SOCALGAS

DIRECT TESTIMONY OF CHRISTOPHER R. OLMSTED

(INFORMATION TECHNOLOGY)

October 6, 2017

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

SoCalGas
A Sempra Energy utility®

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SUMMARY

O&M	2016 ($000)	2019 ($000)	Change
Non-Shared	13,962	21,077	7,115
Shared	10,626	11,850	1,224
Total	**24,588**	**32,927**	**8,339**

Capital	2017 ($000)	2018 ($000)	2019 ($000)
IT	50,879	73,648	81,227
Business	71,774	74,850	94,942
Total	**122,653**	**148,498**	**176,169**

Summary of Requests

- Provide support services that directly contribute to Southern California Gas Company's (SoCalGas) ability to provide secure, safe, and reliable service at reasonable rates for our customers while maintaining a safe work environment for our employees.

- Position the Information Technology (IT) Division (IT Division or IT) to meet the continued growth in business demand.

- Address operational incidents through O&M and capital expenditures.

SOCALGAS DIRECT TESTIMONY OF CHRISTOPHER R. OLMSTED
INFORMATION TECHNOLOGY

I.   INTRODUCTION

A.   Summary of Information Technology Costs and Activities

My testimony supports Test Year (TY) 2019 forecasts for operations and maintenance (O&M) costs for both non-shared and shared services, and capital costs for the estimated years 2017, 2018, and TY 2019, associated with the Information Technology area for SoCalGas.

The IT Division is responsible for many of the technology-related services and activities for SoCalGas, San Diego Gas & Electric Company (SDG&E) and Sempra Energy Corporate Center (Corporate Center). The services include supporting applications, hardware, and software, some of which are used for risk assessment and management across the company. Our business clients rely on IT to provide support for numerous areas to deliver safe and reliable service to our customers. The areas include, but are not limited to, asset management, work management and measurement, fuel and power, outage management, gas and electric facilities, transportation, procurement and settlement, financial management, accounting, customer field operations, meter reading, customer energy management, smart meter data management, routing, scheduling, dispatching, revenue cycle, customer assistance, and customer contact functions. This is accomplished through the IT Division's operation of company data centers that store and manage data, including those used for risk assessments and development of related mitigation plans, as well as foundational information security services to ensure security and privacy. The costs for these services and activities, excluding cybersecurity, are attributed to cost centers at SoCalGas, which are described herein, as well as to cost centers at SDG&E, which are described in my SDG&E IT testimony (Exhibit (Ex.) SDG&E-24). Testimony related to cybersecurity services within IT is sponsored by Gavin Worden (Ex. SCG-27 and Ex. SDG&E-25).

Table CRO-1 below summarizes the overall costs for services and capital investments provided by the IT Division for both SoCalGas and SDG&E.

TABLE CRO-1

Test Year 2019 Summary of Total Costs (SCG & SDG&E)

IT - INFORMATION TECHNOLOGY			
Shown in Thousands of 2016 Dollars	**2016 Adjusted-Recorded**	**TY 2019 Estimated**	**Change**
SoCalGas	24,588	32,927	8,339
SDG&E	73,378	88,449	15,071
Total O&M	**97,966**	**121,376**	**23,410**

	2017	**2018**	**2019**
SoCalGas	122,653	148,498	176,169
SDG&E	119,566	130,371	139,777
Total Capital	**242,219**	**278,869**	**315,946**

B.   Summary of Costs Related to the Fueling our Future Initiative

As described by Hal Snyder in Ex. SCG-03, SoCalGas and SDG&E kicked off the Fueling Our Future (FOF) initiative in May 2016, to identify and implement efficient operations improvements. The IT Division will undertake several FOF initiatives, which are detailed in Section II.C.2 herein. Table CRO-2 below provides a summary of the FOF cost efficiencies described in my testimony.

TABLE CRO-2

Summary of FOF Costs

INFORMATION TECHNOLOGY (In 2016 $)			
FOF O&M	**Estimated 2017 (000s)**	**Estimated 2018 (000s)**	**Estimated 2019 (000s)**
FOF-Implementation	556	2,093	1,390
FOF-Ongoing/Benefits	(169)	(1,606)	(3,182)
Total O&M	**387**	**487**	**(1,792)**

FOF-Implementation	**Estimated 2017 (000s)**	**Estimated 2018 (000s)**	**Estimated 2019 (000s)**
2IT003.000, IT Support NSS	556	2,093	1,390
Total	**556**	**2,093**	**1,390**

