

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

REVISED

SOCALGAS

DIRECT TESTIMONY OF RENE F. GARCIA

(ADVANCED METERING INFRASTRUCTURE (AMI))

December 2017

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



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Sample Data Collector Unit (DCU) Installations
SoCalGas “Bill Analyzer” Online Tool Customer Contact Personnel
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SUMMARY

TY 2019 Summary of Total O&M Costs

| O&M | 2016 (\$000) | 2019 (\$000) | Change |
|------------|--------------|--------------|--------|
| Non-Shared | 0 | 10,477 | 10,477 |
| Shared | 0 | 0 | 0 |
| Total | | 10,477 | 10,477 |

TY 2019 Summary of Total Capital Costs

| Capital | 2016 Adjusted-Recorded | Estimated 2017 (000s) | Estimated 2018 (000s) | Estimated 2019 (000s) |
|---------------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| AMI Balancing Account - Capital | 0 | 24,718 | 7,524 | 0 |
| IT Capital Projects | | | 1,768 | 4,815 |
| Total | 0 | 24,718 | 9,292 | 4,815 |

Summary of Requests

- SoCalGas Advanced Metering Infrastructure (AMI) is requesting \$10.477 million in Operations and Maintenance (O&M) costs in Test Year (TY) 2019 for a post-implementation, on-going AMI operating group: Advanced Meter Operations (AMO).
 - As anticipated in the AMI Application (A.) 08-09-023 (Application), the AMO is responsible for maintaining and optimizing the AMI network and systems in support of timely, reliable and accurate customer metering and billing.
- SoCalGas AMI is showing \$24.718 million in 2017 and \$7.524 million in 2018 as capital costs for rate base purposes only. Costs through 2018 are AMI implementation-related and are recorded in the Advanced Metering Infrastructure Balancing Account (AMIBA), as previously authorized in the AMI Decision (D.) 10-04-027 (Decision) and 2016 GRC Decision (D.) 16-06-054.
- SoCalGas AMI is presenting business requirements for \$1.768 million and \$4.815 million in IT capital costs in 2018 and 2019, respectively. AMI-related IT capital costs are represented in the workpapers of witness, Chris Olmsted (Exhibit SCG-26).

1 **SOCALGAS REVISED DIRECT TESTIMONY OF RENE F. GARCIA**
2 **(ADVANCED METERING INFRASTRUCTURE (AMI))**

3 **I. INTRODUCTION**

4 **A. Purpose of Testimony**

5 The purpose of my testimony is to provide an overview of SoCalGas' Advanced
6 Metering Infrastructure (AMI) implementation and to describe how it is incorporated into on-
7 going operations in Test Year (TY) 2019. Areas presented herein include:

- 8 • A proposal for the Advanced Meter Operations (AMO) and its integration into TY
9 2019, including the continuation of business processes and uses of AMI data in
10 support of customer safety;
- 11 • A description of the business requirements and rationale for three requested IT
12 capital projects, sponsored in the testimony of witness, Mr. Olmsted (Ex. SCG-
13 26);
- 14 • A discussion regarding continued manual meter reading in a few cities and
15 counties that do not agree with SoCalGas' understanding of the California Public
16 Utilities Commission's (CPUC) overarching jurisdiction over AMI facility
17 installations within public right-of-way;
- 18 • A description of AMI impacts to other SoCalGas' operating areas, including the
19 related costs and benefits: Tables RG-9 to RG-15 identify impacted witnesses
20 and their associated costs and benefits, as well as compare TY 2019 costs and
21 benefits to those anticipated in the Application;¹
- 22 • A discussion regarding the Advanced Meter Opt-Out Program implementation
23 and continued manual meter reading in TY 2019;
- 24 • A summary of the results of SoCalGas' energy conservation programs conducted
25 under the AMI umbrella as well as their proposed continuation after deployment.

¹ <https://www.socalgas.com/regulatory/A0809023.shtml>

1 **B. Summary of Advanced Meter Operations - Costs and Activities**

2 My testimony supports the TY 2019 forecasts for operations and maintenance (O&M)
3 costs for non-shared services, and capital costs for the forecast years 2017, 2018, and 2019,
4 associated with the Advanced Metering Infrastructure (AMI) for SoCalGas. Table RG-1
5 summarizes my sponsored costs.

6 **TABLE RG-1**
7 **TY 2019 Summary of Total O&M Costs**
8 **Thousands of 2016 Dollars**

| O&M | 2016 (\$000) | 2019 (\$000) | Change |
|------------|--------------|--------------|--------|
| Non-Shared | 0 | 10,477 | 10,477 |
| Shared | 0 | 0 | 0 |
| Total | | 10,477 | 10,477 |

9 **TABLE RG-2**
10 **TY 2019 Summary of Total Capital Costs**

| Capital | 2016 Adjusted-Recorded | Estimated 2017 (000s) | Estimated 2018 (000s) | Estimated 2019 (000s) |
|---------------------------------|------------------------|-----------------------|-----------------------|-----------------------|
| AMI Balancing Account - Capital | 0 | 24,718 | 7,524 | 0 |
| IT Capital Projects | | | 1,768 | 4,815 |
| Total | 0 | 24,718 | 9,292 | 4,815 |

11 My testimony will address the AMO organization required to monitor, operate and
12 maintain SoCalGas' AMI technology. All AMO related costs will appear as incremental to base
13 year (BY) 2016, as AMI deployment costs have been and will continue to be recorded in the
14 Advanced Metering Balancing Account (AMIBA) through 2018.

15 In addition to sponsoring the AMO organization's costs, my testimony will discuss O&M
16 and capital costs requested by witness areas impacted by the AMI deployment, including those
17 sponsored by witnesses Ms. Orozco-Mejia (Ex. SCG-04), Deanna Haines (Ex. SCG-09), Denita
18 Willoughby (Ex. SCG-22), Gwen Marelli (SCG-18), Michael Baldwin (Ex. SCG-19), Carmen
19 Herrera (Ex. SCG-23), Mr. Olmsted (SCG-26), Mary Gevorkian (SCG-32), Karen Chan (SCG-
20 38), Mike Bermel (SCG-07), and Andrew Cheung (SCG-20).

21 **C. Summary of Safety and Risk-Related Costs**

22 Certain costs presented in my testimony are associated with activities described in
23 SoCalGas and San Diego Gas Electric's (SDG&E) November 30, 2016 Risk Assessment

Mitigation Phase (RAMP) Report.² 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 testimony 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 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 RG-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 RG-3
Summary of Safety Related Risk Mitigation Costs
Thousands of 2016 Dollars

| RAMP Risk Chapter | BY 2016 Embedded Base Costs | TY 2019 Estimated Incremental | TY 2019 Estimated Total |
|---|--|--|--|
| SCG-2 - Employee, Contractor, Customer, and Public Safety | \$ 0 | \$ 456 | \$ 456 |

D. Organization of Testimony

My testimony is organized as follows:

- Section II describes RAMP and Safety Culture
- Section III describes AMI policy - background and overview
- Section IV describes AMI deployment status and current issues
- Section V describes Advanced Meter Operations
- Section VI provides a Summary of TY 2019 AMI impacts on SoCalGas' operating business units
- Section VII provides a status on and proposals for ongoing Advanced Meter Opt-Out

² Please refer to 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 the testimony of Diana Day, Exhibit SCG-02/SDG&E-02, Chapter 1 for more details regarding the utilities' RAMP Report.

- Section VIII describes Advanced Meter Customer Conservation-related Programs

II. RISK ASSESSMENT MITIGATION PHASE AND SAFETY CULTURE

A. RAMP

As discussed in Section I.C of my testimony, AMO costs include activities to mitigate the top safety risks that have been identified in the RAMP report. The risk associated to the mitigation activities described in my testimony is summarized in the table below.

**TABLE RG-4
RAMP Risk Chapter Description**

| RAMP Risk | Description |
|--|---|
| SCG-2 Employee, Contractor, Customer and Public Safety | This risk covers conditions and practices that may result in severe harm to employee, contractor, customer, and/or public safety. These conditions and practices may include driving, customer premises, and appliance conditions, as well as non-adherence to company safety policies, procedures, and programs. |

The costs for these activities are found in my revised workpaper 2AM002.000 and shown as adjustments to my forecasted costs. In my revised workpaper, RAMP mitigation costs represent TY 2019 estimated incremental costs. Table RG-5 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.

**TABLE RG-5
Summary of Safety Related Risk Mitigation Costs
Thousands of 2016 Dollars**

| | BY 2016 Embedded Base Costs | TY 2019 Estimated Incremental | TY 2019 Estimated Total |
|--|--|--|--|
| SCG-2 – Employee Contractor, Customer and Public Safety | | | |
| Gas Consumption Analytics | \$ 0 | \$ 183 | \$ 183 |
| Data Collector Unit (DCU) & Pole Inspections* | \$ 0 | \$ 273 | \$ 273 |
| Total Safety Related Risk Mitigation Costs | \$ 0 | \$ 456 | \$ 456 |

*Note: Data Collector Unit & Pole Inspections were identified after filing the RAMP report and is listed here as a post-RAMP item.

1 Gas Consumption Analytics – with Advanced Meter-enabled data analytics and
2 technology, SoCalGas will be able to identify unauthorized meter turn-ons at premises where
3 SoCalGas technicians have previously turned service off by installing security devices.³ With
4 this new awareness, SoCalGas will be able to more quickly react by scheduling additional visits
5 to the meter to perform investigations for evidence of equipment tampering.⁴

6 When gas service is turned on, safety related policies require that all gas company owned
7 apparatus are checked for leakage, correct delivery pressure, safety, and proper operation. In
8 addition, customer owned gas systems and appliances are also inspected for leakage, safe
9 operation, and carbon monoxide.

10 Prior to the installation of the AMI technology, gas consumption at premises with
11 installed security devices was identified as part of the Billing exception processes by the
12 Customer Information System (CIS). Billing analysts would be required to evaluate and
13 schedule additional visits to the meter if deemed as required. With AMI, SoCalGas can now
14 identify and investigate these possibly unsafe situations more quickly.

15 Safety is a SoCalGas core value and strategies to address tampering of these devices by
16 unauthorized personnel reduces the possibility of hazardous conditions for our customers and the
17 public.

18 Also in support of RAMP and public safety, SoCalGas conducts cyclical inspections of
19 AMI installed poles and related DCU equipment and materials attached to the pole. This process
20 is designed to identify structural problems and/or hazards in support of public safety and a
21 reliable system. Qualified SoCalGas field resources perform this work to comply with the
22 CPUC's General Orders.⁵ These inspections are logged and maintained by the Network

³ Gas Consumption Analytics will include evaluation of prior consumption patterns, customer behavior, results from prior field visits, awareness of security devices previously removed, and the ability to prescribe escalated treatments, as necessary to ensure the safe operation of SoCalGas equipment. Treatments may include notifications and requests for support to Corporate Security, animal control, or the sheriff's department.

⁴ During a field visit that requires closure of the service valve, a security device is installed to ensure only a qualified field technician may operate the valve to turn service on, and that all safety checks are performed in compliance with DOT Code of Federal Regulations (CFR) Title 49 part 192 and CPUC General Orders 58A and 112F. Under DOT and CPUC regulations, only operator qualified personnel are permitted to turn gas service on.

⁵ AMI pole inspections are required by the CPUC General Orders. Additionally, SoCalGas inspects the DCU infrastructure attached to AMI poles.

1 Maintenance & Construction team for compliance reporting. To remain compliant, SoCalGas
2 performs pole inspections of SoCalGas owned poles on an annual basis.

3 Although only mandated to inspect SoCalGas owned poles, all DCU infrastructure is
4 inspected once yearly. This includes DCUs that are attached to third-party poles and indoor
5 DCUs not attached to poles. As an alternative SoCalGas could only inspect poles mandated by
6 the General Orders. However, in support of public safety, SoCalGas has chosen to annually
7 inspect all of its DCU infrastructure.

8 **B. Safety Culture**

9 SoCalGas' longstanding commitment to safety focuses on three primary areas –
10 employee safety, customer safety and public safety. This safety focus is embedded in what we do
11 and is the foundation for who we are – from initial employee training, to the installation,
12 operation and maintenance of our utility infrastructure, and to our commitment to provide safe
13 and reliable service to our customers.

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

20 Within AMI, project managers and technical advisors are required to conduct daily field
21 inspections and to provide technical and field safety support to AMI field employees and
22 approved contractors performing DCU and Pole installations. In addition, SoCalGas requires its
23 AMI field employees and contractors to perform daily Tail-Gate safety meetings before starting
24 their work. They are also empowered and obligated to “stop the job” at any given moment if
25 they believe there are any safety concerns or issues that may result in accidents or injuries.

26 SoCalGas takes an integrated approach to safety, beginning with the design and
27 construction of facilities and followed by continual evaluation and improvement of operation and
28 maintenance activities. We address safety concerns through public communication and
29 awareness, emergency response, safety programs and practices, the implementation of new,
30 defined procurement processes that facilitate materials traceability, and a workplace that
31 encourages continual open and informal discussion of safety-related issues.

