMI MTUs due to Failures	$ 1,714	$ 100	$ 1,814
Low Flow Meter (LFM) and Five Minute Clock Test	$ 449	$ 103	$ 552
Field Investigation for Potential Hot Water Leaks	$ 331	$ 19	$ 350
Restore Service for Chronically Inaccessible Meter Shut Offs for MSA Inspections	$ 44	$ 3	$ 47
Sub-Total	**$ 111,591**	**$ 6,574**	**$ 118,165**
FOF Savings	$ (6,607)	$ (16)	$ (6,623)
FOF One Time Implementation Costs	$ 34	$ 0	$ 34
TY 2019 Estimate	**$ 105,018**	**$ 6,558**	**$ 111,576**

2. CS-F Supervision Cost Category

Table GRM-22 below summarizes SoCalGas requested TY 2019 expenses for the CS-F Supervision cost category which reflect $0.330 million decrease in costs as further discussed below.

TABLE GRM-22

CS-F Supervision Expense Forecast

CS-F SUPERVISION In 2016 $ (000s)			
Expense Item	**BY 2016 Adjusted Recorded**	**TY 2019 Estimated***	**Change**
Labor	$ 10,744	$ 10,402	$ (342)
Non-Labor	$ 656	$ 668	$ 12
Total*	**$ 11,400**	**$ 11,070**	**$ (330)**

*Of the $11,070,000 total TY 2019 estimated costs, approximately $873,000 or 7.9% are RAMP-related costs (refer to Section II for additional details on RAMP mitigation activities).

a) Description of Costs and Underlying Activities

Organizationally, CS-F employees report to CS-F field supervisors. Like field employees, field supervisors are geographically dispersed across all of SoCalGas' 51 operating bases. Field supervisors hire and coach employees, conduct safety and job observations, and coordinate with the dispatch office and others to address and resolve issues, respond to emergency incidents to provide on-site leadership, and manage the overall performance of the CS-F employees who work from each of the 51 operating bases.

RAMP-related costs for CS-F field supervisors include the costs for job observations, field rides and job monitoring. On an annual basis each field supervisor conducts two 4-hour job evaluations, two 2-hour observations for the Smith Driving Improvement Program and two 2-hour job safety observations on each field technician under their managerment.

b) AMI Integrated in TY 2019

As a result of AMI implementation, AMI will greatly decrease certain types of fielded orders in CS-F. To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs were compared to CS-F's TY 2019 estimated cost, which reflects full AMI implementation (Post-AMI).

Table GRM-23 below summarizes the TY 2019 estimated AMI cost and benefit for CS-F supervision comparing TY 2019 estimated pre-AMI cost and TY 2019 estimated post-AMI cost

for those order types affected by AMI. See Ex. 18-WP SCG/Marelli (SCG-18-WP - 2FC002 CS - Field Supervision, Supplemental Workpaper 2).

TABLE GRM-23

Summary of Estimated AMI Cost and Benefit – CS-F Supervision

In 2016 $ (000s)

CS-F Order Types	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated AMI Cost & Benefit (C = B – A)
Decrease in Fielded Orders (Change Of Accounts, i.e.,Turn On Not Entered & Soft Close, HBI, Read & Verify and Planned Meter Changes)	$ 4,483	$ 1,110	$ (3,733)
New Order Type:			
MTU Remediation due to Failures	$ 0	$ 168	$ 168
Total	**$ 4,843**	**$ 1,278**	**$ (3,565)**

c) Forecast Method

The estimated number of field supervisors in TY 2019 is based on maintaining the BY 2016 average employee-to-supervisor ratio of 12:1. A ratio of 12:1 is appropriate given the geographic area covered by each operating base; the variety of work performed and conditions encountered at customer premises; and the expectation that supervisors spend as much time as possible in the field performing safety and job observations, coaching emplyees, and managing performance. A zero-based forecast of expenses was used in lieu of other forecasting methodologies because a zero-based forecast is the only method that appropriately maintains the desired ratio of employees to supervisors.

Non-labor expenses for CS-F supervisors include cell phones, office supplies, and other miscellaneous expenses. The non-labor cost estimate is based on a five-year average of historical non-labor expenses per supervisor multiplied by the forecasted number of supervisors. Because non-labor costs are driven by the number of supervisors, historical averaging or trending of expenses alone would not be appropriate because expenses would not be aligned with the forecasted number of supervisors.

d) Cost Drivers

Costs are driven by the number of supervisors and applicable salary levels for supervisory employees. The number of supervisors is driven by the number of field employees maintaining an employee to supervisor ratio of 12:1 and the need to provide adequate supervision across all 51 operating bases at all times.

e) Vehicles

Field supervisors are provided with company fleet vehicles because they are responsible for supervising and coaching employees, as well as responding to emergency incidents in the field. All costs associated with company vehicles are covered by Ms. Herrera (Ex. SCG-23) and are not included in the costs set forth in my testimony.

f) FOF Cost

A net FOF cost of $0.135 million is included in the TY 2019 estimated request for the CS-F Supervision cost category.

g) Summary of CS-F Supervision Costs

Table GRM-24 below summarizes SoCalGas' TY 2019 estimated request for the CS-F Supervision cost category described above.

TABLE GRM-24

Summary of TY 2019 O&M Expenses for CS-F Supervision

CS-F SUPERVISION	**TY 2019 Estimated In 2016 $ (000s)**		
Activity	**Labor**	**Non-labor**	**Total**
BY 2016 Adjusted-Recorded	$ 10,744	$ 656	$ 11,400
Reduction in supervisors to maintain employee to supervisor ratio of 12:1	$ (477)	$ 12	$ (465)
Sub-Total: Total Field Supervisor costs to maintain employee-to-supervisor ratio of 12:1. See Ex. 18-WP SCG/Marelli (SCG-18-WP – 2FC002 CS – Field Supervision Supplemental Workpaper 1)	**$ 10,267**	**$ 668**	**$ 10,935**
FOF Ongoing Cost	$ 135	$ 0	$ 135
TY 2019 Estimated	**$ 10,402**	**$ 668**	**$ 11,070**

3. CS-F Dispatch Cost Category

Table GRM-25 below summarizes SoCalGas' requested TY 2019 expenses for CS-F dispatch activities which reflect a $1.117 million decrease in costs as further discussed below.

TABLE GRM-25

CS-F Dispatch Expense Forecast

CS-F DISPATCH In 2016 $ (000s)			
Expense Item	**BY 2016 Adjusted Recorded**	**TY 2019 Estimated**	**Change**
Labor	$ 9,661	$ 8,399	$ (1,262)
Non-Labor	$ 145	$ 290	$ 145
Total	**$ 9,806**	**$ 8,689**	**$ (1,117)**

a) Description of Costs and Underlying Activities

Dispatch personnel route and dispatch work orders to CS-F employees on a day before and same day basis, 24 hours a day, 365 days a year. Dispatchers are located at four central locations and handle all matters that come up during the day, including: (1) dispatching emergency orders real time as they are received; (2) redistributing work when CS-F employees call in sick or otherwise become unavailable; and (3) redistributing work orders when CS-F employees are not able to complete all work that has been assigned for the day. Non-labor expenses for these CS-F dispatch employees include cell phone expenses, office materials, and other miscellaneous expenses.

b) Forecast Method

Both labor and non-labor costs remain relatively flat over time. Nonetheless, a five-year average was used to forecast both labor and non-labor costs. A five-year average was used to avoid potential for artificially inflating or deflating results based on short-term anomalies. Consequently, this approach resulted in a decrease in the TY 2019 request as compared to BY 2016.

Table GRM-26 below summarizes the five-year average for CS-F Dispatch costs.

TABLE GRM-26

CS-F Dispatch 5-Year Average

CS-F Dispatch	2012 - 2016 Adjusted Recorded In 2016 $ (000s)		
Year	**Labor**	**Non-labor**	**Total**
2012 Adjusted Recorded	$ 9,211	$ 173	$ 9,384
2013 Adjusted Recorded	$ 8,227	$ 160	$ 8,387
2014 Adjusted Recorded	$ 8,739	$ 177	$ 8,916
2015 Adjusted Recorded	$ 9,473	$ 125	$ 9,598
2016 Adjusted Recorded	$ 9,661	$ 145	$ 9,806
5 Year Average*	**$ 9,063**	**$ 156**	**$ 9,219**

*Average includes rounding differences.

c) Cost Drivers

Costs are primarily driven by the number of dispatchers needed to provide 24/7, 365 days per year coverage to perfom dispatching functions for all 51 operating districts and all field employees, including being able to immediately dispatch all emergency orders. Unlike CS-F Operations costs, CS-F Dispatch costs are not driven by the order volume.

d) FOF Savings

A net FOF benefit of ($0.531) million is included in the 2019 TY estimated request for the CS-F Dispatch cost category.

e) Summary of CS-F Dispatch Costs

Table GRM-27 below summarizes SoCalGas' TY 2019 funding request for the CS-F Dispatch needs described above.

TABLE GRM-27

Summary of TY 2019 O&M Expenses for CS-F Dispatch

CS-F Dispatch	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
BY 2016 Adjusted Recorded	$ 9,661	$ 145	$ 9,806
Decrease in labor and increase in non-labor as a result of using the 5-year average methodology	$ (598)	$ 11	$ (587)
Sub-Total: 5-Year Average (see Table GRM-26)	**$ 9,063**	**$ 156**	**$ 9,219**
FOF Savings & Costs	$ (664)	$ 133	$ (531)
TY 2019 Estimated*	**$ 8,399**	**$ 290**	**$ 8,689**

*TY 2019 Estimated includes rounding differences.