FOF-Ongoing/Benefits	**Estimated 2017 (000s)**	**Estimated 2018 (000s)**	**Estimated 2019 (000s)**
2IT003.000, IT Support NSS	(169)	(1,606)	(3,182)
Total	**(169)**	**(1,606)**	**(3,182)**

1	**C. Summary of Safety and Risk-Related Costs**
2	Included in the capital costs supported in my testimony are business-sponsored projects
3	driven by activities described in SoCalGas and SDG&E's November 30, 2016 Risk Assessment
4	Mitigation Phase (RAMP) Report.[1] The RAMP Report presented an assessment of the key
5	safety risks of SoCalGas and SDG&E and proposed plans for mitigating those risks. As
6	discussed in the Risk Management & Policy testimony of Diana Day and Jamie York (Exhibit
7	SCG/SDG&E-02), the costs of risk-mitigation projects and programs were translated from that
8	RAMP Report into the individual witness areas.
9	The forecasts for mitigation costs included in the RAMP Report are not for funding
10	purposes, but rather to provide a range of estimated cost impacts for the TY 2019 GRC filing.
11	Therefore, the final GRC representation of RAMP costs may differ from the ranges shown in the
12	original RAMP Report. Table CRO-3 below provides a summary of the RAMP-related costs
13	supported by my testimony.

TABLE CRO-3

Summary of Incremental RAMP-Related Costs

INFORMATION TECHNOLOGY (In 2016 $)			
RAMP Report Risk Chapter	**2017 Estimated Incremental (000s)**	**2018 Estimated Incremental (000s)**	**TY 2019 Estimated Incremental (000s)**
SCG-2 Employee, Contractor, Customer and Public Safety	0	533	92
SCG-8 Records Management	34,970	39,549	36,223
Total	**34,970**	**40,082**	**36,315**

16	**D. Summary of Aliso-Related Costs**
17	In compliance with Decision (D.) 16-06-054, the testimony of witness Andrew Steinberg
18	(Ex. SCG-12) describes the process undertaken so the TY 2019 forecasts do not include the
19	additional costs from the Aliso Canyon Storage Facility gas leak incident (Aliso Incident), and
20	demonstrates that the itemized recorded costs are removed from the historical information used
21	by the impacted general rate case (GRC) witnesses.

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[1] Please refer to the Risk Management & Policy testimony of Diana Day (Ex. SCG/SDG&E-02) for more details regarding the utilities' RAMP report.

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1   As a result of removing historical costs related to the Aliso Incident from IT adjusted

2   recorded data, and in tandem with the forecasting method(s) employed and described herein,

3   additional costs of the Aliso Incident response are not included as a component of my TY 2019

4   funding request. Historical IT costs that are related to the Aliso Incident are removed as

5   adjustments in my workpapers (Ex. SCG-26-WP) and also identified in Table CRO-4 below.

6   **TABLE CRO-4**

7   **Historical Adjustments to Remove Aliso Incident Costs**

INFORMATION TECHNOLOGY			
Workpaper	2015 Adjustment (000s)	2016 Adjustment (000s)	Total (000s)
2IT001.000, IT Applications NSS	0	(106)	(106)
2IT002.000, IT Infrastructure NSS	(2)	(14)	(16)
2IT003.000, IT Support NSS	0	0	0
Total Non-Shared	**(2)**	**(120)**	**(122)**
2200-2406.000, DIRECTOR - COMPUTING INFRASTRUCTURE	0	(1)	(1)
2200-2470.000, SCG IT COMPLIANCE MANAGEMENT	0	(16)	(16)
2200-2493.000, IT PORTFOLIO MANAGEMENT	0	(9)	(9)
2200-2494.000, IT TELECOM PMO	0	0	0
Total Shared Services	**0**	**(26)**	**(26)**
Total O&M	**(2)**	**(146)**	**(148)**

8   **E.   Summary of Costs Related to Advanced Metering Infrastructure**

9   By TY 2019, SoCalGas' Advanced Metering Infrastructure (AMI) deployment will be

10   completed and therefore the costs associated with the deployment and post-deployment phases,

11   including the related O&M benefits, will no longer be recorded to the AMI Balancing Account.

12   In this GRC, AMI operating impacts will be integrated into base business operations for the first

13   time. Accordingly, I have incorporated forecasts and explanations for the associated incremental

14   costs for the IT area into my testimony. In addition, in the AMI testimony of Rene F. Garcia

15   (Ex. SCG-17), SoCalGas is proposing an on-going maintenance and operations team required to

16   monitor, operate, maintain, and optimize the AMI system (Advanced Meter Operations).