1 **III. ADVANCED METERING INFRASTRUCTURE POLICY**

2 **A. Regulatory Background and Overview**

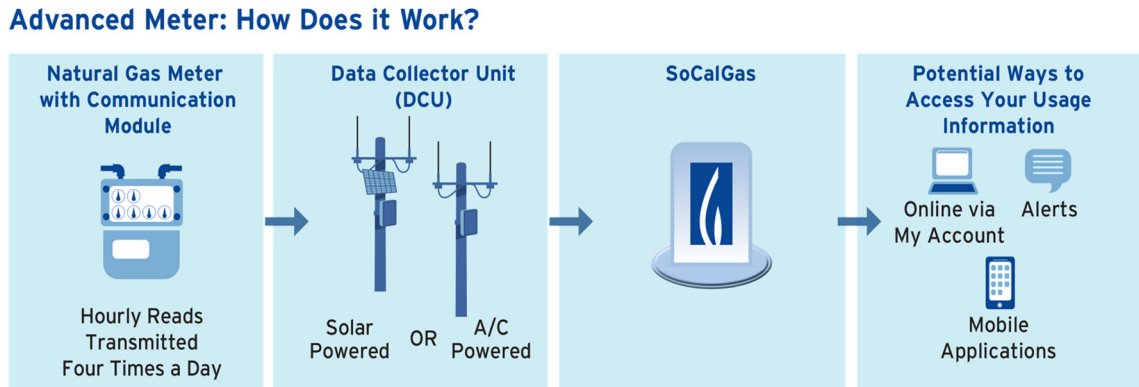
3 **1. Regulatory Background**

4 The Application requested authorization to convert approximately six million customer
5 meters to advanced metering. On April 8th, 2010, the Commission authorized the project in
6 D.10-04-027. Shortly thereafter, SoCalGas' Advice Letter (AL) 4110 was authorized to
7 establish the Advanced Metering Infrastructure Balancing Account (AMIBA) to record O&M
8 and capital-related costs and to implement a component of customer rates through the AMI
9 project deployment period (2010 – 2017).

10 **2. AMI Overview**

11 SoCalGas' AMI deployment consists of three primary components: 1). Meter
12 Transmission Units (MTUs) installed on nearly 6 million gas meters; 2). nearly 4,600 Data
13 Collector Units (DCUs) to be constructed throughout the service territory by TY 2019; and 3).
14 back-office systems that allow for the collection and management of automated meter readings
15 for billing (e.g. Headend (HE) and Meter Data Management System (MDMS)). Figure RG-1
16 provides an overview of the AMI data flow:

17 **FIGURE RG-1**
18 **AMI Data Flow Overview**



- 20 1. The MTU turns on and securely transmits gas usage information to the DCUs for
21 a fraction of a second a day
- 22 2. DCUs wirelessly transmit MTU usage from the meter to SoCalGas' back-office
23 systems.
- 24 3. SoCalGas' systems process usage data and calculate bills

1 4. Customers are then provided access to their gas usage and billing data on the
2 internet or from their mobile devices.

3 An MTU is a communications device that automatically and securely transmits hourly
4 gas meter readings to our DCUs, which in turn transmit the gas meter readings to our back-office
5 systems (e.g. MDMS and HE) and billing department, eliminating the need for manual meter
6 reading.

7 While gas usage is still measured by the analog meter as it was prior to adding the AMI
8 technology, the MTU is applied (retrofitted) to the meter to securely transmit hourly meter
9 readings wirelessly through SoCalGas' data communications network. The MTU is off most of
10 the time, turning on for only a fraction of a second per day (less than two minutes total per year).
11 MTUs are battery powered and most are expected to last up to 20 years.

12 The AMI communication network will include nearly 4,600 DCUs by TY 2019 across
13 the SoCalGas service territory. The DCUs receive the meter reading data from the MTUs
14 installed on each meter. The data is encrypted and transmitted wirelessly across a licensed
15 frequency from the MTU to the DCU. The specific DCU locations, referred to as design points,
16 take into account the location of the approximately six million meters, the topography of the
17 surrounding area, and the influence of the built environment on the transmission of the radio
18 signal.⁶ DCUs can be placed within a 500-foot radius of a design point. Most MTUs will
19 communicate with at least three DCUs.

20 SoCalGas generally installs DCUs on SoCalGas owned poles or on local government/³rd
21 party owned street lights. When SoCalGas installs a DCU on its own pole, the DCU is solar-
22 powered and is provided back-up power via internal batteries which are expected to last five
23 years. When a DCU is installed on a street light, the DCU is most often powered by electricity
24 from the street light. When a DCU is attached to a local government/³rd party street light or
25 other type of asset, SoCalGas negotiates a contract with the asset owner which usually includes a
26 fee to lease the space on the asset and an energy rate for the electricity to power the DCU, when
27 applicable.

28 The third component of the infrastructure includes the AMI Information Technology (IT)
29 systems, including the Head End (HE) and the Meter Data Management System (MDMS).

⁶ MTUs and the associated network communications system operate in the 450 to 470 megahertz (MHz) bands and 800/1900 cellular frequency, respectively.

1 Meter reading data from the MTU is communicated to the DCUs and then transmitted to these
2 systems. Daily and hourly natural gas usage data is then made available on a next day basis
3 though SoCalGas' My Account online customer portal and the SoCalGas Mobile App, providing
4 customers the opportunity to manage their usage and to potentially conserve energy and reduce
5 their monthly bills.⁷

6 **B. Deployment Status**

7 The following section provides information regarding the AMI deployment status,
8 including accomplishments through June, 2017 and on-going challenges such as local
9 jurisdiction permitting issues preventing SoCalGas from completing the DCU network, and
10 challenges that will preclude SoCalGas from completing its curb meter MTU deployment by the
11 end of 2017.

12 **1. Deployment Status as of June 30th, 2017**

13 SoCalGas' AMI deployment is nearly complete. As of June, 2017, nearly 5.9 million
14 meters have been retrofitted with an MTU, representing 99 percent of total meters to be upgraded
15 with the AMI technology by TY 2019. Over the 4.5 years of AMI meter deployment, AMI field
16 installers have operated out of nineteen separate AMI warehouses, spread across SoCalGas'
17 service territory.⁸ Of the nearly 5.9 million meters with MTUs, nearly 99 percent of those are
18 communicating with the AMI network, no longer requiring manual meter reading and are using
19 AMI meter readings for billing – an indication that the various components of the AMI,
20 including MTUs, DCUs and back-office systems, are integrated and operating effectively.

21 With AMI data, customers are now able to monitor their hourly gas usage on a next-day
22 basis and can adjust their usage to save energy and potentially reduce their monthly bills.
23 Additionally, residential conservation “behavior change” program treatments administered by the
24 AMI project produced natural gas savings of almost 1.5 percent amongst customers treated in the
25 2015-2016 heating season campaign and 1.6 percent for customers treated during the most recent
26 2016-2017 campaign.

⁷ This same usage information is also made available to SoCalGas customer service representatives in the Customer Contact Center to assist customers with billing and usage-related inquiries.

⁸ Installation warehouses are workforce hubs located and leased specifically for AMI related, meter installation operations. By the end of 2017, all remaining warehouse operations will be complete and the locations will be closed.

1 SoCalGas has also started using AMI analytics and technology to identify abnormally
2 high gas usage at customer facilities. This technology could allow SoCalGas to more quickly
3 identify and respond to potential safety situations while also helping to reduce methane
4 emissions and improve air quality.

5 From a SoCalGas employee standpoint, it was understood that the Meter Reading
6 workforce would be the most significantly impacted by the project at the time of the Application;
7 both SoCalGas and the CPUC were concerned by the anticipated effect on these employees. In
8 fact, in Ordering Paragraph 1 of D.10-04-027, the Commission specifically addressed this
9 concern:

10 “Southern California Gas Company shall supplement by \$1 million, its
11 funding for workforce retention and retraining. This fund is established to
12 better protect the employment interests of Southern California Gas
13 Company’s meter reading workforce.”

14 Also in response to this concern, SoCalGas established an agreement with the Utility
15 Workers Union of America and the International Chemical Workers Union Council (Union) in
16 2010 to allow meter readers to become full-time employees on the project, providing them
17 opportunities primarily as AMI Project Field Representatives (MTU installers or installers of
18 MTU equipped meters) and AMI Project Office Representatives (primarily to interact with
19 customers requesting an AMI MTU installation appointment), as well as opportunities to bid to
20 other SoCalGas represented positions after a one-year period; SoCalGas is the only California
21 utility to have utilized its own employees to perform its AMI installations. Of the 1,030 Meter
22 Reading personnel employed at the time of the Decision in April 2010, nearly 75 percent of them
23 have transitioned into other SoCalGas positions.

24 **2. Deployment Challenges**

25 **a. Pending DCUs and challenges in certain jurisdictions**

26 As stated above, the DCUs receive meter reads wirelessly from the MTUs installed on
27 SoCalGas’ nearly six million meters. Without DCUs, MTUs cannot communicate automated
28 meter reads to SoCalGas’ back-office systems and customers cannot benefit from the AMI
29 technology. Prior to the AMI deployment, SoCalGas did not have a history of constructing
30 utility poles (such as for power lines or street lights) in public right-of-way. Therefore,

1 deployment of the DCUs on newly installed poles has been challenging in jurisdictions not
2 accustomed to above-ground SoCalGas infrastructure in the service territory.

3 In order to install the poles and the DCU network, SoCalGas has worked to obtain
4 permits to install DCUs in more than 221 permitting jurisdictions (e.g. cities, counties, state, and
5 federal jurisdictions) within its service territory. However, currently there are at least three (3)
6 remaining jurisdictions asserting that SoCalGas must abide by local *discretionary* permitting
7 processes, rather than *ministerial* permitting processes, prior to obtaining approval to construct
8 DCUs in their communities.

9 Generally speaking, local permits fall into two categories: *discretionary* and *ministerial*.
10 A discretionary permit (such as a conditional use permit) is one that is subject to the evaluation,
11 judgment, and approval or denial by the local planning authority.⁹ Essentially, a discretionary
12 permit requirement gives a local agency the power to render a value judgement on whether the
13 item being permitted should be allowed. A ministerial permit (such as a building permit or an
14 excavation permit), on the other hand, is *not* subject to discretion. Rather, the approval of a
15 ministerial permit by a local agency is automatic if the applicant meets certain pre-determined
16 requirements imposed by the local agency. Typically, local agencies recognize that the CPUC
17 has overarching authority over the design and construction of utility facilities.¹⁰ Consequently,
18 most local agencies recognize they have no authority to require *discretionary* permits for utility
19 facilities. Yet the CPUC and utilities recognize that local agencies retain *ministerial* permitting
20 authority even though the local agencies cannot use their discretion to preclude the installation of
21 utility facilities.

22 As noted above, three local jurisdictions continue to assert that SoCalGas must abide by
23 discretionary permitting processes: Santa Barbara County, Rolling Hills and Rancho Palos
24 Verdes. Collectively, these jurisdictions are preventing approximately 13,000 customers from
25 realizing AMI benefits and are preventing completion of the SoCalGas' deployment per the

⁹ See pages 9–10 at the following site: https://www.opr.ca.gov/docs/California_Planning_Guide_2005.pdf

¹⁰ SoCalGas contends that discretionary permit processes are inconsistent with CPUC jurisdiction over utility, design, construction and operation: Title XII, § 8 of the California Constitution, and Public Utilities Code Sections §§ 701, 761, 762, and 768, establish Commission's preemptory authority over city, county, or other public bodies in matters which the Legislature has granted regulatory power to the Commission, including the construction, maintenance, and operation of utility property (See, D. 13-11-023, D.10-04-034 and D.94-06-014).

1 schedule set-forth in D.10-04-027.¹¹ Because discretionary permitting processes are contrary to
2 SoCalGas' understanding of the CPUCs overarching authority over utility facilities, and because
3 acquiescing to discretionary permitting processes could result in DCUs being rejected or
4 removed by the jurisdiction at any time, SoCalGas has refrained from completing applications in
5 these jurisdictions. SoCalGas continues to engage with these jurisdictions to help them
6 understand the CPUC's jurisdiction over utility facilities in the hopes of getting facilities
7 installed as anticipated by our project schedule. In the meantime, SoCalGas anticipates that the
8 permitting issue will delay the full implementation of AMI until the permitting issues can be
9 resolved, either through: (i) acquiescence by the remaining local jurisdictions, (ii) legal action
10 taken against the remaining jurisdictions by SoCalGas, or (iii) potential CPUC intervention on
11 the matter forces acquiescence by the local jurisdictions, or (iv) a combination of any of the
12 above.

13 Until the local permitting matters referenced above are resolved, manual meter reading
14 will continue to be required in these areas for the foreseeable future. Because it is not yet known
15 if these permitting issues will be resolved by TY 2019, the associated funding for manual meter
16 reading in these areas for TY 2019 is being requested by the Customer Services - Field and
17 Meter Reading witness, Ms. Marelli (Ex. SCG-18).