4. **CS-F Support Cost Category**

Table GRM-28 below summarizes SoCalGas' requested TY 2019 expenses for CS-F support activities which reflect a $1.008 million increase in costs as further discussed below.

TABLE GRM-28

CS-F Support Expense Forecast

CS-F SUPPORT In 2016 $ (000s)			
Expense Item	**2016 Adjusted Recorded**	**TY 2019 Estimated***	**Change**
Labor	$ 14,924	$ 13,944	$ (980)
Non-Labor	$ 1,511	$ 3,499	$ 1,988
Total*	**$ 16,435**	**$ 17,443**	**$ 1,008**

*Of the $17,443,000 total TY 2019 estimated costs, approximately $3,478,000 or 19.9% are RAMP-related costs (refer to Section II for additional details on RAMP mitigation activities).

a) Description of Costs and Underlying Activities

The CS-F Support cost category includes: (1) centralized training (classroom instructors, supervisors, and a training manager located at SoCalGas' Pico Rivera skills training center); (2) field instructors who accompany new residential field technicians immediately following their

formal training; quality assurance (QA) inspectors and a QA supervisor who inspects the work of field technicians to ensure policy adherence and quality of the work performed; (3) field technology support personnel who maintain the field Mobile Data Terminals (MDTs), work management, routing and reporting systems used for CS-F operations; (4) operations clerks who are located at the field operating bases; (5) region and district management; and (6) administrative associates. Non-labor costs include cell phones, office supplies, and other miscellaneous expenses.

RAMP-related costs for CS-F Support include the costs for the following mitigation activities: (1) labor and associated non-labor costs for the centralized training group who develops the CS-F training curriculum and conducts employee skills training for field technicians; (2) labor and non-labor costs for field instructors who accompany new residential field technicians following their formal training; and (3) labor and associated non labor costs for the QA inspectors and supervisor who assess the work quality of field technicians to ensure employees adhere to policies and procedures in which work is to be performed. Results of QA audits are communicated to field supervisors to provide feedback to their employees.

b) Forecast Method

Forecasted TY 2019 expenses for both labor and non-labor are based on five-year historical averages, given the variability in CS-F support requirements and associated non-labor expenses.

Several management employees from the CS-F Support group were released from their regular responsibilities during BY 2016 to work on temporary assignments to support activities associated with the Aliso incident. The Aliso incident required reprioritization of company resources, and CS-F Support projects were either deferred when appropriate or other members of the Support Staff took on additional assignments as needed. Costs to support the Aliso incident totaling $5.381 million were excluded from BY 2016 adjusted recorded expenses. Of this amount, $0.400 million was associated with CS-F Support employees who were temporarily assigned to support the Aliso incident mitigation efforts. Employees on temporary assignments to support the Aliso incident have returned to their CS-F Support positions to resume their normal CS-F support workload. In order to adequately resume routine operations, a BY 2016 adjustment for $0.400 million was included in the the 5-year average calculation as shown in

Table GRM-29 to return CS-F Support to normal operations after temporary deployment to mitigate the Aliso incident.

Costs associated with new, incremental activities and net FOF ongoing costs and one time implementation costs were then added to the five year average to determine total funding requirements necessary for CS-F Support functions.

Table GRM-29 below summarizes the five-year average for CS-F Support costs which includes the $0.400 million adjustment added back to return CS-F Support to normal operations after temporary assignments to support the Aliso incident.

TABLE GRM-29

CS-F Support 5-Year Average

CS-F Support	2012 - 2016 Adjusted Recorded In 2016$ (000s)		
Year	**Labor**	**Non-labor**	**Total**
2012 Adjusted Recorded	$ 13,665	$ 1,880	$ 15,545
2013 Adjusted Recorded	$ 12,210	$ 1,989	$ 14,199
2014 Adjusted Recorded	$ 13,078	$ 3,031	$ 16,109
2015 Adjusted Recorded	$ 15,007	$ 2,138	$ 17,145
2016 Adjusted Recorded[19]	$ 14,924	$ 1,511	$ 16,435
2016 Adjustment necessary to return CS-F Support to normal operations after temporary assignments to support the Aliso incident	$ 393	$ 7	$ 400
5 Year Average	**$ 13,855**	**$ 2,111**	**$ 15,966**

c) Cost Drivers

Cost are primarily driven by the need to train new employees, maintain a technically skilled and proficient workforce, and ensure work is performed in a manner that meets SoCalGas' quality standards.

d) Proposed Incremental Funding Requests

SoCalGas is requesting $1.477 million in incremental funding above the five-year average cost shown in Table GRM-29 for the CS-F Support cost category for the following new

[19] 2016 Adjusted Recorded excludes costs to support the Aliso leak mitigation.

items: (1) two QA Inspectors to support the MSA Inspection Organization; (2) ongoing labor and non-labor expenses associated with implementation of SoCalGas CS-F Routing Project; and (3) ongoing and implementation costs associated with the FOF initiative.

The need for each of these incremental items is outlined below:

(1) Two QA Inspectors to support the MSA Inspection Organization

SoCalGas is requesting $0.186 million for two QA Inspectors to support the MSA Inspection Organization. With the increase in field workforce in the MSA Inspection Organization, two incremental QA inspectors are needed to inspect the work of the MSA Inspection Representatives who perform the MSA inspections and Field Service Assistants who perform the remediation work on conditions found during the MSA Inspections to validate the work was completed in accordance with policies and procedures in a manner that complies with DOT regulations.

(2) Incremental Analyst and non-labor funding associated with SoCalGas CS-F Routing Project

SoCalGas is requesting $0.427 million for ongoing costs associated with the implementation of the SoCalGas CS-F Routing Capital Project. Refer to Section V.C for additional information on this capital poject. This request is comprised of the following items: (1) labor funding of $0.093 million for a Technical Analyst position to perform the the following functions: (a) ongoing application support, testing and upgrade for the new MSA planning application; (b) geodata management, i.e., support and maintain processes for current, accurate, and consistent facility location and street map data in routing applications; and (c) ongoing review of existing processes, new application release and refine and improve process; and (2) non-labor funding of $0.334 million for vendor support and upgrades, application licensing, and new field system navigation subscription.

e) FOF Ongoing and Implementation Costs

A net FOF ongoing cost of $0.788 million and one time implementation cost of $0.075 million are included in the TY 2019 request for the CS-F Support cost category.

f) Summary of CS-F Support Costs

Table GRM-30 below summarizes SoCalGas' funding request for the incremental CS-Support needs described above.

TABLE GRM-30

Summary of TY 2019 O&M Expenses for CS-F Support

CS-F SUPPORT	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
BY 2016 Adjusted Recorded	$ 14,924	$ 1,511	$ 16,435
Decrease in labor and increase in non-labor as a result of using the 5-year average	$ (1,069)	$ 600	$ (469)
Sub-total: 5-Year Average (see Table GRM-29)	**$ 13,855**	**$ 2,111**	**$ 15,966**
Incremental Funding Requests			
Two Quality Assurance Inspectors for MSA Inspection Group	$ 177	$ 9	$ 186
Analyst and ongoing non-labor associated with the implementation of the SoCalGas CS-F Routing Project	$ 93	$ 334	$ 427
Sub-Total	**$ 14,125**	**$ 2,454**	**$ 16,579**
FOF Ongoing Costs	$ (181)	$ 969	$ 788
FOF One Time Implementation Costs	$ 0	$ 75	$ 75
TY 2019 Estimated*	**$ 13,944**	**$ 3,499**	**$ 17,443**

*TY 2019 Estimated includes rounding differences.

5. CS-F MSA Inspection Program Cost Category

Table GRM-31 below summarizes SoCalGas' requested TY 2019 expenses for CS-F MSA Inspection Program activities.

TABLE GRM-31

CS-F MSA Inspection Program Expense Forecast

CS-F MSA INSPECTION PROGRAM In 2016 $ (000s)			
Expense Item	**BY 2016 Adjusted Recorded**	**TY 2019 Estimated***	**Change**
Labor	$ 4,502	$ 16,099	$ 11,597
Non-Labor	$ 1,365	$ 603	$ (762)
Total*	**$ 5,867**	**$ 16,702**	**$ 10,835**

*Of the $16,702,000 total TY 2019 estimated costs, approximately $11,648,000 or 69.7% are RAMP-related costs (refer to Section II for additional details on RAMP mitigation activities).

a) Description of Costs and Underlying Activities

Pursuant to CFR § 192.481, the DOT generally requires that each MSA be inspected every three years for atmospheric corrosion. Meter readers have historically performed this function, but with the implementation of AMI and the elimination of the traditional Meter Reading function, a new group, the CS-F MSA Inspection Organization, was formed in BY 2016.

The CS-F MSA Inspection Organization performs physical, onsite inspections of each MSA to comply with DOT required MSA inspections for atmospheric corrosion, to identify conditions which require remediation by CS-F and Distribution field employees, and to contact customers to resolve meter access issues.

The MSA Inspection Organization is comprised of the following job classifications:

- MIRs are field employees who perform the onsite MSA inspections. The MIR is required to thoroughly inspect all aspects of the MSA, including the gas riser, all piping, the regulator and the meter, from all directions and angles, while physically present at the MSA.
- Field Service Assistants (FSA) are field employees who are specifically trained to perform the remediation work, to resolve atmospheric corrosion and abnormal operating conditions identified by MIRs. Conditions that cannot be remediated by the FSA or other CS-F technicians are passed on to the Gas Distribution organization for repair.