17   **F.   Organization of Testimony**

18   The costs presented in the remainder of my testimony are specific to IT costs charged to

19   SoCalGas cost centers. I sponsor the TY 2019 forecasts for O&M costs for both non-shared and

shared services and capital costs for the estimated years 2017 and 2018, and TY 2019. Table CRO-5 below summarizes my SoCalGas IT-sponsored costs.

TABLE CRO-5

Test Year 2019 Summary of SoCalGas IT Costs

IT - INFORMATION TECHNOLOGY			
Shown in Thousands of 2016 Dollars	**2016 Adjusted-Recorded**	**TY 2019 Estimated**	**Change**
Total Non-Shared	13,962	21,077	7,115
Total Shared Services (Incurred)	10,626	11,850	1,224
Total O&M	**24,588**	**32,927**	**8,339**

	2017	**2018**	**2019**
IT	50,879	73,648	81,227
Business	71,774	74,850	94,942
Total Capital	**122,653**	**148,498**	**176,169**

Some of the costs shown in Table CRO-5 serve only SoCalGas, but in most cases, the costs are "shared" and thus serve SoCalGas as well as SDG&E and Corporate Center. Non-shared costs that are incurred and activities performed solely for the benefit of SoCalGas are discussed in Section III. Section IV sets forth the shared costs and activities that benefit SoCalGas, SDG&E, and/or Corporate Center. Section V details SoCalGas IT capital costs.

The IT Division is responsible for a variety of technology-related services and activities for SoCalGas, SDG&E, and Corporate Center. The O&M costs presented in my testimony have been categorized into three areas:

- Applications – Applications support the development, implementation, and maintenance of computer software utilized by customers, employees, and/or vendor partners.
- Infrastructure – IT Infrastructure supports the design, implementation, and operation of the Company's computing infrastructure, includes both hardware (ranging from desktop computing systems and servers to storage systems) and software (including middleware, production control, operating systems, and other low-level software systems).

1   • <u>IT Support</u> – This category of costs includes labor and non-labor for cost centers that

2   are not specifically aligned with the other IT areas described above. Examples would

3   include officer costs, budget and planning activities, and our intern/associate

4   program.

5   **G.   Forecast Methodology**

6   The forecast methodology developed for IT costs is the base year (2016) recorded, plus

7   adjustments. The primary reason for this approach is that history is not necessarily a good

8   predictor of future needs. The pace of change in the technology industry continues to accelerate

9   when compared to prior years. This is evidenced by growth in computing power at the hardware

10   level as well as the number and diversity of applications at the software level. Factoring in

11   emerging computing trends, such as cloud computing and the increasing commercialization of IT

12   capabilities, required us to use current data and adjustments rather than relying on historical

13   averages that do not include these types of trends in our computing environment. In addition, the

14   level of support provided by the IT Division continues to grow as capital projects are

15   implemented because projects that drive benefits and efficiencies within business units often

16   create increased workload within the IT Division that would not have been reflected in our

17   historical costs.

18   Finally, using the base year, plus adjustments, methodology starts the IT Division at a

19   lower requested dollar amount than if we had utilized 3-year, 4-year or 5-year averages (see

20   Table CRO-6 below). Use of the base year, plus adjustments, methodology is consistent with

21   SDG&E's approach, as demonstrated in my SDG&E IT testimony (Ex. SDG&E-24).

22   **TABLE CRO-6[2]**

23   **IT Division (SoCalGas and SDG&E) Forecast Methodology Comparison (000's)**

2016 Adjusted-Recorded	5-Year Average	4-Year Average	3-Year Average
97,976	103,266	100,556	98,910

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[2] The 5-year historical costs include both routine IT support as well as unique project work that may vary from year to year. All costs have been included within our historical averages and accurately reflect the scope of IT Division responsibilities.

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1   **H.   IT System Wide Outages**

2   Another consideration for using a base year costs, plus adjustments, methodology is the

3 fact that disruptive events have the potential to change planning assumptions dramatically. In

4 2017, several significant system-wide IT outages impacted business operations. The frequency

5 and duration of these events resulted in forecasts in 2018 and 2019 to be based on the events

6 occurring in 2017 rather than historical patterns. Table CRO-7 below includes the most

7 significant events in 2017 to date, which resulted in widespread impacts to the business for

8 several hours at a time, the most significant being a multiple day outage occurring on April 11,

9 2017.