18 **b. Curb Meter Modules**

19 As communicated to the Commission in late 2016 as well as in SoCalGas' February,
20 2017 Semiannual Report¹², SoCalGas discovered that a small percentage (approximately 0.15
21 percent) of MTUs were producing inaccurate digital gas usage reads. These devices were
22 issuing multiple, excessive false tamper alarms. These excessive tamper alarms were determined
23 to be early indicators of a faulty device, allowing SoCalGas to quickly identify and remove them
24 from service.

¹¹ Individual customer benefits include but are not limited to the associated bill reduction of SoCalGas' meter reading operating costs, customer conservation opportunities provided with visibility to hourly gas usage data, and societal benefits associated with removing meter reading vehicles from the road, resulting in a reduction in greenhouse gas emissions. Other safety-related benefits not available to customers in these areas are specific to data analytics and its ability to identify potential gas leaks. For Further discussion in my testimony, see section IV.E. New Capabilities Enabled by AMI Data Analytics for additional details regarding these benefits.

¹² <https://www.socalgas.com/regulatory/A0809023.shtml>, at pg. 6.

1 During the investigation, a subsequent manufacturing issue was identified with MTUs
2 located in curb meter vaults, currently affecting approximately 26,000 curb meters. These MTUs
3 cannot be replaced until the necessary replacement MTUs become available from the
4 manufacturer. SoCalGas expects the replacement curb meter MTUs to become available in the
5 fourth quarter of 2017. Until the affected curb meter MTUs are replaced, these meters will be
6 manually read to minimize any billing impacts to customers. Additionally, the deployment of
7 approximately 23,000 curb meter MTUs that were pending installation at the time the issue was
8 identified is now on hold. However, once the replacement MTU curb meter product is available,
9 the deployment will resume.

10 SoCalGas is seeking full-financial recovery from the vendor for the costs associated with
11 the curb meter MTU issue, including the costs for replacement product, for temporary manual
12 meter reading of the affected curb meters and for the labor costs associated with replacing those
13 that have been installed. Funding for the costs to remediate these curb meters or to temporarily
14 manually read them is not being requested in the TY 2019 GRC. Instead, SoCalGas will record
15 the costs within the AMIBA, as described in section III.3 below.

16 **3. AMI Bridge-Year Period and Regulatory Treatment for Deployment** 17 **Challenges**

18 Due to the timing of the AMI Application and Decision, the project deployment period
19 overlapped with SoCalGas' TY 2012 and TY 2016 General Rate Case (GRC) schedules. Since
20 AMI deployment costs and benefits are recorded in the AMIBA, AMI impacts could not be
21 integrated into GRC forecasts until TY 2019. As a result, SoCalGas requested authorization in
22 the TY 2016 to establish a 2018 "bridge-year" period – the year between the end of deployment
23 in 2017 and TY 2019. Subsequently, on May 5th, 2017, SoCalGas filed Advice Letter 5134 to
24 request the 2018 bridge-year period, referred to in the Advice Letter as the "post-deployment
25 phase cost sub-account."¹³ Consequently, the AMIBA's post-deployment phase cost sub-
26 account, to be effective as of January 1, 2018, will allow SoCalGas to record AMI related costs
27 and O&M benefits during the first year of "Advanced Meter Operations."¹⁴ In addition, within

¹³ AL 5134 with sub-account details is available at the following site:

<https://www.socalgas.com/regulatory/tariffs/tm2/pdf/5134.pdf>

¹⁴ As anticipated in the AMI Application, (A.) 08-09-023, Advanced Meter Operations (AMO) is the SoCalGas group that will maintain and operate the Advanced Metering network, systems and associated business processes for ongoing operations. The costs and benefits for AMO in year-one were defined in

1 the above referenced AL, SoCalGas requested authorization to record costs in two additional
2 AMIBA sub-accounts associated with the DCU deployment and curb meter MTU issues
3 described in sections III.2.a. and III.2.b. above. The AL was approved by the Commission on
4 June 5th.

5 **C. AMI Treatment in TY 2019 GRC**

6 AMI costs and benefits have been recorded in the AMIBA since the beginning of the
7 project in 2010 and will continue to do so through 2018. TY 2019 is SoCalGas' first opportunity
8 to integrate the impacts of the AMI implementation into SoCalGas' continuing operations and
9 associated GRC forecasts.

10 **IV. ADVANCED METER OPERATIONS**

11 **A. Non-Shared Costs**

12 "Non-Shared Services" are activities that are performed by a utility solely for the benefit
13 of its own customers. Corporate Center provides certain services to the utilities and to other
14 subsidiaries. For purposes of this general rate case, SoCalGas treats costs for services received
15 from Corporate Center as Non-Shared Services costs, consistent with any other outside vendor
16 costs incurred by the utility. Table RG-6 summarizes the total non-shared O&M forecasts for the
17 listed cost categories.

18 **TABLE RG-6**
19 **TY 2019 Summary of Non-Shared Costs**
20 **Thousands of 2016 Dollars**

| O&M | 2016 (\$000) | 2019 (\$000) | Change |
|--------------|--------------|--------------|--------|
| Non-Shared | 0 | 10,477 | 10,477 |
| Shared | 0 | 0 | 0 |
| Total | 0 | 10,477 | 10,477 |

21 **B. Description of Costs and Underlying Activities**

22 **1. Overview**

23 AMI deployment costs, as well as AMI operations-related costs, have historically been
24 and will continue to be recorded in the AMIBA through 2018. As anticipated in the Application,

the Application and authorized in D.10-04-027. SoCalGas' AMI 2018 policy request was submitted in the TY 2016 GRC A.14-11-004 and authorized by the Commission in D.16-06-054. In the TY 2016 GRC, SoCalGas requested authorization to establish a revenue requirement in the 2018 bridge-year period, by way of Advice Letter, utilizing the costs and benefits defined in the original AMI Application for 2018.

1 and common to other California AMI implementations¹⁵, on-going support will be required to
2 operate and maintain the AMI network, systems and related business processes. SoCalGas’
3 O&M expenses for Advanced Meter Operations will be introduced into the GRC for the first
4 time in TY 2019.

5 Many of the AMO’s functions directly support the timeliness, accuracy and reliability of
6 our customer billing activities. Labor and non-labor costs necessary to run and maintain the
7 AMI network, equipment and systems are provided below. A description of each group’s
8 responsibilities and functions is also provided.

9 **C. Forecast Methodology**

10 A zero-based forecast method for operations related labor and non-labor was used
11 because Advanced Meter Operations will be in its first full year of operations. Prior to TY 2019,
12 this existing workforce will still be partially focused on implementation, therefore, historical
13 costs recorded in the AMIBA were not used to derive the forecast. The forecast that I am
14 supporting incorporates known activity requirements for AMO in TY 2019.

15 **D. Cost Drivers**

16 The AMO will be made up of four primary groups: (i) Network Management, (ii)
17 Network (DCU) Maintenance and Construction, (iii) Business Systems Analytics, and (iv)
18 System Operations.

19 **1. Network Management**

20 The labor costs for the Network Management group in TY 2019 are forecasted to be
21 \$2.030 million, representing nineteen (19) FTEs. The Network Management group is
22 responsible for the ongoing operation of the AMI Network, including the data communication
23 integration between DCUs and MTUs.

24 The Network Management group monitors nearly six (6) million MTUs on a regular
25 basis for poor or inadequate communications and improper MTU functionality.¹⁶ If MTU
26 anomalies are identified, the Network Management group may conduct investigative field visits,
27 directly send MTU maintenance orders to SoCalGas’ field operations teams in Customer

¹⁵ SDG&E, A.10-12-006

¹⁶ MTUs functioning improperly may be experiencing excess alarms, irregular usage or communication patterns or may fail to communicate at all. These MTUs are accounted for in the projected Annual Failure Rate (“AFR”) of MTU maintenance (replacements).

1 Services or Gas Distribution (the Field), or determine if additional DCUs are needed to improve
2 network communications and reliability.¹⁷

3 For DCU related operations, the Network Management group currently monitors more
4 than 4,200 DCUs daily.¹⁸ If DCU anomalies are identified, the Network Management group
5 may remotely remediate the DCU or conduct an investigative field visit. Anomalies that are
6 identified daily include issues involving network connectivity, battery charging issues, RF
7 interference, and DCU security alarms. The Network Management group also works closely
8 with cellular carriers and SoCalGas' Information Technology group to ensure that the network
9 communications backhaul from the DCUs to SoCalGas is functioning reliably on a daily basis.

10 The Systems Health team within the Network Management group is responsible for
11 reporting on the status of the AMI systems and facilitating the resolution of system and database
12 issues and interfaces between the DCUs and the MTUs. Their primary functions and objectives
13 are in support of ensuring the AMI systems, components and data exchanges are operating
14 properly.

15 The Network Engineering Group within Network Management is responsible for both
16 ongoing radio-frequency (RF) engineering and technology product/systems engineering aspects
17 of the Advanced Meter technology. Specifically, the responsibilities of the group include:

- 18 • Managing resolution of network issues in the field related to RF interference,
19 cellular coverage challenges and signal degradation, and 'extreme' hard to hear
20 meter locations such as large, 'new business' apartment buildings with indoor
21 meter sets.
- 22 • Providing RF modeling and network design support to resolve any emergent
23 network coverage challenges and to enable network buildout to cover new
24 business meter sets.
- 25 • Ongoing AMI vendor relationship and contract management for the DCU product
26 line, as well as the MTU product line in coordination with the SoCalGas Gas

¹⁷ In TY 2019, DCUs needed to improve the network would primarily be due to meter growth in areas where the network is not already constructed or in newly built structures (e.g. apartment buildings) with subterranean meter locations. In these instances, AMO RF engineers perform RF propagation analysis to validate the location of the DCUs and propose additional DCU locations to strengthen and optimize the overall network.

¹⁸ Expected to be nearly 4,600 by TY 2019.

1 Engineering organization. This includes management of the Engineering Change
2 Order (ECO) processes with the vendor for both DCU and MTU products and
3 their related changes (e.g. firmware changes, component/Bill of Materials
4 changes, etc.) over time. The ECO process involves review of vendor-proposed
5 product changes, consultation with vendor engineering staff, and lab/field testing
6 and certification of all technology changes prior to their introduction for use in the
7 SoCalGas production environment.

- 8 • Managing the information security aspects of the Advanced Meter network and
9 working with our AMI vendor and outside experts to understand and adapt
10 (through product enhancements/upgrades) to ever-evolving cybersecurity
11 challenges.

12 Non-labor costs associated with Network Management functions are \$1.882 million.
13 Non-standard escalation (NSE), non-labor is forecasted to be \$0.143 million. Non-labor costs
14 include contractor services to: support operational matters with DCU network components,
15 provide RF Engineering consultation, MTU/DCU product change consultation, services related
16 to new meter/module products and their testing and integration within the SoCalGas environment
17 prior to accepting into inventory, AMI warranty fees, DCU Ethernet fees for cellular gateways
18 and Ethernet backhaul connectivity, fees paid to cellular communications providers to cover the
19 cost of monthly cellular data plans for each DCU; maintenance and enhancements for network
20 engineering lab and field equipment, costs for required periodic certifications/calibrations of RF
21 equipment needed for testing new product and firmware revisions for MTUs and DCUs, and to
22 assess network coverage and network interference in the field. Employee expenses for training,
23 telecom, and other miscellaneous costs are also included.

24 **2. Network Maintenance and Construction**

25 Labor costs for the Network Maintenance & Construction group in TY 2019 are
26 forecasted to be \$0.917 million, representing 9 FTEs (2.8 of 9 are dedicated to RAMP activities).
27 The Network Maintenance and Construction group is focused on maintaining SoCalGas' DCU
28 infrastructure deployed across SoCalGas' service territory in accordance with the Commission's
29 General Orders. In addition, the team is responsible for performing land acquisition, processing
30 and submitting ministerial and coastal commission permits in Public Right of Way (PROW),

1 utility easements, new pole and co-location construction, and commissioning DCUs that may be
2 needed to support new business associated with meter growth.

3 Events that will warrant additional AMI network infrastructure include: 1) new
4 residential and/or commercial homes or buildings constructed in areas where network coverage
5 may not have been previously needed, and 2) new development of multi-family dwellings, at
6 times constructed with subterranean meter rooms. SoCalGas learned that these subterranean
7 meter rooms are not always supported by existing Data Collector units erected above ground
8 within the community, per the network design provided by SoCalGas' AMI vendor. In order to
9 communicate with the AMI network and to provide customers in these developments access to
10 the full benefits of AMI, custom "in-door" DCU installations are at times required to be
11 constructed within these buildings. When this occurs, multiple DCU installations may be
12 required to support individual, multi-family dwellings. Given the above customer growth
13 scenarios, SoCalGas is projecting an increase of approximately 41 DCUs per calendar year
14 within the service territory. Capital costs associated with New Business and replacement poles
15 and DCUs are forecasted in the testimony of witness, Ms. Orozco-Mejia (Ex. SCG-04).