- MSA Office Representatives (MOR) are office employees who contact customers to gain meter access in those instances when the MIR is unable to perform the onsite inspection. Contact is made through phone calls or by sending a letter that requests the customer contact SoCalGas to schedule the inspection. Depending on customer response, multiple calls and letters may be required in order to schedule the inspection.
- Customer Service Representatives II (CSR II) are office employees who creates inspection orders for MIRs in addition to performing the MOR duties.
- MSA Office Clerks are office employees who handle payroll, employee availability, and provide other administrative support to the group.
- MSA Program Management Staff includes the MSA Inspection Manager, MSA Inspection Supervisors who manage the work and performance of the MIRs and FSAs, MSA Inspection Field Team Leads who manage the work and performance of the MSA Inspection Supervisors, MSA Operations Supervisor who manages the work and performance of the MORs, MSA Operations Analysts and Specialist who manages the MSA route creation, support the daily inspection schedule, manage the daily MOR work distribution, and handle the workforce planning and scheduling, inspection scheduling, and compliance reporting.

The major portion of the costs for the CS-F MSA Inspection Program is associated with DOT required inspections of the MSA; hence, approximately 69.7% of the costs are attributable to the RAMP mitigation item, "gas facility and pipeline inspections", as indicated in section II.A. The costs for the remediation work associated with conditions identified during the MSA inspections were exluded from the RAMP costs.

b) Forecast Method

CS-F MSA Inspection Organization costs are primarily driven by work order volumes. Work order volumes are largely driven by the number of inspections and remediation work to be completed to meet DOT compliance timeline requirements. It is also driven by factors outside of SoCalGas' control in the case of meter access issues and customer's response to SoCalGas' attempts to gain access to the meter to complete the inspections. A zero–based forecast is used to forecast TY 2019 expenses based on the volume of inspections and associated remediation work estimated to meet DOT compliance requirements and the volume of meter access issues.

c) Cost Drivers

The CS-F MSA Inspection Program costs are driven by the following: (1) for the MIRs and FSAs, the costs are driven by the order volumes, the average number of orders completed per employee, training time, and vacation and sick time; (2) for the MORs, the costs are driven by the call volume associated with meter access issues, the average calls handled per employee, training time, and vacation and sick time; and (3) for the support staff, the costs are driven by the number of employees such as number of supervisors to manage employees, clerical employees who provide the administrative support to the group and other management staff and applicable wage rates, and lastly, (4) non-labor costs are based on an associated non-labor expense per FTE for related small tools, uniforms, cost of notices and miscellaneous supplies. The non-labor expense is based on BY 2016 average non-labor expense per FTE.

d) Incremental Funding Request

SoCalGas is requesting incremental funding of $10.835 million above BY 2016 costs. SoCalGas has included the cost elements listed below in its TY 2019 forecast. Refer to SCG-18-WP- 2FC005 CS – Field MSA Inspection Program, Supplemental Workpapers 1 through 6, Exhibit SCG-18-WP, for detailed calculations.

(1) Incremental MIRs to perform MSA inspections

SoCalGas is requesting $4.947 million for incremental MIRs. In order to comply with DOT regulations, SoCalGas is required to inspect approximately 2.1 million facilities annually. The forecast is driven by the order volume and average orders per employee. Based on BY 2016 MSA inspections, the MIR completes an average of about 100 inspections per day for the first visit (including drive time), as inspections are clustered together to create efficient routes for each employee. This factor was applied to the volume of 2.1 million inspections to derive the forecast. Most of these inspections are completed in one field visit, however, in approximately 8.7%[20] of these facilities, additional field visits are required due to access issues, i.e., CGI. For the CGI orders, the MIR completes an average of about 22 CGI field visits per day (including drive time) since the inspections are located farther apart due to the randomness of the facility locations, requiring additional drive time from one location to the next.

[20] 8.7% or 183,583 based on 2016 data which is the first full year of MSA Inspection Program implementation.

(2) Incremental FSA's to perform MSA remediation work

SoCalGas is requesting $4.263 million for incremental FSAs. Based on the BY 2016 MSA inspections, 7.1% (or 149,874) of the meters were identified as requiring remediation by FSAs during the MSA inspection. MSA inspections also identify additional remediation work that are handled by other CS-F technicians[21] and Gas Distribution field employees.[22] Most of this remediation work is completed in one field visit, however, in approximately 11.1% (or 16,635) of these facilities, additional field visits are required due to access issues.

(3) Incremental MORs to contact customers for meter access issues

SoCalGas is requesting $0.652 million for incremental MORs. The forecast is driven by the call volume and average calls handled per employee. Based on BY 2016, each MOR handles an average of approximately 13,700 calls annually. Collectively, MORs are expected to handle approximately 257,016 calls in TY 2019, which is a combination of inbound and outbound calls. Inbound calls from customers resulting from CGI facilities are received and handled by MORs. In addition, the MORs also make multiple attempts to reach customers by phone (outbound calls) and send letters to notify customers to contact SoCalGas to make arrangements to complete the inspection.

(4) Two-Employee Access Teams for chronically inaccessible meters

SoCalGas is requesting incremental funding of $0.232 million for two-employee access teams to resolve chronically inaccessible meters. Chronically inaccessible meters refers to meters that MIRs are unable to access after multiple attempts. Based on BY 2016 inspection data, SoCalGas anticipates a 0.4% (or 9,140) chronically inaccessible rate in TY 2019 on total MSA inspection volume. The two-employee access team will consist of one FSA and one MIR and are incremental to the MIR and FSA funding requested above in items d.1 and d.2. The two-employee teams have been successful for chronic CGI facilities due to several factors including the FSA is able to perform tasks (i.e. assist with the safe use of a ladder, assist with stuck curb lids, remove gates, etc.) that the MIR is unable to do. This two employee access team represents

[21] The incremental request for MSA remediation work handled by other CS-F technicians is embedded in CS-F Operations order volume forecast.

[22] The incremental request for MSA remediation work handled by Gas Distribution field employees is discussed by Ms. Orozco-Mejia (Ex. SCG-04).

the final field attempt by the MSA inspection organization before a termination letter is sent notifying the customer that service will be cut in the street if SoCalGas is unable to access the meter to complete the inspection.

The forecast is driven by the order volume and average orders per day which is the same 22 CGI orders per day (used for incremental MIR forecast).

(5) Incremental Supervisors

SoCalGas is requesting $1.056 million for incremental supervisors to manage the work of the MIRs and FSAs. MSA Inspection Supervisors hire and coach employees, conduct safety and job observations, coordinate with dispatch and others to address and resolve issues, and manage the overall performance of the MIRs and FSAs who work from various MSA inspection district locations. The TY 2019 request is based on BY 2016 employee to supervisor ratio of about 12:1.

(6) Incremental Support Staff

SoCalGas is requesting $0.446 million for incremental support staff to manage and support the incremental field and office workforce. A list of positions planned in TY 2019 is shown in SCG-18-WP-2FC005 CS – Field MSA Inspection Program, Supplemental Workpaper 6, Exhibit SCG-18-WP. The job functions for these positions are described in Section III.B.5.a.

(7) Vehicles

MSA Inspection field employees, i.e., MIRs and FSAs, field supervisors and field team leads are provided with company fleet vehicles to perform their jobs. Vehicle costs are covered by Ms. Herrera (Ex. SCG-23), and are not included in the costs set forth in my testimony.

e) Summary of CS-F MSA Inspection Program Costs

Table GRM-32 below summarizes SoCalGas' funding request for the incremental CS-F MSA Inspection Program costs described above.

TABLE GRM-32

Summary of TY 2019 O&M CS-F MSA Inspection Program

CS-F MSA INSPECTION PROGRAM	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
BY 2016 Adjusted-Recorded	$ 4,502	$ 1,365	$ 5,867
Incremental Funding Requests			
MIRs to perform MSA inspections	$ 4,947	$ 0	$ 4,947
FSAs to perform MSA remediation work	$ 4,263	$ 0	$ 4,263
2 Man Team to handle MSA chronic access work	$ 232	$ 0	$ 232
MORs to contact customers on meter access issues	$ 652	$ 0	$ 652
Field Supervisors to manage the MIRs and FSAs	$ 1,056	$ 0	$ 1,056
Other Management Support Staff, Office Clerks and CSRs	$ 446	$ 0	$ 446
Reduction in Non-Labor Expenses[23]	$ 0	$ (761)	$ (761)
TY 2019 Estimated*	**$ 16,099**	**$ 603**	**$ 16,702**

*TY 2019 Estimated includes rounding differences.

C. Customer Services – Meter Reading

Table GRM-33 below summarizes the total non-shared O&M forecasts for the listed CS-MR cost categories, each of which will be described more fully below:

[23] Reduction of $0.761 million in TY 2019 non-labor for expenses incurred during BY 2016 that are not expected to continue; hence, it was not included in the TY 2019 estimated cost.

TABLE GRM-33

Non-Shared O&M Summary of Costs by CS-MR

CS-MR In 2016 $ (000s)			
CS-MR Cost Category	**BY 2016 Adjusted Recorded**	**TY 2019 Estimated***	**Change**
CS-MR - Operations	$ 7,032	$ 2,219	$ (4,813)
CS-MR - Clerical	$ 514	$ 148	$ (366)
CS-MR - Supervision & Training	$ 1,180	$ 355	$ (825)
CS-MR- Support	$ 1,337	$ 305	$ (1,032)
Total*	**$ 10,063**	**$ 3,027**	**$ (7,036)**

*Of the $3,027,000 total TY 2019 estimated costs, approximately $1,126,000 or 37.2% are RAMP-related costs (refer to Section II for additional details of RAMP mitigation activities).