16 The DCU Maintenance and Construction group is also responsible for the ongoing
17 maintenance required for the existing and new business poles and DCUs. As discussed in the
18 RAMP and Safety Culture Section II.A. above, SoCalGas will need to conduct cyclical
19 inspections of all poles and related DCU equipment and materials attached to the pole. This
20 inspection activity will generate additional preventive and corrective work discovered under the
21 inspection process. Qualified AMO field resources will need to perform this corrective work in
22 order to comply with the CPUC's General Orders.

23 Non-labor costs associated with the Network Maintenance & Construction group are
24 forecasted to be \$1.526 million and include: permitting fees for DCU maintenance and service
25 (e.g. for battery changes, repairs, inspections and replacements), DCU repair equipment costs
26 (e.g. solar panels, batteries, nuts, bolts, cables, antennas), attachment costs for DCUs attached to
27 existing non-SoCalGas poles, costs associated with DCU maintenance and inspections (including
28 follow-up repairs or in response to emergency incidents), costs for test and personal safety
29 equipment, miscellaneous costs for incremental complex MTU or DCU installations and pole
30 relocation costs (i.e. upon a city's request). Employee expenses for training, telecom and other
31 miscellaneous costs are also included.

1 **3. Business Systems & Analytics**

2 Labor costs for the Business Systems & Analytics (BSA) group in TY 2019 are
3 forecasted to be \$1.419 million, representing 14 FTEs (2 of 14 are dedicated to RAMP
4 activities). The BSA group provides system and business process support to the SoCalGas
5 organizations that depend on and are impacted by the AMI technology for daily operations. BSA
6 analyzes and oversees any issues encountered by the impacted organizations and determines
7 what data, technical or procedural resolution may be needed. And as discussed in the RAMP
8 and Safety Culture Section II.A. above, part of the BSA group’s responsibility is to analyze and
9 monitor gas consumption on closed accounts and to report any anomalies to the Field for further
10 investigation.

11 The BSA group is the custodian of system and process enhancement requests related to
12 the AMI implementation and on-going operations; all changes must be managed, prioritized,
13 tested, implemented and supported by this group. In addition, BSA is responsible for evaluating
14 enhancements planned, built and implemented in SoCalGas’ Customer Information System
15 (CIS) and mobile applications used to perform work at SoCalGas premises by the Field to ensure
16 that enhancements do not negatively impact the AMI applications and business processes. BSA
17 also supports end-to-end and regression testing of all AMI-related system enhancements that
18 may impact SoCalGas’ Billing Operations and Field operations.

19 Non-labor costs associated with the BSA group are \$0.236 million and NSE costs are
20 \$0.319 million. These costs represent the following: Licensing costs for Siterra¹⁹, a 3rd party
21 vendor application developed for SoCalGas used as the system of record for the management of
22 DCUs and poles; ongoing maintenance fees for the Network Exceptions Management &
23 Operations (NEMO) system²⁰ including general troubleshooting and fault correction, defect fixes
24 and periodic software upgrades; contractor services to estimate, design, develop and implement
25 enhancements and provide technical support to validate emerging AMI-based products, systems
26 and services. Employee expenses for training, cell phone service and other miscellaneous costs
27 are also included.

¹⁹ 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.

²⁰ The NEMO application provides the ability to monitor the AMI network status and performance by providing automated network status reporting, aggregated data and visualization tools to execute the resolution of network communication exceptions at both the DCU and MTU level.

1 **4. System Operations**

2 Labor costs for the Systems Operations group in TY 2019 are forecasted to be \$1.235
3 million, representing 11 FTEs. The Systems Operations group is responsible for maintaining and
4 enhancing the primary software components of the AMI.

5 The AMI Information Technology (IT) system is comprised of two key software
6 components, the HE and the MDMS. The HE software collects and processes meter data and
7 pressure alarms and other data needed to help AMI support groups operate and manage the AMI
8 network. The MDMS software is the system of record for AMI meter reads, gas usage, and
9 MTU tamper alerts. The HE and MDMS systems are critical to SoCalGas’ AMI infrastructure
10 and necessary for automated meter reading, on-line customer usage data presentment and
11 customer billing.

12 In the Application, SoCalGas anticipated that it would need on-going IT support for the
13 MDMS and HE. SoCalGas’ support functions will continue to operate as a component of the
14 Advanced Meter Operations group and are not included in the forecast of IT witness, Mr.
15 Olmsted (SCG-26). SoCalGas believes continued alignment between the network operations
16 groups, the business operations support group and the IT systems support groups will allow for a
17 more effective and efficient operation of an accurate and reliable AMI.

18 Non-labor costs for Systems Operations are \$.039 million and \$0.731 million for NSE
19 non-labor. These costs include the following: contractor services for enhancements and
20 technical support for the HE and MDMS systems; software maintenance fees for both the HE
21 and MDMS; and Employee expenses for training, telecom expenses and other miscellaneous
22 costs.

23 **E. New Capabilities Enabled by AMI Data Analytics**

24 Included in the AMO O&M forecast are requested expenses to continue pursuing
25 programs associated with AMI data analytics and developing algorithms to help identify unusual
26 gas consumption patterns. This effort includes implementing business processes, policies and
27 tools to further support the continued safe and reliable delivery of natural gas to customers. As
28 the Commission articulated in the Decision²¹, the Advanced Meter system “provides [a] system-
29 wide technology platform with the ability to expand operating benefits as new applications

²¹ D. 10-04-027, at page 40.

1 emerge.” Through AMI data analytics, SoCalGas has explored expanding the use of its AMI to
2 provide safety-related benefits to its customers.

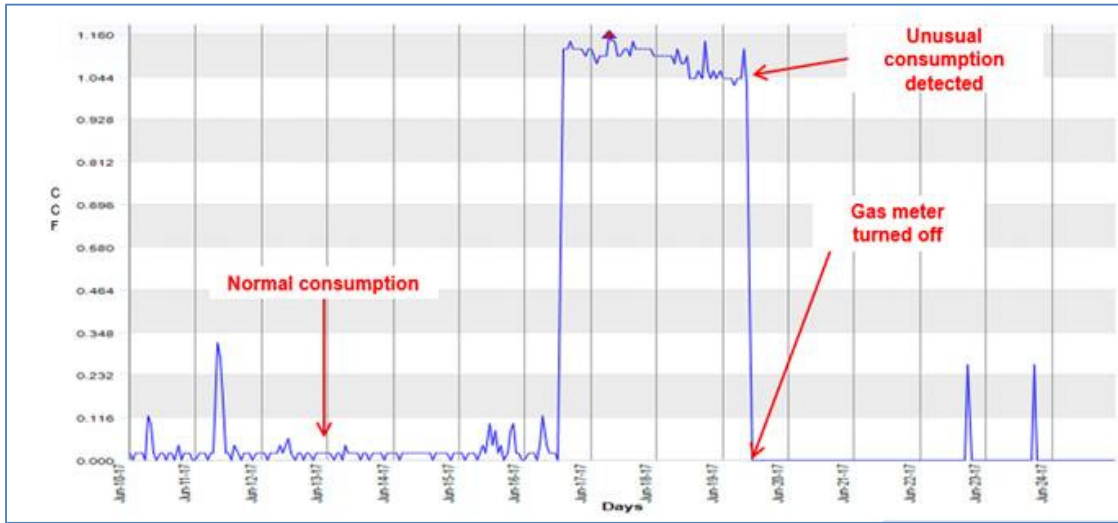
3 SoCalGas’ AMO group is in the early stages of developing AMI data analytics associated
4 with analyzing gas consumption at AMI-enabled facilities. In areas where the communications
5 network is fully deployed, these new insights are beginning to uncover new opportunities and
6 benefits potential.²² Leveraging the AMI network and data can result in faster identification of
7 abnormally high gas usage, which assists with investigating and responding to potential safety-
8 related situations more quickly. In addition, by discovering abnormally high gas usage and
9 notifying customers, SoCalGas can reduce methane emissions at those facilities, saving energy
10 and improving air quality while also reducing the potential financial burden resulting from
11 higher usage. Chart RG-1 below is an example of how gas consumption analytics can support
12 customer benefits and safety.

13 In this chart, the y-axis represents the amount of gas used in CCFs, the x-axis represents
14 time (days) and the jagged line represents the flow of gas over time. For this facility, normal gas
15 flow is observed where the jagged line fluctuates just above 0 CCFs. Near the middle of the x-
16 axis/time-period, gas flow spiked by multiple CCFs. With AMO data analytics, the unusual
17 consumption was identified, a fielded service order was generated to investigate for a possible
18 leak, and the gas was turned off. This is one example of how leveraging the AMI network and
19 data can result in the identification of abnormally high gas usage, which assists with
20 investigating and responding to potential safety-related situations more quickly.

²² AMI data analytics in support of customer safety is only possible at facilities and in areas where both MTUs and DCUs are present. Therefore, these enhanced safety-related benefits will unfortunately not be available to Opt-Out customers or to those customers in the Escalated Jurisdictions (until resolved).

1
2

CHART RG-1 AMI Hourly Data Analytics: Unusual Gas Consumption (Sample)



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4

High-level Process Flow:

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11

- AMI meters evaluated for ‘Unusual Consumption’
 - Unusual consumption may be when constant flow is observed (consumption not returning to pilot flow) during a 24-hour period²³
- Field Service order is generated by AMO, requesting a meter visit to investigate the reason for the unusual consumption
- Field technicians identify and resolve issue and complete a registration check to ensure consumption is back to zero (with all appliances turned off)

12
13

SoCalGas’ data analytics efforts thus far have produced the following findings from completed field visits as shown in Table RG-7 below:

²³ Consumption levels are not indicative of documented appliances at the premises nor are they indicative of appliances in use, based on appliance manufacturer data.

1
2

TABLE RG-7
Gas Consumption Data Analytics Results through June 30, 2017

| Findings from completed field visits | Number of field visits | Percent |
|--|-------------------------------|----------------|
| Total field visits generated by consumption analytics awareness | 5,909 | 100.00 |
| Gas services closed by SoCalGas field technician due to excessive registration, awaiting resolution <ul style="list-style-type: none">• Resolution takes place at the time of the follow-up field visit to reinstate gas service | 2,561 | 43.34 |
| Gas leak found by SoCalGas field technician | 1,120 | 18.95 |
| Gas or hot water leaks corrected by the customer as a result of SoCalGas field visit | 878 | 14.86 |
| Hot water leaks where the hot water heater was in continuous demand | 835 | 14.13 |
| Abnormal gas usage resulting from an appliance in use for an extended period of time (e.g., appliances unintentionally left on) | 515 | 8.72 |

3 AMI consumption analytics is in support of SoCalGas' existing processes and procedures
4 aimed at supporting public safety. AMO continues to build out analytics capabilities enabled by
5 the Advanced Meter system in order to further customer service and safety benefits, including
6 the increased likelihood of detecting potential leaks more quickly.

7 **V. CAPITAL**

8 **A. Introduction**

9 My testimony supports the business requirements for three (3) IT capital funding
10 requests, sponsored by witness, Mr. Olmsted (SCG-26). Table RG-8 summarizes the total
11 capital forecasts for 2017, 2018, and 2019.

12

1 **TABLE RG-8**

2 **Capital Expenditures Summary of Costs**

| IT Capital WP | Capital | Estimated 2017 (000s) | Estimated 2018 (000s) | Estimated 2019 (000s) |
|----------------------|---|--------------------------------------|----------------------------------|----------------------------------|
| 00776AA | 19120 DCU LTE Upgrade Program | 0 | 1,051 | 4,265 |
| 00776AB | 19121 DCU Software IS Upgrade | 0 | 248 | 316 |
| 00776Z | 19119 DCU Compliance Inspection Work Mgmt | 0 | 469 | 234 |
| IT Capital Total | | 0 | 1,768 | 4,815 |

3 **B. DCU LTE Upgrade Program**

4 **1. Description**

5 The forecast for SoCalGas' DCU LTE Upgrade in 2018 is \$1.051 million and \$4.265
6 million in 2019.

7 SoCalGas' DCUs require a cellular communications card upgrade. Each DCU contains a
8 cellular communications card provided by Verizon Wireless or AT&T Wireless that relays meter
9 readings and other data from the DCUs back to the Head End system. Existing cellular
10 communications cards utilize 2G or 3G cellular technology and must be upgraded to the newer
11 LTE technology. Verizon has announced that they will no longer support our older equipment
12 by the end of the decade (2020).²⁴ AT&T has not announced a sunset date for their equipment
13 but it is expected to be announced for the early-to-mid-2020s.

14 Cellular communications cards are central to the functionality of all DCUs. If
15 unsupported cellular communications equipment remains in DCUs, AM data transmission will
16 be degraded or completely disconnected, making it impossible for Advanced Meter data to be
17 returned to SoCalGas for billing and customer energy presentment. SoCalGas' electronic
18 pressure monitors and methane sensors could also be affected. This project supports the
19 company's goals of billing service quality and reliability.