1. CS-MR Operations Cost Category

a) Description of Costs and Underlying Activities

The CS-MR Operations cost category includes part-time meter readers who are dispersed across SoCalGas' operating bases. SoCalGas is requesting funding of $2.219 million for meter readers to capture manual reads (173,180 in TY 2019) at customer premises for customers enrolled in the Opt-Out Program, customers located in AMI's escalated jurisdictions (156,000 in TY 2019) and customers affected by AMI MTU failures (6,564 in TY 2019).

RAMP-related costs for CS-MR operations include the costs for the following mitigation activities: (1) PPE and safety equipment and (2) gas facility and pipeline inspections. Meter readers inspect the MSA for atmospheric corrosion during the course of manually reading the meter.

The revenue associated with Opt-Out fee[24] collected from customers who are enrolled in the Opt-Out Program is discussed by Ms. Steffen (Ex. SCG-41).

b) AMI Integrated in TY 2019

To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs

[24] Commission issued D.14-12-078 to establish fees for residential customers selecting the opt-out option.

were compared to TY 2019 estimated cost which reflects full AMI implementation (Post-AMI). For CS-MR, if AMI was not deployed at SoCalGas, the TY 2019 estimated cost was based on retaining a pre-AMI Meter Reading organization (consisting of meter readers and meter reading technicians) to manually read and inspect for atmospheric corrosion on over 5.8 million active meters together with supervision, clerical support, technology and analytical support, and associated non-labor expenses. In contrast, TY 2019 post-AMI estimated cost for CS-MR is significantly less since it only includes manual meter reading costs for customers located in AMI's escalated jurisdictions and customers affected by AMI's MTU failures. See Ex. 18-WP SCG/Marelli (SCG-18-WP- 2FC006 CS – MR Operations, Supplemental Workpaper 2) for detailed calculations on TY 2019 estimated pre-AMI cost.

Table GRM-34 below summarizes the TY 2019 estimated AMI benefit for CS-MR Operations comparing TY 2019 estimated pre-AMI cost and TY 2019 estimated post-AMI cost.

TABLE GRM-34

Summary of TY 2019 AMI Estimated Cost and Benefit – CS-MR Operations

In 2016 $ (000s)

Meter Reading	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated AMI Benefit (C = B – A)
CS-MR Operations[25]	$ 31,631	$ 1,074	$ (30,556)

c) Forecast Method

A zero-based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation.

d) Cost Drivers

The cost of CS-MR Operations is primarily driven by the number of gas meters to be read each month, and to some degree, by the proficiency level of each part-time meter reader. The forecast is based on the average number of read orders per meter reader, training time, and vacation and sick time.

[25] The "TY 2019 Estimated Post-AMI" cost of $1,074 excludes manual meter reading costs associated with customers enrolled in SoCalGas' Opt-Out program. The ongoing costs for the Opt-Out program were separately addressed by the Commission in D.14-12-078.

e) Summary Of CS-MR Operations Costs

Table GRM-35 below summarizes SoCalGas TY 2019 funding request for the CS-MR Operations cost category. Refer to SCG-18-WP- 2FC006 CS – Meter Reading Operations, Supplemental Workpaper 1, Exhibit SCG-18-WP, for detailed calculations.

TABLE GRM-35

Summary of TY 2019 O&M Expenses for CS-MR Operations

CS-MR OPERATIONS	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
2016 Adjusted Recorded	$ 6,727	$ 305	$ 7,032
AMI Implementation Impact	$ (6,727)	$ (305)	$ (7,032)
Manual Meter Reading costs associated with Opt-Out Program	$ 1,120	$ 24	$ 1,144
Manual Meter Reading costs associated with AMI Escalated Jurisdictions	$ 1,009	$ 22	$ 1,031
Manual Meter Reading costs associated with AMI MTU Failures	$ 42	$ 1	$ 43
TY 2019 Estimated*	**$ 2,172**	**$ 47**	**$ 2,219**

*Of the $2,219,000 total TY 2019 estimated costs, approximately $1,126,000 or 50.8% are RAMP-related costs (refer to Section II for additional details of RAMP mitigation activities).

2. CS-MR Clerical Cost Category

a) Description of Costs and Underlying Activities

SoCalGas is requesting TY 2019 forecast expenses of $0.148 million for meter reading clerical personnel. CS-MR clerks handle customer information system facility updates for the new business meter process, provide general administrative support such as timekeeping, payroll and scheduling of part-time meter readers, and also assist with meter access issues.

b) AMI Integrated in TY 2019

To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs were compared to TY 2019 estimated cost which reflects full AMI implementation (Post-AMI). For CS-MR, if AMI was not deployed at SoCalGas, the TY 2019 estimated cost was based on retaining a pre-AMI Meter Reading organization (consisting of meter readers and meter reading technicians) to manually read and inspect for atmospheric corrosion on over 5.8 million active

meters together with supervision, clerical support, technology and analytical support, and associated non-labor expenses. In contrast, TY 2019 post-AMI estimated cost for CS-MR is significantly less since it only includes manual meter reading costs for customers located in AMI's escalated jurisdictions and customers affected by AMI's MTU failures. See Ex. 18-WP SCG/Marelli (SCG-18-WP- 2FC006 CS – MR Operations, Supplemental Workpaper 2).

Table GRM-36 below summarizes the estimated TY 2019 estimated AMI benefit for CS-MR Clerical comparing TY 2019 estimated pre-AMI cost and TY 2019 estimated post-AMI cost.

TABLE GRM-36

Summary of TY 2019 AMI Estimated Cost and Benefit – CS-MR Clerical

In 2016 $ (000s)

CS-MR	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated AMI Benefit (C = B – A)
CS-MR Clerical	$ 1,192	$ 148	$ (1,044)

c) Forecast Method

A zero-based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation.

d) Cost Drivers

Cost for the CS-MR clerical group are primarily driven by the number of clerical personnel and applicable wage rates. Although most of the manual meter reading function will be eliminated (except for those stated in Section III.C.1, CS-MR Operations), clerical support is still needed to handle customer information system facility updates for the new business meter process and provide administrative support to the remaining meter reading operations workforce such as timekeeping and scheduling.

e) Summary Of CS-MR Clerical Costs

Table GRM-37 below summarizes SoCalGas TY 2019 funding request for the CS-MR Clerical cost category.

The two meter reading clerks shown in the table below are needed to handle customer information system facility updates for new business[26] in addition to providing administrative support to CS-MR Operations. Labor cost is based on an average hourly rate of $35.29 x 2088 paid hours x 2 FTEs. Non-labor cost is based on BY 2016 non-labor cost per FTE of $616 x 2 FTEs.

TABLE GRM-37

Summary of TY 2019 O&M Expenses for CS-MR Clerical

CS-MR CLERICAL	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
2016 Adjusted Recorded	$ 510	$ 4	$ 514
AMI Implementation Impact	$ (510)	$ (4)	$ (514)
Cost for 2 Meter Reading Clerks	$ 147	$ 1	$ 148
TY 2019 Estimated	**$ 147**	**$ 1**	**$ 148**

3. CS-MR Supervision & Training Cost Category

a) Description of Costs and Underlying Activities

SoCalGas is requesting TY 2019 forecast expenses of $0.355 million for CS-MR supervisors. Supervisors are distributed across SoCalGas'operating bases from which meter readers work, to supervise, coach and manage the performance of meter reading employees.

b) AMI Integrated in TY 2019

To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs were compared to TY 2019 estimated cost which reflects full AMI implementation (Post-AMI). For CS-MR, if AMI was not deployed at SoCalGas, the TY 2019 estimated cost was based on retaining a pre-AMI Meter Reading organization (consisting of meter readers and meter reading technicians) to manually read and inspect for atmospheric corrosion on over 5.8 million active meters together with supervision, clerical support, technology and analytical support, and associated non-labor expenses. In contrast, TY 2019 post-AMI estimated cost for CS-MR is

[26] See Ex. 17 SCG/Garcia at Section VI (regarding AMI-related O&M costs and benefits).

significantly less since it only includes manual meter reading costs for customers located in AMI's escalated jurisdictions and customers affected by AMI's MTU failures. See Ex. 18-WP SCG/Marelli (SCG-18-WP- 2FC006 CS – MR Operations, Supplemental Workpaper 2).

Table GRM-38 below summarizes the TY 2019 estimated AMI benefit for CS-MR Supervision and Training comparing TY 2019 estimated pre-AMI cost and TY 2019 estimated post-AMI cost.

TABLE GRM-38

Summary of TY 2019 AMI Estimated Cost and Benefit – CS-MR Supervision & Training

In 2016 $ (000s)

CS-MR	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated MI Benefit (C = B – A)
CS-MR Supervision and Training[27]	$ 4,324	$ 172	$ (4,152)

c) Forecast Method

A zero-based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation.

d) Cost Drivers

The number of supervisors and applicable wage rates are the primary driver of costs in this category.

e) Summary of CS-MR Supervision & Training Costs

Four supervisors are needed to manage the work and performance of the part time meter reading workforce identified in the Section III.C.1, CS-MR Operations. Labor cost is based on BY 2016 average hourly rate for CS-MR Supervision of $39.98 x 4 FTEs x 2088 paid hours. Non-labor cost is based on BY 2016 non-labor cost per FTE of $5,274 x 4 FTEs. The labor and non-labor costs for supervisors were allocated to the three manual meter reading components shown in Table GRM-35.

[27] The "TY 2019 Estimated Post-AMI" cost of $172 excludes supervision costs associated with manual meter reading for customers enrolled in SoCalGas' Opt-Out program (as shown in Table GRM-39). The ongoing costs for the Opt-Out program were separately addressed by the Commission in D.14-12-078.

Table GRM-39 below summarizes SoCalGas TY 2019 funding request for the CS-MR Supervision & Training cost category broken down by the three manual meter reading components.

TABLE GRM-39

Summary of TY 2019 O&M Expenses for CS-MR Supervision & Training

CS-MR SUPERVISION & TRAINING	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
2016 Adjusted Recorded	$ 1,110	$ 70	$ 1,180
AMI Implementation Impact	$ (1,110)	$ (70)	$ (1,180)
Supervision costs associated with manual meter reading for the Opt-Out Program	$ 172	$ 11	$ 183
Supervision costs associated with manual meter reading for the AMI escalated jurisdictions	$ 155	$ 10	$ 165
Supervision costs associated with manual meter reading for the AMI MTU failures	$ 7	$ 0	$ 7
TY 2019 Estimated	**$ 334**	**$ 21**	**$ 355**

4. CS-MR Support Cost Category

a) Description of Costs and Underlying Activities

SoCalGas is requesting TY 2019 forecast expenses of $0.305 million for this cost category. The CS-MR Support cost category consists of a meter reading manager who supports CS-MR operations and business analysts who support the meter reading technologies, including the process to download and upload data to meter reading MDTs (aka handheld devices), conduct meter reading route analyses and route realignments, project management, and other reporting and analysis.

b) AMI Integrated in TY 2019

To estimate the benefit attributable to the full effect of AMI implementation, costs were estimated for TY 2019 as though AMI was not deployed at SoCalGas (Pre-AMI), and these costs were compared to TY 2019 estimated cost which reflects full AMI implementation (Post-AMI).

For CS-MR, if AMI was not deployed at SoCalGas, the TY 2019 estimated cost was based on retaining a pre-AMI Meter Reading organization (consisting of meter readers and meter reading technicians) to manually read and inspect for atmospheric corrosion on over 5.8 million active meters together with supervision, clerical support, technology and analytical support, and associated non-labor expenses. In contrast, TY 2019 post-AMI estimated cost for CS-MR is significantly less since it only includes manual meter reading costs for customers located in AMI's escalated jurisdictions and customers affected by AMI's MTU failures. See Ex. 18-WP SCG/Marelli (SCG-18-WP- 2FC006 CS – MR Operations, Supplemental Workpaper 2).

Table GRM-40 below summarizes the estimated AMI benefit for CS-MR Support comparing TY 2019 estimated pre-AMI cost and TY 2019 estimated post-AMI cost.

TABLE GRM-40

Summary of AMI Estimated Cost and Benefit – CS-MR Support

In 2016 $ (000s)

CS-MR Support	TY 2019 Estimated Pre-AMI Cost (A)	TY 2019 Estimated Post-AMI Cost (B)	TY 2019 Estimated AMI Benefit (C = B – A)
CS-MR Support[28]	$ 2,633	$ 148	$ (2,485)

c) Forecast Method

A zero-based forecast is used to forecast TY 2019 expenses in lieu of other forecasting methodology to reflect the effect of AMI implementation.

d) Cost Drivers

The primary costs driver for this cost category is the number of CS-MR support personnel and applicable wage rates.

e) Summary Of CS-MR Support Costs

Labor cost is based on BY 2016 average hourly rate for CS-MR Support cost of $46.04 x 3 FTEs x 2088 paid hours. Non-labor cost is based on BY 2016 non-labor cost per FTE of

[28] The "TY 2019 Estimated Post-AMI" cost of $148 excludes support costs associated with manual meter reading for customers enrolled in SoCalGas' Opt-Out program (as shown in Table GRM-41). The ongoing costs for the Opt-Out program were separately addressed by the Commission in D.14-12-078.

$5,726 x 3 FTEs. The labor and non-labor costs for the CS-MR Support employees were allocated to the three manual meter reading components shown in Table GRM-35.

Table GRM-41 below summarizes SoCalGas TY 2019 funding request for the CS-MR Support cost category broken down by the three manual meter reading components.

TABLE GRM-41

Summary of TY 2019 O&M Expenses for CS-MR Support

CS-MR SUPPORT	TY 2019 Estimated In 2016 $ (000s)		
Activity	**Labor**	**Non-labor**	**Total**
2016 Adjusted Recorded	$ 971	$ 366	$ 1,337
AMI Implementation Impact	$ (971)	$ (366)	$ (1,337)
Support costs associated with the manual meter reading for Opt-Out Program	$ 148	$ 9	$ 157
Support costs associated with manual meter reading for AMI's escalated jurisdictions	$ 134	$ 8	$ 142
Support costs associated with manual meter reading for AMI MTU failures	$ 6	$ 0	$ 6
TY 2019 Estimated	**$ 288**	**$ 17**	**$ 305**

IV. SHARED COSTS

A. Introduction

The purpose of this section is to present SoCalGas' estimated TY 2019 expenses for shared services that are required for both SoCalGas and SDG&E CS-F operations. There are no shared services for CS-MR operations.

The CS-F shared service expenses include personnel who manage and support certain aspects of both SoCalGas and SDG&E CS-F operations. Therefore, labor and non-labor expenses for these employees must be allocated across both utilities. Table GRC-42 summarizes the shared services for CS-F.

Table GRM-42

CS-F Shared Services O&M Summary of Costs

CS-F Staff In 2016 $ (000s)			
Category	**2016 Adjusted Recorded**	**TY 2019 Estimated***	**Change**
CS-F Staff	$ 1,194	$ 1,514	$ 320
Total Shared Services*	**$ 1,194**	**$ 1,514**	**$ 320**

*Of the $1,514,000 total TY 2019 estimated costs, approximately $961,000 or 63.5% are RAMP-related costs (refer to Section II for additional details on RAMP mitigation activities).

B. CS-F Staff

1. Description of Costs and Underlying Activities

SoCalGas is requesting TY 2019 forecast expenses of $1.514 million for this cost category, an increase of $0.320 million compared to BY 2016 adjusted-recorded costs. CS-F Staff is comprised primarily of management personnel who develop and implement processes, policies and procedures, including Gas Standards and Information Bulletins; track, analyze and report operational data; and manage special projects for CS-F operations. Although the CS-F Staff is primarily centralized in SoCalGas' Los Angeles headquarters building, this organization supports both SoCalGas'and SDGE's CS-F organizations.

CS-F Staff is needed to establish and maintain uniform policies and procedures for CS-F field personnel to follow. Policies and procedures are continuously updated to reflect new rules and regulations, manufacturer safety alerts, manufacturer appliance recalls, and other related changes. Analysts within CS-F Staff track and analyze customer and company-generated work order volumes, drive time, on premises time and other associated operating metrics. Project managers oversee and implement process and other changes that impact CS-F operations.

Non-Labor costs include cell phone costs, office supplies, travel and other miscellaneous expenses.

2. Forecast Method

A five-year historical average was used to forecast both labor and non-labor costs to avoid potential for artificially inflating or deflating results based on short-term anomalies.

The shared services allocation percentage is based on an assessment of the specific activities performed by each individual CS-F Staff employee. Some positions assigned to this cost category perform work solely for SoCalGas and their costs are allocated accordingly. As a result of assessing the work performed by positions in this cost category, 5.56% of CS-F Staff costs will be allocated to SDG&E in TY 2019.

Several management employees from the CS-F Staff group were released from their regular responsibilities during BY 2016 to work on temporary assignments to support activities associated with the Aliso incident. The Aliso incident required reprioritization of company resources, and CS-F Staff projects were either deferred when appropriate or other members of CS-F Staff took on additional assignments as needed. All labor and associated non-labor costs for these CS-F Staff employees for supporting the Aliso incident were excluded from BY 2016 adjusted recorded expenses. Employees on temporary assignments to support the Aliso incident have returned to their CS-F Staff positions to resume their normal CS-F Staff workload. In order to adequately resume routine operations, a 2016 adjustment for $0.225 million was included in the 5-year average calculation as shown in Table GRM-43 to return CS-F Staff to normal operations after temporary deployment to mitigate the Aliso incident.

Table GRM-43 below summarizes the five-year average for CS-F Staff costs which includes the $0.225 million adjustment added back to return to normal operations after temporary assignments to support the Aliso incident.

TABLE GRM-43

CS-F Staff 5-Year Average

CS-F Staff	2012 - 2016 Adjusted Recorded In 2016 $ (000s)		
Year	**Labor**	**Non-labor**	**Total**
2012 Adjusted Recorded	$ 1,567	$ 74	$ 1,641
2013 Adjusted Recorded	$ 1,520	$ 115	$ 1,635
2014 Adjusted Recorded	$ 1,347	$ 165	$ 1,512
2015 Adjusted Recorded	$ 1,225	$ 137	$ 1,362
2016 Adjusted Recorded[29]	$ 1,050	$ 144	$ 1,194
2016 Adjustment necessary to return CS-F Staff to normal operations after temporary assignments to support the Aliso incident	$ 212	$ 13	$ 225
5 Year Average	**$ 1,384**	**$ 130**	**$ 1,514**

3. Cost Drivers

Costs associated with this category are are primarily labor costs and are driven by the size of the CS-F staff organization. The number of CS-F Staff personnel required is in turn driven by the breadth and depth of the various CS-F operational functions supported as described in Section IV.B.1 above.