20 The specific cost details regarding the project are found in witness, Mr. Olmsted's capital
21 workpapers (See Ex. SCG-26-CWP, wp 00776AA - 19120 DCU LTE UPGRADE PROGRAM).

²⁴ See article regarding Verizon Wireless' sunset of their "CDMA-1x network:"
<http://www.fiercewireless.com/wireless/verizon-to-shut-down-2g-cdma-1x-network-by-end-2019>

1 **C. DCU - Software Information Security (IS) Upgrade Project**

2 **1. Description**

3 The forecast for the DCU - Software Information Security (IS) Upgrade Project for 2018
4 is \$0.248 million and \$0.316 million in 2019.

5 This project supports the company's goals of enhancing existing IS capabilities of the
6 Advanced Meter hardware and IT systems to adapt and better defend against increasingly more
7 sophisticated cybersecurity threats.

8 SoCalGas AMI network connects DCUs through cellular communication gateways to the
9 Company's Head End at its data center. Although SoCalGas' system is designed with robust
10 authentication and cryptographic capabilities, SoCalGas must continually enhance its AMI
11 network security systems, including software and DCU firmware to keep data safe and secure as
12 vulnerabilities change over time.

13 The specific cost details regarding this project are found in witness, Mr. Olmsted's
14 capital workpapers (See Ex. SCG-26-CWP, wp 00776AB - 19121 DCU SOFTWARE IS
15 UPGRADE).

16 **D. DCU Compliance Inspection Work Management (Siterra to SAP Project)**

17 **1. Description**

18 The forecast for SoCalGas' Siterra to SAP Project for 2018 is \$0.469 million and \$0.234
19 million in 2019.

20 SoCalGas manages DCUs, poles, compliance inspections, installations, replacements,
21 incidents and inventory in the 3rd party Siterra application (provided by our AMI vendor as part
22 of the DCU deployment). To leverage existing Company technology and processes and to
23 reduce on-going maintenance costs, SoCalGas proposes to transition from its current AMI asset
24 management system to the Company's enterprise SAP asset management system. This project
25 supports the company's goals of utilizing existing technology to enhance system performance.

26 The specific cost details regarding the project are found in witness, Mr. Chris Olmsted's
27 capital workpapers (See Ex. SCG-26-CWP, wp 776Z - 19119 DCU COMPLIANCE
28 INSPECTION WORK MGMT).

1 **VI. AMI IMPACTED BUSINESS AREAS AND WITNESSES**

2 The following section describes the impacts of AMI on various business areas and
3 witnesses. TY 2019 costs and benefits are provided for each area as well as a comparison of TY
4 2019 costs and benefits to what was anticipated in the Application for post-AMI deployment
5 costs and benefits in that same year. In comparison to the assumptions in the Application,
6 SoCalGas estimates an additional net O&M benefit to rate payers of approximately \$6.784
7 million in TY 2019, as shown in Table RG-9. Net capital benefits in TY 2019 are \$16.148
8 million less than anticipated in the Application. Most of this variance is due to IT capital costs
9 not known at the time of the Application, lower than anticipated spend for meters through the
10 deployment and unanticipated DCUs needed to support meter growth in future years.

TABLE RG-9
Summary of 2008 AMI Application Assumptions vs. TY 2019
Aggregate O&M and Capital Costs and Benefits
(Thousands of 2016 Dollars)

| | AMI Application | TY 2019 | Variance |
|---------------------|------------------------|----------------|------------------|
| O&M Cost | \$15,913 | \$19,182 | \$3,269 |
| O&M Benefit | \$86,571 | \$96,624 | \$10,053 |
| Net O&M Benefit | \$70,658 (a) | \$77,442 (b) | \$6,784 (b-a) |
| Capital Cost | \$4,417 | \$11,370 | \$6,953 |
| Capital Benefit | \$29,243 | \$20,048 | \$(9,195) |
| Net Capital Benefit | \$24,826 (a) | \$8,678 (b) | \$(16,148) (b-a) |

11 **A. TY 2019 O&M Costs and Benefits by Impacted Witness**

12 As described in section IV. above, O&M forecasts for TY 2019 reflect the annual
13 ongoing costs associated with operations and maintenance of the AMI systems and network.
14 Other ongoing costs resulting from the AMI deployment are reflected in the forecasts of
15 SoCalGas' business units impacted by the deployment.

16 The AMI deployment has also created operational benefits that are passed on as savings
17 to customers in rates. These operating benefits have impacted several of SoCalGas' business
18 units and are reflected or discussed in their forecasts and/or testimony. Table RG-10 below
19 identifies the impacted business unit testimony area, witness sponsor, and AMI-related O&M
20 costs and benefits. Additionally, descriptions of the impacts are provided further below.

TABLE RG-10

TY 2019 O&M Costs and Benefits by Impacted Witness Area
Thousands of 2016 Dollars

| Ref | Testimony Area | Witness | Exhibit | O&M Cost | O&M Benefit |
|------------------|--|-------------------|---------|---------------------|-----------------|
| 1 | Gas Distribution | Gina Orozco-Mejia | SCG-04 | \$347 | \$741 |
| 2 | Gas Engineering | Deanna Haines | SCG-09 | \$652 ²⁵ | \$0 |
| 3 | Advanced Metering Operations | Rene F. Garcia | SCG-17 | \$10,477 | - |
| 4 | Customer Services - Field & Meter Reading | Gwen Marelli | SCG-18 | \$5,908 | \$83,830 |
| 5 | Customer Services - Office Operations | Mike Baldwin | SCG-19 | \$922 | \$3,940 |
| 6 | Customer Services – Information | Andrew Cheung | SCG-20 | \$255 | - |
| 7 | Supply Management | Denita Willoughby | SCG-22 | \$621 | - |
| 8 | Fleet Services & Facilities | Carmen Herrera | SCG-23 | - | \$7,805 |
| 9 | Human Resources Department, Safety, Long-Term Disability & Workers' Compensation | Mary Gevorkian | SCG-32 | - | \$308 |
| Sub-total | | | | \$19,182 | \$96,624 |

1. O&M costs in Gas Distribution are associated with the expected annual failure rate (AFR) and replacement of a small percentage of MTUs on meters serviced by Gas Distribution field technicians.²⁶ O&M benefits in Gas Distribution are associated with the conversion of more than 2,000 Electronic Pressure Monitors (EPMs) from primarily wired telecommunications connections to the wireless AMI network. The monthly telecommunication services fee for each converted EPM will be eliminated in TY 2019.

²⁵ The forecast in the testimony of Ms. Haines (Ex. SCG-09) is undergoing further evaluation and may be revised at the next opportunity.

²⁶ Estimated to be 1.92 percent of meters supported by Gas Distribution. Any AFR-related credits received from the AMI vendor will be recorded to the Core Fixed Cost Account (CFCA) in order to refund those dollars back to rate payers.

- 1 2. O&M costs in Gas Engineering are associated with the incremental FTEs
2 needed to support the new AMI technology and assets, as well as construction
3 design of DCU pole installations. Other efforts include: policy and procedure
4 standards and material specification maintenance, incoming quality assurance
5 inspection, return material evaluation, product issue and new feature testing
6 and evaluation, commercial and industrial equipment configuration,
7 commercial and industrial field support, standard and special design
8 development, and construction drawing generation.
- 9 3. O&M costs in AMO are necessary to continue the safe operation and
10 maintenance of the advanced meter network, systems and associated business
11 processes. The AMO will also support network assessments for the
12 construction of new DCUs resulting from meter growth or DCU replacements
13 in response to incidents in the field (DCU or pole damage caused by 3rd
14 parties). Additional high-level functions of the AMO include: technical and
15 business support for AMI-related IT systems and gas consumption data
16 analytics. For detailed AMO functions and costs, please see section IV.
17 above.
- 18 4. O&M costs related to Customer Services - Field & Meter Reading are
19 associated with on-going Customer Services - Field remediation of MTUs that
20 will require replacement due to the expected annual failure rate (AFR).²⁷
21 O&M costs also include clerical support needed for new business meters and
22 system updates and costs related to Atmospheric Corrosion Inspections
23 (ACOR).²⁸ O&M benefits are associated with the near elimination of the

²⁷ Estimated to be 0.68 percent for connected meters supported by Customer Services - Field. Any AFR-related credits received from the AMI vendor will be recorded to the CFCA in order to refund those dollars back to rate payers.

²⁸ O&M cost of \$5,908 includes \$3,525 TY 2019 estimated AMI total cost as shown in the testimony of Ms. Marelli (Ex. SCG-18, Table GRM-6) plus \$2,383 estimated cost for the continuation of the ACOR inspections once the meter reading organization was eliminated which was included in the AMI Application. Although these ACOR inspections are included above, this program has been replaced by a more comprehensive MSA Inspection Program, as discussed in the TY 2016 GRC testimony of SoCalGas witness Sara Franke (TY 2016 GRC Ex. SCG-89). The TY 2019 GRC request for the MSA Inspection Program is covered in the testimony of Ms. Marelli (Ex. SCG-18).

1 manual meter reading function and the reduction in FTEs due to fielded orders
2 eliminated for Customer Services - Field, primarily fielded Gas On-Turn-On
3 and fielded Change of Account orders.²⁹ Additional O&M benefits are
4 associated with the accelerated meter changes that were performed during the
5 AMI deployment and therefore avoided in TY 2019.

- 6 5. O&M costs related to Customer Services – Office Operations are associated
7 with mailing the SoCalGas Home Energy Guide (HEG) to customers
8 establishing gas service; this guide was previously hand-delivered to customer
9 locations as part of the CSF on-turn-on order, which is now nearly eliminated
10 due to AMI. During the deployment period, these costs were recorded in the
11 AMIBA. Other O&M costs include a portion of the ongoing software
12 maintenance fees for tools used by the Customer Contact Center to assist
13 customers with billing inquires, where AMI-enabled hourly usage data is now
14 leveraged to assist customers who call with billing inquiries. O&M benefits
15 are associated with FTE reductions in the Billing Operations unit, primarily
16 due to automation and reduced manual meter reading errors, resulting in fewer
17 billing investigations for billing analysts.
- 18 6. O&M costs in Customer Services – Information are costs associated with the
19 ongoing operation and support of the customer-facing Ways to Save online
20 tools, the customer contact personnel “Bill Analyzer” tool, and weekly Bill
21 Tracker Alerts.
- 22 7. O&M costs in Supply Management are associated with the Meter Shop
23 processing, which includes the inspection and testing of MTUs returned from
24 the field, sorting of MTUs between those being reharvested³⁰, those entering
25 the Return Materials Authorization (RMA)³¹ process, and those that are
26 damaged, and coordinating shipments and logistics.

²⁹ Prior to AMI, SoCalGas obtained a manual meter read when customers established their gas service and hand-delivered the Home Energy Guide (HEG). With AMI, the starting read can now be obtained through the AMI network and the HEG can be mailed.

³⁰ Processing and handling of functioning MTUs returned from the field due to meter removal and put back into inventory.

³¹ Processing and handling of faulty MTUs returned from the field after removal and prepared for return to the vendor for warranty processing.

- 1 8. O&M benefits in Fleet and Facilities are associated with the estimated
2 reduction in fleet for Customer Services - Field FTEs (represented employees)
3 and Meter Reading FTEs (management employees) as well as the reduction in
4 non-labor mileage expense associated with the near elimination of part-time
5 meter readers.
- 6 9. O&M benefits in Human Resources (HR) are associated with a reduction of
7 HR advisors, given that the meter reading function will be nearly eliminated
8 by TY 2019.

9 Costs and benefits in the impacted witness areas in TY 2019 were anticipated
10 within the Application. Although variances may exist within individual witness areas, the
11 aggregate TY 2019 O&M costs and benefits in all areas reflect a net benefit of \$77.442 million.
12 See Table RG-11 below by witness area for a comparison of O&M costs and benefits between
13 the assumptions made in the Application and TY 2019 estimates.

14 **TABLE RG-11**
15 **O&M Cost Comparison**
16 **AMI 2008 Application Assumptions vs. TY 2019**
17 **Thousands of 2016 Dollars**

| Ref | Testimony Area | Witness | Exhibit | AMI Application | TY 2019 |
|-----------|---|-------------------|---------|-----------------------|-----------------|
| 1 | Gas Distribution | Gina Orozco-Mejia | SCG-04 | \$0 | \$347 |
| 2 | Gas Engineering | Deanna Haines | SCG-09 | \$0 | \$652 |
| 3 | Advanced Metering Operations | Rene F. Garcia | SCG-17 | \$8,080 ³² | \$10,477 |
| 4 | Information Technology | Chris Olmsted | SCG-26 | | - |
| 5 | Customer Services - Field & Meter Reading | Gwen Marelli | SCG-18 | \$6,393 | \$5,908 |
| 6 | Customer Services - Office Operations | Mike Baldwin | SCG-19 | \$843 | \$922 |
| 7 | Customer Services Information | Andrew Cheung | SCG-20 | \$0 | \$255 |
| 8 | Supply Management & Supplier Diversity | Denita Willoughby | SCG-22 | \$597 | \$621 |
| Sub-total | | | | \$15,913 | \$19,182 |

³² AMO-related O&M costs anticipated in the AMI Application to reside within Information Technology after the deployment are now forecasted within the AMO.