V. CAPITAL

Capital costs for the forecast years 2017, 2018, and 2019 for information technology systems that support CS-F and CS-MR operations (Table GRM-44 below) are sponsored by Mr. Olmsted (Ex. SCG-26). The purpose of this section of my testimony is to describe the operating need for these costs. Refer to Mr. Olmsted's capital workpapers, Exhibit SCG-26-CWP – Information Technology, for the basis for the costs.

[29] 2016 Adjusted Recorded excludes costs to support the Aliso leak mitigation.

TABLE GRM-44

Test Year 2019 Summary of Total Capital Costs

CUSTOMER SERVICES - FIELD CAPITAL COSTS In 2016 $ (000s)				
IT Capital Workpaper Group	**Project Name**	**2017 Estimated**	**2018 Estimated**	**2019 Estimated**
00754C – 84291	PACER OCS Order Reprioritization Project (Phase 1)	$ 440	$ 0	$ 0
00754E – 81499	MSA Inspection Project	$ 328	$ 0	$ 0
00774U - 84227	SoCalGas CS-F Routing	$ 1.556	$ 0	$ 0
00784B – 19109	FOF – Energy Diversion	$ 788	$ 234	$ 0
00784D – 19111	FOF – PACER OCS – Order Reprioritization Project (Phase II)	$ 300	$ 544	$ 1,881
00785A – 19108	FOF – CS-F PACER Mobile Platform	$ 3,426	$ 4,262	$ 1,591
	Total	**$ 6,838**	**$ 5,040**	**$ 3,472**

The PACER[30] application is a custom-built work order management system that has been in place since 1991 and is used by SoCalGas's CS-F and Dispatch Operations to issue and manage customer work orders and is essential to maintain customer service field operations across its entire service territory. The PACER system schedules, routes and dispatches work to CS-F field technicians. It collects specific data on work performed by CS-F technicians at customer's premise which is recorded and returned to other SoCalGas systems for status and reporting. Listed below are several projects to enhance customer service field processes supported by the PACER application.

A. 00754C – 84291: PACER OCS – Order Reprioritization Project (Phase 1)

SoCalGas is requesting $0.440 million for 2017 capital expenses for the PACER OCS – Order Reproritization Project (Phase 1). SoCalGas CS-F uses the PACER system to manage the

[30] PACER – Portable Automated Centralized Electronic Retrieval system.

work Order Completion Schedule (OCS) and manage field employee shift time availability. Currently, OCS manages customer generated work orders but has limited ability to manage company generated work order volumes. CS-F order category assignments have not changed in the PACER system in approximately 15 years and are in need of modernization to reflect current business conditions such as MSA inspections, AMI maintenance work, and many other follow-up company generated maintenance and compliance work.

The purpose for this Phase 1 project is to improve PACER dispatch work order scheduling and management, providing the ability to better and more granularly prioritize work based on order types, for all company generated orders. MSA inspections and AMI have added substantial maintenance and compliance follow-up work order types, many requiring due-by-dates, impacting billing and compliance. This project will provide PACER dispatch views of those work order streams, further enabling compliance aging and dispatch and routing capabilities for these orders. The intent of this project is to provide PACER system visibility for all company generated maintenance and compliance work order processing in order to effectively manage the increasing volume and Customer Contact Center user visibility in its customer information system for pending maintenance work.

B. 00754E – 81499: MSA Inspection Project

SoCalGas is requesting $0.328 million for 2017 capital expenses for the MSA Inspection Project. Enhancements were made to PACER and the customer information system during 2015 to implement the new MSA Inspection Program and enable the MSA Inspection Organization to perform the DOT required inspections beginning in January, 2016. The capital funding for 2017 was used for compliance reporting changes, creating a dedicated field employee code for the MSA inspections field workforce and routing realignment changes.

C. 00774U – 84227: SoCalGas CS-F Service Routing

SoCalGas is requesting $1.556 million for 2017 capital expenses associated with the implementation of the SoCalGas CS-F Service Routing project. The CS-F routing and mapping system is currently operating with unsupported, obsolete IT infrastructure and applications. Servers and applications are at end of life and require upgrades to sustain and improve customer service routing processes. For example, current applications leverage disparate and inaccurate geographic data sources, thus providing inconsistent reporting and route results across field navigation applications, back-office route planning, reporting, and dispatch applications.

Further, no end-to-end programs or processes exist for maintaining current, accurate, and consistent facility location and street map data. Consequently, application and server upgrades, enhancements and replacement are required to sustain daily operations, meet regulatory compliance mandates for MSA inspections, maintain IT standard compliance, vendor support for mission critical applications, and ultimately improve route efficiency.

In order to address the issues stated above, the CS-F routing system will undergo server, and client replacement, application upgrades and functional enhancements. Obsolete applications will be replaced and enhanced. End-to-end programs and processes to maintain facility and street location accuracy and consistency will be developed for ongoing operations.

D. 00784B – 19109: FOF – Energy Diversion Project

SoCalGas is requesting $0.788 million for 2017 capital expenses and $0.234 million for 2018 capital expenses for the Energy Diversion Project. Implementation of an energy diversion program will allow SoCalGas to implement business and system processes across multiple organizations to better document, track, and manage energy diversion cases. The scope of this project is to develop an energy diversion mitigation order to manage, track, and report energy diversion cases. Enhancements to customer information system will provide visibility to several groups such as Customer Contact Center, High Bill Investigation team, Special Investigations team, Set Desk, Billing and Collections groups in support of new processes to manage operational activities at these facilities.

E. 00784D – 19111: CS-F PACER OCS – Order Reprioritization Project (Phase II)

SoCalGas is requesting $0.300 million for 2017 capital expenses, $0.544 million for 2018 capital expenses and $1.881 million for 2019 capital expenses for CS-F PACER OCS – Order Reprioritization Project (Phase II). This is second phase of the PACER Order re-prioritization project and the main drivers for this project is CS-F order scheduling and management, providing the ability to better and more granularly prioritize work based on order type, for all CS-F order types. The current PACER Order Completion Schedule manages order types by "categories" rather than targeted order types/priorities.

The scope of this Phase II project is to enable more granular work order management in CS-F Dispatch Offices, by order type, eliminating order categories. The project will include reviewing/addressing employee availability calculations, order on premises times, drive times, etc., comparing order volumes, which make up the entire OCS PACER Program. This project

addresses: (1) prioritization of OCS orders and categories; and (2) automated scheduling of un-scheduled company generated work orders.

F. 00785A – 19108: CS-F PACER Mobile Platform Project

SoCalGas is requesting $3.426 million for 2017 capital expenses, $4.262 million for 2018 capital expenses and $1.591 million for 2019 capital expenses for the CS-F PACER Mobile Platform Project. CS-F field employees are equipped with Mobile Data Terminals (MDTs) through which they receive and track work orders in the field using the PACER system. MDTs are replaced on a five year cycle with the next replacement due in 2018. One of the projects included in the FOF initiative is to replace the MDTs with Smartphones to reduce the total cost of ownership (both O&M and capital) and enable functionalities that will improve efficiency and enhance customer satisfaction, such as providing call ahead notification to customers for scheduled orders requiring entry access to customer's premises. The legacy PACER application will also need to be migrated from an MDT to a mobile Smartphone application and perform as effectively and efficiently as it does on an MDT. This project is required to achieve a portion of the projected FOF benefits as shown in CS-F Operations.

VI. CONCLUSION

My O&M and capital forecasts were carefully developed and scrutinized by my staff and me as representing a reasonable and prudent level of funding for CS-F and CS-MR operations. The expense forecasts are based on diligent, thorough and transparent consideration of the myriad of factors influencing costs associated with providing field services and reading gas meters at customers premises. The funding requested in my testimony is critical to providing safe, reliable, and efficient services at customer premises and reflects SoCalGas' efforts to continuously improve its operations.

This concludes my prepared testimony.

VII. WITNESS QUALIFICATIONS

My name is Gwen R. Marelli. My business address is 555 West Fifth Street, Los Angeles, California 90013. I am employed by SoCalGas as the Director of Customer Services Staff for the Southern California Gas Company. I am responsible for leading and overseeing the policies and procedures, training, quality assurance, technology, and other staff functions that support Customer Services Field operations, including CSF shared service functions performed on behalf of SDG&E. I have held this position since January 2017.

I received a Master of Business Administration degree from Pepperdine University's Graziadio School of Business and Management in 1990 and a Bachelor of Science degree in Mechanical Engineering from the University of California, San Diego in 1986. I have been employed by SoCalGas since 1991 and have held roles of increasing responsibility in Marketing, Communications, Strategy, Operations, Energy Markets and Capacity Products. Prior to joining SoCalGas, I held engineering positions at Bechtel Western Power Company and McDonnell Douglas Corporation.

I have previously testified before the California Public Utilities Commission.