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TABLE RG-12
O&M Benefits Comparison
AMI 2008 Application Assumptions vs. TY 2019
Thousands of 2016 dollars

| Ref | Testimony Area | Witness | Exhibit | AMI Application | TY 2019 |
|------------|--|-------------------|----------------|------------------------|-----------------|
| 1 | Gas Distribution | Gina Orozco-Mejia | SCG-04 | \$804 | \$741 |
| 2 | Customer Service Field & Meter Reading | Gwen Marelli | SCG-18 | \$74,868 | \$83,830 |
| 3 | Customer Service - Office Operations | Mike Baldwin | SCG-19 | \$4,507 | \$3,940 |
| 4 | Fleet Services & Facilities | Carmen Herrera | SCG-23 | \$5,888 | \$7,805 |
| 5 | Human Resources Department, Safety, Long-Term Disability & Workers' Compensation | Mary Gevorkian | SCG-32 | \$504 | \$308 |
| Sub-total | | | | \$86,571 | \$96,624 |

5 In TY 2019, the estimated O&M benefits resulting from the AMI deployment³³ will be greater
6 than the O&M benefits anticipated in the Application by approximately \$10 million. The
7 primary driver is the additional benefits estimated for O&M in Customer Services - Field &
8 Meter Reading. For additional detail, see the testimony of witness, Ms. Marelli (Ex. SCG-18).

9 **B. TY 2019 Capital Costs and Benefits by Impacted Witness**

10 AMI-related capital costs are forecasted in TY 2019 to continue expanding the AMI
11 components, primarily due to customer growth and to enhance the AMI network, systems and
12 security. Capital benefits are also realized in TY 2019 by the avoidance of capital expenses due
13 to the AMI deployment. See Table RG-13 below for estimated capital related costs and benefits
14 by affected witness area.

³³ Estimated operational benefits directly resulting from the AMI deployment (in 2016 direct dollars); they do not address other workforce impacts attributed to other requirements or programs.

1 **TABLE RG-13**

2 **TY 2019 Capital Costs and Benefits by Impacted Witness Area**
 3 **Thousands of 2016 Dollars**

| Ref | Testimony Area | Witness | Exhibit | Capital Cost | Capital Benefit |
|------------------|---|-------------------|---------|-----------------|-----------------|
| 1 | Gas Distribution | Gina Orozco-Mejia | SCG-04 | \$6,555 | \$19,971 |
| 2 | Gas Transmission - Capital | Mike Bermel | SCG-07 | - | \$0 |
| 3 | Customer Services - Field & Meter Reading | Gwen Marelli | SCG-18 | - | \$77 |
| 4 | Information Technology | Chris Olmsted | SCG-26 | \$4,815 | - |
| 5 | Working Cash | Karen Chan | SCG-38 | - | - |
| Sub-total | | | | \$11,370 | \$20,048 |

4 1. Capital costs in Gas Distribution are associated with on-going costs for the
 5 addition of new business MTUs and DCUs, as well as the associated labor
 6 required to manage the construction of the new business DCUs. Capital
 7 benefits are associated with the acceleration of planned meter changes
 8 (PMCs), curb meter replacements, regulator replacements and the avoidance
 9 of a second MTU for a meter due to be replaced within five years of the AMI
 10 deployment.³⁴ Because this Gas Distribution benefit is fully dependent on the
 11 AMI deployment and the timely purchase and replacement of meters included
 12 in AMI’s scope, this benefit is addressed in my testimony. Given that the
 13 AMI schedule will be met from an MTU and meter purchase and replacement
 14 perspective by TY 2019, SoCalGas costs for these assets are therefore avoided
 15 in TY 2019 GRC. Any meter and MTU forecast in Gas Distribution for
 16 PMCs in TY 2019, are for meters recently identified for meter replacement.
 17 Hence, those meters were not previously identified to be replaced as part of
 18 the AMI deployment and are therefore excluded from this comparison.

³⁴ PMCs that were identified to require replacement in the five-year period after the AMI deployment (2018 – 2022), as well as other meters considered to be incompatible with the MTU were authorized to be replaced (along with regulators, when appropriate) during the project deployment period (2012 – 2017) in D.10-04-027. Accelerating PMCs (650,000 over the 5-year deployment period) also eliminated the need for a second visit to those meter locations to perform a meter and MTU replacement within the 5-year period after the AMI deployment. Therefore, 130,000 MTU purchases for PMCs are also estimated to be avoided in TY 2019.

2. Capital Benefits in Gas Transmission are associated with the utilization of the AMI network and data to monitor pipeline pressure and to assist with pipeline capacity-related planning. In the Application, it was assumed that higher precision gas data provided by AMI could allow SoCalGas to defer the construction of a major pipeline and compressor station by one year. Because the associated capital benefit represents a one-year project deferral (costs avoided one year but incurred the following year), the capital benefit was associated with the net present value of the one-year deferral. In the Application, a project assumed to be constructed in 2019 would be deferred to 2020. For purposes of comparison between TY 2019 and the Application assumptions, the benefit associated with the one-year deferral, as calculated in the Application, is presented here.
3. Capital Benefits in Customer Services - Field & Meter Reading are associated with the avoidance of purchasing meter reading hand-held devices in TY 2019.
4. Capital costs in Information Technology are associated with projects planned for enhancing or upgrading the AMI systems. See section V. above for detailed descriptions for each IT capital projects presented in support of SoCalGas' AMI.
5. Working cash is impacted by the AMI deployment due to the ability to collect a closing read immediately after a customer's call to close his or her account. Working cash will also be reduced due to SoCalGas' ability to read all summary bill account meters on the same day. This capability will be implemented in Q4, 2017. An additional "same day read to bill" working cash benefit assumed at the time of the business case has not been implemented due to a technical limitation.

Similar to O&M, capital costs and benefits in the impacted witness areas in TY 2019 were anticipated during the AMI Application. See Tables RG-14 and RG-15 below for a comparison of capital costs and benefits between TY 2019 and the Application.

Table RG-14
Capital Cost Comparison
AMI 2008 Application Assumptions vs. TY 2019
Thousands of 2016 Dollars

| Ref | Testimony Area | Witness | Exhibit | AMI Application | TY 2019 |
|------------------|------------------------|-------------------|---------|-----------------|-----------------|
| 1 | Gas Distribution | Gina Orozco-Mejia | SCG-04 | \$4,417 | \$6,555 |
| 2 | Information Technology | Chris Olmsted | SCG-26 | \$0 | \$4,815 |
| Sub-total | | | | \$4,417 | \$11,370 |

1. Gas Distribution – TY 2019 capital costs include MTUs, DCUs and labor associated with new business DCUs. Additional DCUs, as a result of customer growth, were not anticipated at the time of the Application.
2. Information Technology – AMI IT capital enhancements were not specified at the time of the Application. However, enhancing software, hardware and security is customary for systems and technologies to continue to operate effectively and efficiently.

Table RG-15
Capital Benefits Comparison
AMI 2008 Application Assumptions vs. TY 2019
Thousands of 2016 Dollars

| Ref | Testimony Area | Witness | Exhibit | AMI Application | TY 2019 |
|--------|--|-------------------|---------|-----------------|-----------------|
| 1 | Gas Distribution | Gina Orozco-Mejia | SCG-04 | \$26,906 | \$19,971 |
| 2 | Gas Transmission Capital | Mike Bermel | SCG-07 | \$1,600 | \$0 |
| 3 | Customer Service Field & Meter Reading | Gwen Marelli | SCG-18 | \$77 | \$77 |
| 4 | Working Cash | Karen Chan | SCG-38 | \$660 | - |
| Totals | | | | \$29,243 | \$20,048 |

1. Gas Distribution – TY 2019 benefits (avoided costs associated with meters, regulators and MTUs replaced during deployment) are based on average, annual AMI actuals and consider current unit pricing. Lower per unit costs and fewer meter purchases were required as compared to what was assumed in the Application.

2. Gas Transmission capital benefit – SoCalGas’ Engineering Design group has begun to import hourly gas consumption data from AMI databases and to develop processes for incorporating the data into pipeline system modeling and analysis. The development of these processes is in its early stages and is not at a point where SoCalGas can claim a benefit from capacity-related project deferment in TY 2019. At the same time, the Engineering Design group will leverage newly forming analytics on hourly pressure, consumption and weather data. These analytics may help in determining where capacity-related project deferments are warranted.
3. Customer Services - Field & Meter Reading – with the near elimination of the meter reading function, meter reading handheld purchases will be avoided.
4. Working Cash - AMI specific working cash impacts in TY 2019 could not be isolated, but the Application assumption is provided here for comparative purposes.

VII. AMI OPT-OUT PROGRAM

A. Overview and Regulatory Background

In Application 12-05-016, filed in May 2012, SoCalGas requested CPUC authorization for an Advanced Meter Opt-Out Program in order to provide the option to residential customers who do not wish to have an MTU installed at their location. The application included a proposed interim fee structure for customers wishing to opt-out of Advanced Meter service. The requested fees were identical to those adopted for SCE, PG&E, and SDG&E.³⁵

On February 27, 2014, the CPUC approved SoCalGas’ Opt-Out Program and the following interim fee structure for residential customers, in D.14-02-019.

- Non-CARE Customers: Initial fee of \$75.00 and \$10.00/month ongoing cost
- CARE Customers: Initial fee of \$10.00 and \$5.00/month ongoing cost

On March 19, 2014, SoCalGas’ Opt-Out Program became effective and SoCalGas began informing employees of the program and to revising program-related company communication materials.³⁶ The approved fees were consistent with those adopted for the other California Investor-Owned Utilities (IOUs).

³⁵ D.12-02-014 (PG&E), D.12-04-018 (SCE), and D.12-04-019 (SDG&E).

³⁶ Pursuant to D.14-02-019.

1 In addition, SoCalGas was party to A.11-03-014 (Opt-Out Phase 2 proceeding) and as
2 such requested opt-out fees which would be put in place on a permanent basis on August 10,
3 2012. In this proceeding, the other California IOUs also requested permanent opt-out fees and
4 on December 19, 2014, the Commission issued D.14-12-078, reiterating approval of the interim
5 opt-out fees and charges and adopted them as permanent fees and charges for residential
6 customers for each of the California IOUs. The terms included:

- 7 • Adopted current interim Opt-Out rates as a permanent Opt-Out fee structure;
- 8 • The collection of monthly charges from opt-out customers would be limited to
9 three years from the date they choose to Opt-Out;
- 10 • Remaining portion of revenues collected that exceed the revenue requirements
11 from the opt-out charges would be allocated to the residential customer class as a
12 whole;
- 13 • SoCalGas shall implement bi-monthly (every other month) meter reading for all
14 customers that choose to Opt-Out;
- 15 • SoCalGas shall include a summary of opt-out costs incurred and revenues
16 collected in its next GRC;
- 17 • No court or agency has found that RF sensitivity is a “disability” or
18 “psychological disorder” that is subject to ADA;³⁷ and
- 19 • Local Governments and local entities such as condos and other multi-unit
20 dwellings should not be allowed to exercise the Opt-Out option.

21 **B. Program Implementation**

22 In April 2015, pursuant to the Commission’s Phase 1 and Phase 2 Opt-Out decisions,
23 SoCalGas implemented modifications to its billing system to begin charging the appropriate fees
24 to Opt-Out Program participants, including customers who were defaulted into the program. In
25 addition, SoCalGas performed or completed the following to comply with program guidelines:

- 26 • Incorporated Phase 2 program features into existing customer talking points and
27 all relevant AMI customer communications materials;

³⁷ Americans with Disabilities Act: <https://www.dol.gov/general/topic/disability/ada>

- Developed and implemented a billing process for the approved fees and charges that a Residential Customer received by enrolling or defaulting into the Opt-Out Program;
- Developed the process to inform Advanced Meter Deferral List Customers³⁸ of the Opt-Out Program;
- Developed program procedures for Residential customers that did not provide reasonable access to install an MTU;
- Developed and updated all internal Opt-Out business processes and related materials (e.g. communication, talking points, etc.); and
- Designed, tested and implemented the necessary IT changes for bi-monthly manual meter reading, field-order workflow and customer billing changes.

At the time of the Opt-Out Program implementation, it was assumed that no more than 0.5 percent of SoCalGas' customers would Opt-Out of the AMI technology and as of June 2017, approximately 27,028 (0.46 percent) Residential customers are actively enrolled.