APPENDIX A

List of Acronyms

Line No.	Acronyms	Definition
1	ACOR	Atmospheric Corrosion
2	AMI	Advanced Metering Infrastructure
3	BBS	Behavior Based Safety
4	BY	Base Year
5	CFR	Code of Federal Regulations
6	CGI	Can't Get In
7	CO	Carbon Monoxide
8	CS-F	Customer Services - Field
9	CS-MR	Custtomer Services – Meter Reading
10	CPUC	California Public Utilities Commission
11	CSO	Customer Service Order
12	D	Decision
13	DOT	Department of Transportation
14	FOF	Fueling our Future
15	FSA	Field Service Assistant
16	FTE	Full-time Equivalent
17	GRC	General Rate Case
18	HBI	High Bill Investigation
19	IT	Information Technology
20	LFM	Low Flow Meter
21	MDT	Mobile Data Terminal
22	MIR	MSA Inspection Representative
23	MOR	MSA Office Representative
24	MPCP	Meter Performance Control Program
25	MSA	Meter Set Assembly
26	MTU	Meter Transmission Unit

APPENDIX A

List of Acronyms

Line No.	Acronyms	Definition
27	O&M	Operations and Maintenance
28	OCS	Order Completion Schedule
29	OpQual	Operator Qualification certification
30	OSHA	Occupational Safety and Health Administration
31	PACER	Portable Automated Centralized Electronic Retrieval System
32	PMC	Planned Meter Change
33	PPE	Personal Protective Equipment
34	QA	Quality Assurance
35	RAMP	Risk Assessment Mitigation Phase
36	SDG&E	San Diego Gas & Electric
37	TY	Test Year

APPENDIX B

Order Type – Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
1	Change of Account - Turn On (Not Entered)	This is change of account activity. This work is performed to establish a new customer's account. No appliance work is performed. The meter is read, the meter is inspected, and gas flow is observed to ensure it is not above normal usage. Advanced Meter data is generally used to eliminate the fielding of this order type. Orders are issued when a meter has not been advanced. In addition, the field technician sometimes find the gas is already on when he arrives to a Turn On type order where it was expected to be off.
2	Change of Account - Close (Soft)	This is change of account activity. This work is performed to terminate a customer's account at their request. The meter is read, the meter is inspected, and gas flow is observed to ensure it is not above normal usage. Advanced Meter has eliminated the need for fielding this type of order when a new customer has moved in.
3	Credit/Collections - 48 Hour (1st Call)	Prior to shutting off gas service for nonpayment, this is an attempt to collect an unpaid balance from the customer, allowing 48 hours to make payment arrangements. If payment is not rendered, a notice is provided, containing payment locations and telephone numbers for SoCalGas' Customer Contact Center. The 48 hour order is required for elderly or handicapped residential customers if they cannot be reached by phone before the gas can be shut off for non-payment.
4	Credit/Collections - Collect/Close (2nd Call)	This is an attempt to collect on an unpaid customer balance. If customer is unable to pay, the gas service is hard closed (close valve and secure with a locking device) when possible. A 1st Call order has already been completed if required.
5	Credit/Collections - Returned Check	When a payment is made by check and the account lacked sufficient funds to cover the unpaid balance, a collect or close order is issued and the customer must pay in cash, money order, certified check or Bill Matrix (credit card) for gas service to remain on. If the customer is unable to pay, the gas valve is closed and secured with a locking device.
6	Credit/Collections - Tenant Notification	Written notification is posted at the property address informing the tenants that the gas account is delinquent and the service will be closed if the account holder fails to pay.
7	Credit/Collections - Other	This order type is used for miscellaneous collections-related work not covered by other order types.

APPENDIX B (Continued)

Order Type – Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
8	Customer Service Order (CSO)	This is an order type where the customer requests that a gas appliance be checked (e.g., inoperative water heater).
9	CSO - CO Test	This order type is used when a customer requests a Carbon Monoxide (CO) test to ensure the safety of their home. The field technician checks for CO levels present in the customer's home.
10	CSO - No Gas	This order type is used when a customer calls to indicate their gas appliances are not working and the reason is unknown or not covered by other order types.
11	CSO - Seasonal Off	This order type is used when a customer requests that a gas space heating appliance with a pilot or electronic ignition be turned off. The field technician closes the control or line valve. A full safety check is performed on the heating appliance before closing the gas supply.
12	CSO - Seasonal On	This order type is used when a customer requests that a heating appliance be turned on. The field technician conducts a full safety check on the heating appliance before leaving the gas supply valve on.
13	Gas Leak - CSO Leak	This order type is used when a report of a gas leak or odor complaint is received. The field technician investigates and identifies the source of the leakage or odor complaint. When a leak is found and it can be repaired, the technician makes repairs. Otherwise, the employee isolates and leaves the gas off pending completion of needed repairs if on the customer's houseline or refers to Gas Distribution group if on the company pipeline.
14	Gas Leak - Pilot Out Only	This order type is used when a customer reports a leak at a gas appliance and requests service. Upon inspection, the field technician determines the cause of the leak is a pilot light outage.
15	Gas Leak - Leak Investigation (Step2)	A gas leak becomes a Step 2 investigation when the cause of the odor cannot be determined with 100% certainty without checking the customer's houseline for leakage. The field technician shuts off all gas appliances so that gas flow can be checked at the meter. Underground samples are also taken to determine if there is a leak on company facilities. The field technician makes needed repairs, if possible, or leaves the gas off.

APPENDIX B (Continued)

Order Type – Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
16	Fumigation - Turn On	This order type is used when a customer requests that gas service be restored after it was shut off for fumigation.
17	Fumigation - Close	This order type is used when a customer's property is scheduled for fumigation and the customer requests that gas service be closed and secured in preparation for the fumigation. The field technician shuts off gas service to the premise.
18	HBI - Entered	This order type is used when a customer requests that a service technician be sent to the customer's premise to investigate the cause of a high bill.
19	HBI - Not Entered	This is where the customer has requested a service visit to review the cause of a high bill. The explanation for the bill is determined without entering the home.
20	Meter Work (Capital) - Meter Set - Turn On	This order type is used when a new gas meter is installed at a customer's premise. Gas service is established and the field technician enters the property to service all the gas appliances.
21	Meter Work (Capital) - Meter Set - Left Off	This order type is used when a new gas meter is installed on a customer's premise and the service valve is left off because access to the appliances is not available.
22	Meter Work (Capital) - Meter Set (PSI)	This is order type is used when a new gas meter is installed at a customer's premise and higher-than-standard gas pressure (e.g., 2 PSI, or pounds per square inch) is provided.
23	Meter Work (O&&M) - Meter Reset - Turn On	This order type is used when a gas meter is installed at an existing facility where the gas meter had previously been removed due to non-use. Gas service is re-established and the field technician enters the property to service all the gas appliances.
24	Meter Work (O&&M) - Meter Reset - Left Off	This order type is used when a gas meter is installed at an existing facility where the gas meter had previously been removed due to non-use. Due to appliance inaccessibility, the field technician installs the meter, leaves the service off, and secures the gas valve.
25	Meter Work (O&&M) - Meter Change (Entered)	This order type is used when a gas meter is replaced and gas service is interrupted during the meter change. The field technician enters the property and services the gas appliances to restore gas service.

APPENDIX B (Continued)

Order Type – Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
26	Meter Work (O&&M) - Meter Change (Not Entered)	This order type is used when a gas meter is replaced. The field technician does not need to enter the property to service the appliances because a bypass is used during the meter change, enabling gas to remain on during the meter change, therefore, not interrupting the customer's gas service.
27	Meter Work (O&&M) - Meter Change (Size)	This order type is used when a customer's gas end uses necessitate a larger gas meter.
28	Meter Work (O&&M) - Meter Remove	This order type is used when a gas meter is removed from a customer's property for any reason.
29	NonPay Turn On - Turn On	This order type is used when a customer's gas service was shut off for nonpayment and the customer requests service re-activation following payment of their bill. The field technician services the customer's gas appliances and restores gas service.
30	Read/Verify - Verify	This order type is used when a field technician is asked to collect additional data at a customer premise, typically as a result of billing data abnormalities.
31	Read/Verify - Verify - Soft Close	This is a system-generated work order behind a soft-closed account. The order is generated when gas usage is expected to exceed 30 CCF. A field technician hard closes gas service at the meter.
32	Read/Verify - Verify - Soft Close - 180 Days	This is a system-generated work order behind a soft-closed account. The order is generated when the account has been in "soft close" status for 180 days without a new occupant. The field technician hard closes gas service at the meter.
33	Read/Verify - Load Survey - Residential	This order type is used when a field technician conducts a load survey of a customer's gas appliances to determine the potential load when the appliances are in use. The load survey results are used to properly size a new gas meter.
34	TurnOn/ShutOff - Turn On (Entered)	This order type is used when a new customer account is established and the gas is off. The field technician reads the meter, checks to ensure gas flow is normal and services all gas appliances.
35	TurnOn/ShutOff - Turn On Entered (Gas On)	This order type is used when a new customer account is established, the gas is already on, and the customer requests a safety check on their gas appliances.

APPENDIX B (Continued)

Order Type – Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
36	TurnOn/ShutOff - Turn On (Back On/Restore)	This order type is used when the gas has been shut off by the company or a third party. Repairs, if required, have been made; the field technician turns the gas on and services all gas appliances.
37	TurnOn/ShutOff - Turn On (PSI)	This order type is used when a new customer account is established, and the premise is served with higher-than-standard-pressure gas service. The field technician turns the gas service on and services all gas appliances.
38	TurnOn/ShutOff - Close (Hard)	This order type is used when a customer requests that their account be closed and gas service be shut off. A field technician closes the gas valve at the meter and secures it with a locking device.
39	Miscellaneous - Service Order (MSO)	This is a miscellaneous service order to account for work at customer premises that does not fit within other order categories, including follow-up work resulting from other orders.
40	Miscellaneous - Meter & Reg (MMR)	This is a multi-purpose order issued to address and correct a variety of conditions found at the meter including corrosion.
41	Miscellaneous - Assist	This order type is used when a field employee working an order requests assistance from another employee in order to complete the order, e.g., needs tools or parts, is concerned about their safety, etc.
42	Food Industry - Turn On (Entered)	This order type is used when a customer has established an account but the gas is off. A commercial/industrial field technician turns the gas on and services all gas equipment.
43	Food Industry - CSO	This order type is used when a food industry customer requests service on a piece of gas equipment.
44	Food Industry - CSO Leak	This order type is used when a food industry customer reports a potential gas leak at a piece of equipment. A commercial service technician investigates the source of the gas leak and makes needed repairs, if possible, or isolates the leak and shuts off gas service.
45	Commercial/Industrial - ISO	This order type, an industrial service order, is used when an industrial customer requests service on a gas-fired piece of equipment.