C. AMOPBA Status

Opt-Out Program expenses were incurred both for the implementation of the program at SoCalGas and for bi-monthly manual meter reading at the Opt-Out customer facilities. The Decision (D.) 14-12-078 provided SoCalGas a cost cap of \$4.5M, to be collected within a three-year program period³⁹ and until associated costs could be incorporated into SoCalGas' next GRC. In the program's first three years and through the end of 2016, expenses recorded to the Advanced Metering Opt-out Program Balancing Account (AMOPBA) were \$5.11 million. Through that same period, Opt-out revenues collected were \$5.14 million. For 2017, expenses through June were an additional \$1.29 million and revenues collected were \$1.41 million. Due to SoCalGas' Opt-out implementation schedule and the timing of its GRCs, the first opportunity to integrate Opt-Out related expenses is in this TY 2019 GRC, five years after the program was authorized and two years past the initial three-year program period. As a result, SoCalGas is incurring expenses above the initial cost cap for the Opt-Out Program. See Table RG-16 for

³⁸ Prior to the Opt-Out Program Decision, MTU installations were deferred for those customers who requested to not have an MTU installed.

³⁹ At pg. 37, D.14-12-078 – the initial three (3) year period was defined as 2012 – 2014. Since SoCalGas' AMI deployment started later than the other IOUs, its Opt-Out Program started in 2014. Therefore, SoCalGas' three-year implementation period, subject to the program cost cap, was 2014 – 2016.

1 Opt-Out related revenues and expenses by year, as well as the associated interest and account
2 balance.

3 **TABLE RG-16**
4 **Summary of Recorded Revenues and Expenses in AMOPBA**
5 **From 2014 – June 2017**
6 **Thousands of Dollars**

| Year⁴⁰ | Revenues | Expenses | Interest | Account Balance |
|--------------------------|-----------------|-----------------|-----------------|------------------------|
| 2014 | \$ - | \$1,173.0 | \$0.4 | \$1,173.3 |
| 2015 | \$(1,761.1) | \$996.0 | \$0.8 | \$409.0 |
| 2016 | \$(3,379.0) | \$2,938.1 | \$(0.6) | \$(32.4) |
| Jan-Jun 2017 | \$(1,409.8) | \$1,289.4 | \$(0.6) | \$(153.4) |

7 SoCalGas proposes a true-up of the AMOPBA in TY 2019. For details, see the
8 testimony of witness, Ms. Yu (Ex. SCG-42). In addition, SoCalGas is forecasting ongoing
9 manual meter reading costs for Opt-Out customers in TY 2019. For details, see the testimony of
10 witness, Ms. Marelli (Ex. SCG-18).

11 **VIII. CUSTOMER CONSERVATION**

12 **A. Introduction and Background**

13 As outlined in the Application in Chapter(s) I, V and VI, AMI benefits are attributed to
14 operational savings, avoided costs, and to customer conservation efforts realized through
15 accessibility to customer specific gas usage information. AMI-enabled hourly and daily gas
16 usage data has enabled the design and development of new customer conservation programs,
17 tools and capabilities. These include:

- 18 • New conservation “behavior change” energy-efficiency programs that leverage
19 and incorporate advanced meter usage data to motivate customers to reduce their
20 natural gas usage, including monthly winter energy reports delivered by mail and
21 through e-mail;
- 22 • “Bill Tracker Alerts” delivered weekly through e-mail or text throughout the
23 billing period helping customers monitor their consumption and avoid surprises in
24 their monthly bill;

⁴⁰ Costs for 2014 through January 2015 were recorded to the Advanced Meter Opt Out Memorandum Account (AMOPMA). D.14-12-078 authorized SoCalGas to transfer the amount recorded to the AMOPMA to a new balancing account, AMOPBA.

- 1 • New energy presentment and analysis tools made available through the “Ways to
2 Save” section of both the socialgas.com “My Account” customer portal as well as
3 through the SoCalGas Mobile App.⁴¹

4 The implementation of these programs and tools supports the achievement of
5 conservation benefits outlined in the Application, and provides the foundation for a new class of
6 energy efficiency programs and strategies as well as new customer bill management tools and
7 services. In section 8, page 27 of D.10-04-027 - “Consistency with State Energy Policy
8 Objectives” - the Commission outlines their support for these new capabilities and affirms that “a
9 gas-only AMI system is consistent with Commission energy policy objectives of increasing
10 energy conservation and demand-side management, reducing greenhouse gas emissions, and
11 providing customers with information and tools that allow them to manage and make educated
12 decisions about their energy use.” On page 25, they explain that, “Providing consumers with
13 more, and more timely, information on their energy usage enables customers to make more
14 educated choices on conservation, energy efficiency, and energy consumption in general,
15 enabling them to save money on energy bills.” And on page 42, they state, “...we fully expect
16 that SoCalGas will use this opportunity not only to induce behavioral conservation but also to
17 scale-up participation in energy efficiency programs. The dramatic expansion in available energy
18 usage information to customers should fundamentally alter their relationship with energy, and
19 encourage greater subscription and utilization of the energy efficiency programs offered through
20 the utility and others.”

21 In addition, the Decision issued the following two Ordering Paragraphs to ensure that the
22 SoCalGas AMI project conservation objectives and outcomes remain on track:

- 23 • Ordering Paragraph 3. “SoCalGas shall offer customers direct access to near-real
24 time gas usage data, provide retail and wholesale prices to customers on a real-time
25 or near real-time basis in a machine-readable form,⁴² and provide access to such

⁴¹ These same tools and information are also made available to SoCalGas customer contact personnel, to assist customers with billing and usage-related inquiries.

⁴² Decision (D.) 12-08-045, “Decision extending privacy protections to customers of gas corporations and community choice aggregators, and to residential and small commercial customers of electric service providers,” page 16, later clarified the requirements in Ordering Paragraph 3 stating that, “The other requirements from D.11-07-056, such as ... providing customers with wholesale prices in real-time, are not applicable to gas operations, or to those of SoCalGas.”

1 AMI data to customer authorized third parties, on a timeline concurrent with meter
2 installation.”

- 3 • Ordering Paragraph 5. “Southern California Gas Company shall establish a system
4 to track and attribute program costs and projected savings from conservation. Based
5 on this tracking system, Southern California Gas Company shall submit a report to
6 the Director of the Commission’s Energy Division semi-annually, tracking the gas
7 conservation impacts of the advanced metering infrastructure project to date. These
8 reports shall serve as a forum to adjust, as necessary the elements laid out in the
9 final outreach plan described above. We expect that customer outreach, education
10 and communications will continue to evolve and improve as SoCalGas conducts
11 customer research, monitors customer reaction to new AMI technology and various
12 customer usage presentation tools, and incorporates feedback from these activities
13 into its AMI outreach and education activities. If the report shows that the company
14 is falling short of its projections, it shall submit revisions to its conservation plan to
15 increase awareness, participation, and durability of conservation actions among its
16 customers. The semi-annual reports and any revisions to the advanced metering
17 infrastructure outreach and conservation plan shall be submitted to the director of
18 the Commission’s Energy Division and served on the most recent service list for
19 this proceeding. Additional costs incurred in order to improve conservation
20 response will be funded out of contingency funds, or otherwise subject to the risk
21 sharing mechanism authorized in Ordering Paragraph 2.”

22 **B. Progress Reporting and Post-Deployment Treatment**

23 D.10-04-027 set a goal for SoCalGas to reduce residential gas consumption by one
24 percent⁴³ and placed reporting requirements on SoCalGas as outlined in Ordering Paragraph 5.
25 Beginning in 2013, SoCalGas has filed its semiannual reports per the defined submission
26 schedule, providing status of the deployment as well as progress towards its conservation goals.⁴⁴

27 SoCalGas launched its fourth targeted heating season conservation “behavior change”
28 campaign leveraging AMI-enabled usage data in November 2016. This was the final campaign
29 in a series of four conservation “Test and Learn” campaigns conducted over the course of the

⁴³ This energy savings goal specifically refers to 1 percent of total *residential* gas usage.

⁴⁴ <https://www.socalgas.com/regulatory/A0809023.shtml>

1 AMI project. The goal of the Test and Learn approach was that, over the course of the AMI
2 deployment, the most effective means for encouraging energy savings from information
3 feedback were identified and offered to customers. This approach was developed to specifically
4 address Ordering Paragraph 5 expectations that AMI communications would “continue to evolve
5 and improve as SoCalGas conducts customer research, monitors customer reaction to new AMI
6 technology and various customer usage presentation tools, and incorporates feedback from these
7 activities into its AMI outreach and education activities.” Accordingly, each of SoCalGas’
8 successive heating season conservation campaigns incorporated the lessons learned and key
9 findings from the prior campaigns.

10 The goal of these consecutive behavior change conservation campaigns was to
11 demonstrate how to best meet the one percent energy savings goal associated with the AMI
12 rollout and to track the resulting conservation savings. New and continued residential
13 conservation behavior change program treatments tested have produced increasing average
14 natural gas savings since the second campaign, with 1.6 percent average savings for customers
15 treated during the most recent 2016-2017 campaign. Also of note for the 2016-2017 treatments
16 tested was that one treatment - a “Seasonal Energy Update” energy report based on AMI
17 analytics developed by SoCalGas – achieved the highest savings rate for all four years’
18 campaigns of 3.43 percent. Please refer to the August SoCalGas Advanced Meter Semiannual
19 Reports⁴⁵ for further information, including detailed third-party evaluations for each Test and
20 Learn conservation campaign conducted over the course of the project.

21 As SoCalGas outlined in its Program Implementation Plan for the 2013-2014 California
22 Statewide Program for Residential Energy Efficiency, “Upon completion of the Advanced Meter
23 project, SoCalGas will incorporate successful behavioral programs and techniques into the
24 energy efficiency portfolio.”⁴⁶ This commitment is further reinforced and carried forward in
25 SoCalGas’ Energy Efficiency Business Plan (Business Plan) that was filed with the Commission
26 on January 17th, 2017, which outlines several new SoCalGas Energy Efficiency strategies and
27 approaches that will fully leverage AMI usage data in future program offerings. These new
28 elements support the Commission’s original vision in D.10-04-027 on page 42, “...that

⁴⁵ <https://www.socalgas.com/regulatory/A0809023.shtml>

⁴⁶ California Statewide Program for Residential Energy Efficiency, p. 9, approved by the Commission in D.12-11-005.

1 SoCalGas will use this opportunity not only to induce behavioral conservation but also to scale-
2 up participation in energy efficiency programs.”

3 Funding for the continuation of behavior programs developed through the AMI project,
4 as well as for the new strategies and approaches outlined in the Business Plan, will be addressed
5 in the Commission’s Energy Efficiency Proceeding (R.13-11-005).

6 SoCalGas has fulfilled the directives outlined in Ordering Paragraph 3 with respect to
7 “SoCalGas shall offer customers direct access to near-real time gas usage data,” and “provide
8 access to such AMI data to customer authorized third parties, on a timeline concurrent with
9 meter installation.” As outlined previously, as part of the AMI deployment and in collaboration
10 with other SoCalGas initiatives, new energy presentment and analysis tools have been made
11 available through the “Ways to Save” section of both the socalgas.com “My Account” customer
12 portal as well as through the SoCalGas Mobile App. Residential and Business customers with
13 AMI can access their hourly and daily natural gas usage data through the “Analyze Usage” tool
14 available within this online tool suite. Through the Analyze Usage tool, customers can also
15 download their advanced meter usage data in both the standard “CSV” and/or the “Green
16 Button” download format to facilitate sharing with third parties of their choosing. The Ways to
17 Save tool suite also includes other complementary energy and bill analysis tools, such as a
18 “Compare Bills” feature that allows customers to analyze factors causing their bills to increase or
19 decrease when compared to prior billing periods.

20 As of the end of 2016, approximately 1/3rd of the over two million SoCalGas customers
21 registered for My Account access had visited one or more of the Ways to Save online tools at
22 least once. Customer service representative (CSR) utilization of the counterpart “Bill Analyzer”
23 energy analysis tool deployed (providing CSRs access to hourly and daily natural gas usage
24 information) also rose over the course of the project, nearly doubling each year.⁴⁷ CSRs can
25 now better respond to customer billing inquiries by recognizing customer daily and hourly
26 consumption patterns to help explain variations in monthly gas bills.

27 Beginning in TY 2019, funding for the ongoing operation and support of the customer-
28 facing Ways to Save online tools, the customer contact personnel “Bill Analyzer” tool, and
29 weekly Bill Tracker Alerts, will be provided predominantly through the Digital Engagement

⁴⁷ Appendix B – SoCalGas “Bill Analyzer” Online Tool Customer Contact Personnel Utilization Statistics.

1 team as referenced in witness, Mr. Cheung's testimony (Ex. SCG-20) and through the Customer
2 Contact Center as referenced in witness, Mr. Baldwin's testimony (Ex. SCG-19). Continued
3 funding of the software and services fees, as well as the ongoing staff support, associated with
4 these new customer-facing tools is essential for ongoing realization of the customer energy
5 conservation and bill management benefits contemplated in the Decision.

6 **IX. CONCLUSION**

7 As stated above, SoCalGas' AMI implementation will be completed by TY 2019. As
8 established in the Application, a post-implementation operations and maintenance organization is
9 required to monitor, operate, maintain and optimize the AMI solution to support timely, reliable
10 and accurate customer metering and billing. In addition, SoCalGas believes the pursuit and
11 extension of data analytics with hourly gas-consumption data has demonstrated promising
12 benefits from customer gas usage reductions and identification of safety issues from abnormal
13 consumption patterns. For these reasons, SoCalGas believes its requests are reasonable and
14 should be authorized by the Commission.

15 This concludes my prepared direct testimony.
16

1 **X. WITNESS QUALIFICATIONS**

2 My name is Rene F. Garcia and I am presently employed by SoCalGas. My business
3 address is 555 W. Fifth St., Los Angeles, California, 90013.

4 I am currently managing the Project Management Office (PMO) of SoCalGas' AMI
5 deployment, helping to deliver and achieve project scope, schedule and operational benefits.
6 Since late 2011, I have been responsible for the following AMI areas: regulatory initiatives,
7 project governance and controls, benefits realization, contracts and vendor management, product
8 supply chain, IT project portfolio oversight and employee change management.

9 I have been employed by the Sempra Energy companies since 1998 and have held
10 various positions within business unit staff organizations and Information Technology; most of
11 my career has been in project management and oversight, as with AMI.

12 Prior to joining SoCalGas, I was a member of a consulting firm that supported SoCalGas
13 with various transformational projects, including the Year 2000 project, a GIS implementation
14 and a process re-engineering project for Gas Distribution & Operations. I have a Bachelor's of
15 Arts in Economics from California State University, San Bernardino.

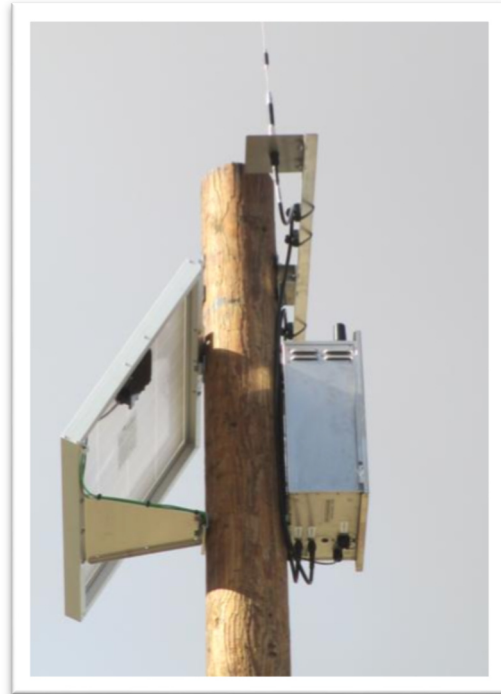
16 I have previously testified before the California Public Utilities Commission.
17

LIST OF ACRONYMS

| ACRONYM | DEFINITION |
|----------------|--|
| ACOR | Atmospheric Corrosion Inspections |
| AFR | Annual Failure Rate |
| AMI | Advanced Metering Infrastructure |
| AMIBA | Advanced Metering Infrastructure Balancing Account |
| AMOPBA | Advanced Metering Opt-Out Program Balancing Account |
| BY | Base Year |
| BSA | Business Systems & Analytics |
| CFCA | Core Fixed Cost Account |
| CIS | Customer Information System |
| CPUC | California Public Utilities Commission |
| CSR | Customer Service Representative |
| DCU | Data Collector Unit |
| ECO | Engineering Change Order |
| HEG | Home Energy Guide |
| IOUs | Investor Owned Utilities |
| IS | Information Security |
| MDMS | Meter Data Management System |
| MTU | Meter Transmission Unit |
| NEMO | Network Exception Management System |
| PMC | Planned Meter Change |
| PROW | Public Right of Way |
| RAMP | Risk Assessment Mitigation Phase |
| RF | Radio Frequency |
| Union | Utility Workers Union of America and the International Chemical Workers Union Council |

APPENDIX RFG-A-1-1 – Sample Data Collector Unit (DCU) Installations

1. Wood Pole



2. Concrete Pole



3. Steel Pole



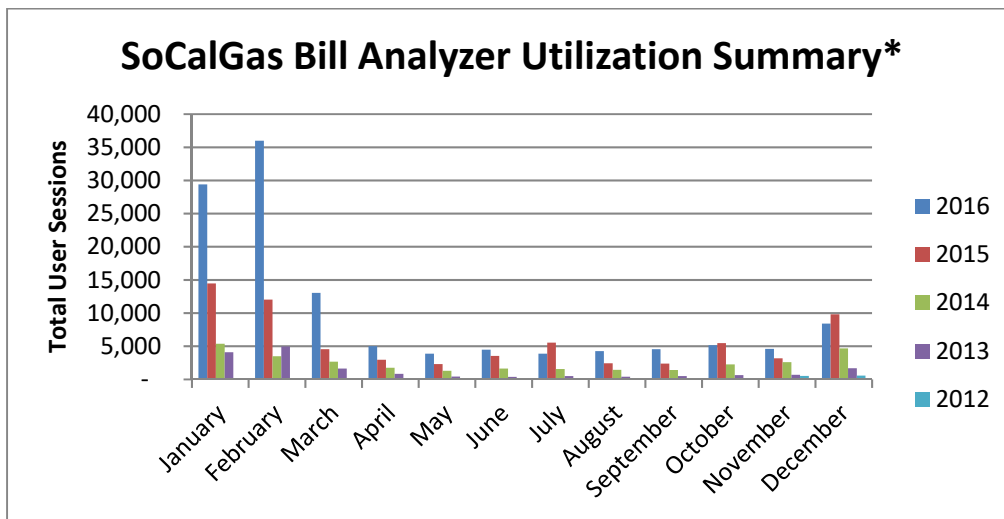
4. DCU Street Light Attachment



**APPENDIX RFG-A-1-2 – SoCalGas “Bill Analyzer” Online Tool
Customer Contact Personnel Utilization Statistics**

User Sessions - 2012 through 2016

| Month | 2016 | 2015 | 2014 | 2013 | 2012 |
|--------------|----------------|---------------|---------------|---------------|--------------|
| January | 29,397 | 14,468 | 5,375 | 4,097 | |
| February | 35,977 | 12,016 | 3,472 | 4,967 | |
| March | 13,037 | 4,545 | 2,654 | 1,632 | |
| April | 5,010 | 2,959 | 1,754 | 838 | |
| May | 3,863 | 2,310 | 1,291 | 428 | |
| June | 4,462 | 3,528 | 1,622 | 363 | |
| July | 3,879 | 5,542 | 1,558 | 488 | |
| August | 4,246 | 2,416 | 1,430 | 393 | |
| September | 4,550 | 2,376 | 1,397 | 487 | |
| October | 5,157 | 5,452 | 2,263 | 639 | 186 |
| November | 4,595 | 3,173 | 2,594 | 693 | 513 |
| December | 8,399 | 9,794 | 4,666 | 1,684 | 570 |
| Total | 124,588 | 70,594 | 32,090 | 18,722 | 3,281 |



* Note, the Bill Analyzer tool is primarily used by SoCalGas customer contact personnel to assist with customer billing and usage-related inquiries. The growth in utilization of this tool may be attributed to growth in user adoption, as well as to any other factors that drive increases in billing-related inquiries, such as cold weather patterns, etc.

Source: Aclara Consumer Engagement “Bill Analyzer” monthly utilization statistics for SoCalGas, December 31, 2016.



SCG 2019 GRC Testimony Revision Log – December 2017

| Exhibit | Witness | Page | Line | Revision Detail |
|----------------|----------------|-------------|-------------|---|
| SCG-17 | Rene F. Garcia | RFG-ii | N/A | Removed page numbers from List of Appendices. |
| SCG-17 | Rene F. Garcia | RFG-iii | N/A | “...as previously authorized in the AMI Decision (D.) 10-04-027 (Decision) and 2016 GRC Decision (D.) 16-06-054.” Added reference to 2016 GRC Decision (D.) 16-06-054. Since we are referencing costs through 2018, both Decisions apply. |
| SCG-17 | Rene F. Garcia | RFG-1 | 2 | Replaced (ADVANCED METERING INFRASTRUCTURE POLICY) with (ADVANCED METERTING INFRASTRUCTURE (AMI)) |
| SCG-17 | Rene F. Garcia | RFG-4 | 9-10 | Inserted “revised” before workpapers |
| SCG-17 | Rene F. Garcia | RFG-5 | 6 | “When gas service is turned on, safety related policies require...” Clarified statement. |
| SCG-17 | Rene F. Garcia | RFG-5 | 21 | “Qualified SoCalGas field resources perform this corrective work...” Clarified statement – removed word “corrective”. |
| SCG-17 | Rene F. Garcia | RFG-7 | 4 | “As stated above, the Application requested...” Clarified statement – removed “As stated above”. |
| SCG-17 | Rene F. Garcia | RFG-7 | 6 | Corrected Advice Letter reference number from 1410 to 4110. |
| SCG-17 | Rene F. Garcia | RFG-12 | 19 | “As communicated to the Commission in late BY 2016...” Clarified statement – removed “BY” as reference is not relevant in this context. |
| SCG-17 | Rene F. Garcia | RFG-19 | 8 | “...part of the BSA group’s responsibility is to analyze...” Inserted missing word “responsibility”. |
| SCG-17 | Rene F. Garcia | RFG-19 | 20 | Added footnote to address the costs that would change if a 4 year GRC cycle is adopted. |
| SCG-17 | Rene F. Garcia | RFG-23 | Table RG-7 | Inserted 100% into “Total” line for clarification (previously blank). |
| SCG-17 | Rene F. Garcia | RFG-27 | Table RG-10 | Changed O&M Cost for Gas Engineering from \$760k to \$652k. Updated sub-total from \$19,290k to \$19,182k. |
| SCG-17 | Rene F. Garcia | RFG-26 | Table RG-9 | As a result of the change in Table RG-10: Updated O&M Cost TY 2019 from \$19,290k to \$19,182k. Updated O&M Cost Variance from \$3,337k to \$3,269k. Updated Net O&M Benefit TY 2019 from \$77,334k to \$77,442k. Updated Net O&M Benefit Variance from \$6,676k to \$6,784k. |
| SCG-17 | Rene F. Garcia | RFG-30 | Table RG-11 | As a result of the change in Table RG-10: |

| Exhibit | Witness | Page | Line | Revision Detail |
|----------------|----------------|------------------|-------------|---|
| | | | | Updated Gas Engineering TY 2019 from \$760k to \$652k. Updated sub-total from \$19,290k to \$19,182k. |
| SCG-17 | Rene F. Garcia | RFG-26 | 6 | As a result of the change in Table RG-10: Updated number from \$6.676 million to \$6.784 million. |
| SCG-17 | Rene F. Garcia | RFG-30 | 11 | As a result of the change in Table RG-10: Updated number from \$77.334 million to \$77.442 million. |
| SCG-17 | Rene F. Garcia | RFG-29 | Footnote 29 | “...hand-delivered the Home Energy Guide (HEG).” Inserted acronym definition as it is the first time it is used in the testimony. |
| SCG-17 | Rene F. Garcia | RFG-30 | 2 | “O&M benefits in Fleet and Facilities are associated with the estimated reduction in fleet for Customer Services – Field FTEs...” Inserted missing words “fleet for”. |
| SCG-17 | Rene F. Garcia | RFG-30 | 7 | “...associated with a reduction of HR advisors and a field safety advisor...” Clarified statement – removed “field safety advisor”. |
| SCG-17 | Rene F. Garcia | RFG-33 | 28 | “...were anticipated during the AMI business case.” Clarified statement – replaced “business case” with “Application”. |
| SCG-17 | Rene F. Garcia | RFG-34 | Table RG-14 | Changed Capital Cost for Gas Distribution from \$3,850k to \$6,555k. Updated sub-total from \$8,665k to \$11,370k. |
| SCG-17 | Rene F. Garcia | RFG-26 | Table RG-9 | As a result of the change in Table RG-14: Updated Capital Cost TY 2019 from \$8,665k to \$11,370k. Updated Capital Cost Variance from \$4,248k to \$6,953k. Updated Net Capital Benefit TY 2019 from \$11,383k to \$8,678k. Updated Net Capital Benefit Variance from \$13,443k to \$16,148k. |
| SCG-17 | Rene F. Garcia | RFG-32 | Table RG-13 | As a result of the change in Table RG-14: Updated Gas Distribution Capital Cost from \$3,850k to \$6,555k. Updated Sub-total from \$8,665k to \$11,370k. |
| SCG-17 | Rene F. Garcia | RFG-26 | 8 | As a result of the change in Table RG-14: Updated number from \$13.443 million to \$16.148 million. |
| SCG-17 | Rene F. Garcia | RFG-37 | 21 | “...Advanced Meter Out-out Program Balancing Account...” Clarified statement – replaced “Out-out” with “Opt-out” |
| SCG-17 | Rene F. Garcia | List of Acronyms | N/A | Updated list of acronyms. |

| Exhibit | Witness | Page | Line | Revision Detail |
|----------------|----------------|---------------------------|-------------|--|
| SCG-17 | Rene F. Garcia | Workpapers; 2AM002.001 | N/A | Corrected reference 2n in summary table in SCG-RFG-SUP-002 with from "\$14,330" to "\$46,575" – No impact to request. |