APPENDIX B (Continued)

Order Type – Description of Activity Performed

Line No.	ORDER TYPE	DESCRIPTION OF ACTIVITY PERFORMED
46	Commercial/Industrial - Load Survey- I/C	This order type is used when a commercial/industrial field technician is asked to determine gas end use load at a customer premise, at the customer's request and/or in preparation for a meter change in order to properly size the meter.
47	Commercial/Industrial - CSO	This order type is used when a commercial customer requests service on a gas-fired piece of equipment.
48	Commercial/Industrial - Turn On (Entered)	This order type is used when a commercial/industrial customer requests gas service to be turned on. The commercial/industrial field technician turns on gas service at the meter and services all gas equipment.
49	Cust/Comp Work - Other	This order type is used for miscellaneous customer- or company-generated work at customer premises.
50	Incomplete	This order type is used when a field technician is unable to complete a service order at a customer premise for any number of reasons.

APPENDIX C

2012 – 2016 Historical Volume by Order Type &

2017 – 2019 Estimated Volume by Order Type

Line No.	Order Type	Historical Actual Volume					Estimated Order Volume		
		2012	2013	2014	2015	BY 2016	2017	2018	TY 2019
1	Change of Account - Turn On (Not Entered)	829,470	786,953	557,381	325,995	118,375	43,217	15,895	5,893
2	Change of Account - Close (Soft)	657,993	611,060	506,660	374,748	305,457	307,112	309,396	311,853
3	Credit/Collections - 48 Hour (1st Call)	44,640	40,298	39,908	41,997	59,466	56,353	56,772	57,223
4	Credit/Collections - Collect/Close (2nd Call)	268,332	265,719	231,740	273,335	316,491	299,862	302,091	304,490
5	Credit/Collections - Returned Check	5,490	4,253	2,049	757	712	679	684	689
6	Credit/Collections - Tenant Notification	12,782	14,722	15,606	15,686	15,079	14,435	14,542	14,658
7	Credit/Collections - Other	89	61	114	142	72	69	70	70
8	Customer Service Order - CSO	257,830	248,483	216,006	192,254	199,468	200,549	202,040	203,645
9	CSO - Carbon Monoxide Test	5,507	6,328	5,709	6,654	6,590	6,626	6,675	6,728
10	CSO - No Gas	15,338	15,011	19,260	16,948	18,369	18,469	18,606	18,754
11	CSO - Seasonal Off	7,878	7,261	7,620	6,513	5,762	5,793	5,836	5,883
12	CSO - Seasonal On	63,402	64,588	58,580	60,826	54,652	54,948	55,357	55,796
13	Gas Leak - CSO Leak	258,472	268,475	271,614	296,674	269,460	270,920	272,934	275,102
14	Gas Leak - Pilot Out Only	24,963	23,194	20,822	21,581	19,800	19,907	20,055	20,215
15	Gas Leak - Leak Investigation (Step2)	10,797	12,543	11,841	13,068	13,256	13,328	13,427	13,534
16	Fumigation - Turn On	58,601	64,691	63,315	68,684	72,083	72,474	73,012	73,592
17	Fumigation - Close	67,458	74,014	72,150	76,463	77,602	78,023	78,603	79,227
18	HBI - Entered	5,779	7,515	6,449	4,230	4,349	4,373	4,405	4,440
19	HBI - Not Entered	8,594	13,235	11,099	7,223	6,704	6,740	6,790	6,844
20	Meter Work (Capital) - Meter Set - Turn On	12,047	16,571	19,180	18,799	21,362	22,870	27,570	29,524

APPENDIX C (Continued)

2012 – 2016 Historical Volume by Order Type &

2017 – 2019 Estimated Volume by Order Type

Line No.	Order Type	Historical Actual Volume					Estimated Order Volume		
		2012	2013	2014	2015	BY 2016	2017	2018	TY 2019
21	Meter Work (Capital) - Meter Set - Left Off	1,745	1,467	2,230	1,729	2,814	2,620	3,159	3,382
22	Meter Work (Capital) - Meter Set (PSI)	2,741	3,100	3,734	5,058	2,666	4,554	5,490	5,880
23	Meter Work (O&M) - Meter Reset - Turn On	1,453	1,495	1,388	1,013	945	950	957	965
24	Meter Work (O&M) - Meter Reset - Left Off	603	566	517	478	538	541	545	549
25	Meter Work (O&M) - Meter Change (Entered)	6,415	3,786	6,282	5,093	3,935	3,225	7,372	5,598
26	Meter Work (O&M) - Meter Change (Not Entered)	104,655	64,406	69,854	58,432	45,444	42,110	96,274	73,102
27	Meter Work (O&M) - Meter Change (Size)	5,096	5,498	5,757	5,534	5,970	6,002	6,047	6,095
28	Meter Work (O&M) - Meter Remove	5,193	5,356	6,071	6,352	7,705	7,747	7,804	7,866
29	NonPay Turn On - Turn On	80,872	81,011	74,160	88,240	106,637	105,187	103,187	101,034
30	Read/Verify - Verify	79,694	78,893	83,971	76,776	90,026	90,514	91,187	91,911
31	Read/Verify - Verify - Soft Close	48,766	43,690	33,045	29,747	31,330	31,500	31,734	31,986
32	Read/Verify - Verify - Soft Close - 180 Days	27,028	24,522	23,268	18,940	18,374	18,474	18,611	18,759
33	Read/Verify - Load Survey - Residential	5,912	5,834	6,034	5,689	6,069	6,102	6,147	6,196
34	TurnOn/ShutOff - Turn On (Entered)	131,103	118,167	100,060	88,925	90,150	90,639	91,312	92,038
35	TurnOn/ShutOff - Turn On Entered (Gas On)	51,382	45,495	34,921	25,493	18,600	18,701	18,840	18,989
36	TurnOn/ShutOff - Turn On (Back On/Restore)	50,953	35,344	31,647	44,862	48,388	48,650	49,012	49,401
37	TurnOn/ShutOff - Turn On (PSI)	1,571	1,522	1,416	1,416	1,501	1,509	1,520	1,532
38	TurnOn/ShutOff - Close (Hard)	47,330	46,669	47,608	48,947	49,404	49,672	50,041	50,439

APPENDIX C (Continued)

2012 – 2016 Historical Volume by Order Type &

2017 – 2019 Estimated Volume by Order Type

Line No.	Order Type	Historical Actual Volume					Estimated Order Volume		
		2012	2013	2014	2015	BY 2016	2017	2018	TY 2019
39	Miscellaneous - Service Order (MSO)	23,753	28,469	29,808	42,314	50,438	42,407	42,722	43,061
40	Miscellaneous - Meter & Reg (MMR)	51,665	30,916	39,052	63,695	73,100	66,818	67,315	67,850
41	Miscellaneous - Assist	13,914	15,165	17,080	16,167	25,482	25,620	25,811	26,016
42	Food Industry - Turn On (Entered)	3,132	3,103	3,118	2,944	2,744	2,759	2,779	2,801
43	Food Industry - CSO	53,753	55,366	56,802	61,628	66,134	66,492	66,987	67,519
44	Food Industry - CSO Leak	10,257	9,950	10,168	10,297	9,427	9,478	9,549	9,624
45	Commercial/Industrial - ISO	21,183	21,671	22,681	24,241	25,048	25,184	25,371	25,572
46	Commercial/Industrial - Load Survey- I/C	4,071	4,099	6,548	4,887	4,529	4,554	4,587	4,624
47	Commercial/Industrial - CSO	23,685	31,827	30,991	38,934	33,324	33,505	33,754	34,022
48	Commercial/Industrial - Turn On (Entered)	22,535	31,780	29,293	34,782	31,081	31,249	31,482	31,732
49	Cust/Comp Work - Other	1	4	3	8	583	586	591	595
50	Incomplete	291,366	265,557	249,156	234,559	237,326	227,250	232,201	230,482
51	Total	3,787,289	3,609,703	3,163,766	2,869,757	2,674,821	2,561,343	2,617,147	2,597,781

SCG 2019 GRC Testimony Revision Log –December 2017

Exhibit	Witness	Page	Line or Table	Revision Detail
SCG-18	Gwen Marelli	GRM-22	9	Added a footnote at the end of the statement, ". . . as shown in Table GRM-20 below." The footnote states "If the four year GRC cycle is adopted, as proposed in the testimony of Jawaad Malik (Exhibit SCG-44), then this calculation will need to be revised to reflect such option."
SCG-18	Gwen Marelli	GRM-28	Table GRM-21	For the item, Reduction due to the Order Forecast Methodology, changed the Total amount from "$(7,938)" to "$(8,015)"
SCG-18	Gwen Marelli	GRM-34	Table GRM-27	In Sub-Total: 5 Year Average line, changed "GRM-24" to "GRM-26"
SCG-18	Gwen Marelli	GRM-44	5	Removed "1. CS-MR Operations Cost Category" under C. Customer Services – Meter Reading.
SCG-18	Gwen Marelli	GRM-45	5	Added "1. CS-MR Operations Cost Category" above item a) Description of Costs and Underlying Activities.