10   **TABLE CRO-7**

11   **IT Division (SoCalGas and SDG&E) System Wide Outages**
12   **(January 2017 – To Date)**

Event Start	Duration (in minutes)	Description
February 6, 2017	2,772	Multiple virtual machine (VM) hosts outage related storage and high central processing unit (CPU) use due to over provisioning
March 29, 2017	2,524	Multiple applications running in VM environment down
April 7, 2017	4,563	Multiple applications running in VM environment down
April 11, 2017	49,164	Storage failure
May 9, 2017	11,590	Network outage
June 6, 2017	133	Network outage
June 12, 2017	182	Core network router down
June 29, 2017	2,835	Network outage

13   As a result of these outages, O&M and capital forecasts have taken into consideration the

14 need to invest in infrastructure resources and equipment to provide a more reliable computing

15 environment that our business clients have come to expect in order to meet their operational

16 needs.

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

18   **A.   Risk Assessment Mitigation Phase**

19   A portion of my requested capital funds are linked to mitigating the key safety risks that

20 have been identified in the RAMP Report. These key risks were identified through the RAMP

21 process described in the RAMP Report and are associated with activities presented in my

22 testimony. These risks are summarized in the table below:

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RAMP Risk Chapter Description

RAMP Risk	Description
RAMP Report Chapter SCG-2 Employee, Contractor, Customer and Public Safety	This risk covers conditions and practices which may result in severe harm to employee, contractor, customer, and/or public safety such as driving, customer premises, and appliance conditions, as well as non-adherence to company safety policies, procedures, and programs.
RAMP Report Chapter SCG-8 Records Management	This risk relates to the use of inaccurate or incomplete information that could result in the failure to construct, operate, and maintain SoCalGas' pipeline system safely or to satisfy regulatory compliance requirements.

2   While developing the GRC forecasts, SoCalGas evaluated the scope, schedule and

3 resource requirement, and synergies of RAMP-related projects and programs to determine costs

4 already covered in the base year (2016) and the additional capital costs that are incremental

5 increases expected in the following three years. A list of these projects along with the

6 sponsoring witness are provided in the table below. RAMP-related costs and activity

7 descriptions are further described in my capital workpapers.

8   **Safety Related Risk Mitigation Capital Costs**

9   **In 2016 $ (000s)**

INFORMATION TECHNOLOGY (In 2016 $)				
RAMP Report Chapter SCG-2 Employee, Contractor, Customer and Public Safety	**2017 Estimated Incremental (000s)**	**2018 Estimated Incremental (000s)**	**TY 2019 Estimated Incremental (000s)**	**Exhibit Reference**
00756M, RAMP - INCREMENTAL 19097 WebEOC Applications Replacement Project	0	533	92	SCG-13 Devin Zornizer
Total	**0**	**533**	**92**	
RAMP Report Chapter SCG-8 Records Management	**2017 Estimated Incremental (000s)**	**2018 Estimated Incremental (000s)**	**TY 2019 Estimated Incremental (000s)**	**Exhibit Reference**
00756A, RAMP - INCREMENTAL 19060 3DPM-Work Order Sketching 2018 & 2019	0	1,714	1,714	SCG-05 Omar Rivera
00756C, RAMP - INCREMENTAL 19061 Gas GIS 2018-2019	0	4,634	4,637	SCG-05 Omar Rivera

00756F, RAMP - INCREMENTAL 19063 M&R (CLICK) Image Document Management	0	938	655	SCG-05 Omar Rivera
00756G, RAMP - INCREMENTAL 19064 Operator Qualification & Training Process Automation	1,291	412	0	SCG-05 Omar Rivera
00756H, RAMP - INCREMENTAL 19065 SCG CPD Enhancements Phase 4	1,141	1,673	0	SCG-05 Omar Rivera
00756I, RAMP - INCREMENTAL 19072 GT Leak Survey	0	854	3,682	SCG-05 Omar Rivera
00756J, RAMP - INCREMENTAL 19094 Click Enhancements Project	5,137	3,898	2,000	SCG-05 Omar Rivera
00756P, RAMP - INCREMENTAL 84255 3DPM WORK ORDER SKETCHING 2016 & 2017	1,145	623	0	SCG-05 Omar Rivera
00756Q, RAMP - INCREMENTAL 84206 GAS GIS 2015 & 2016	4,721	0	0	SCG-05 Omar Rivera
00756R, RAMP - INCREMENTAL 84220 MATERIAL TRACEABILITY - SAP BATCH MGMT	4,360	0	0	SCG-05 Omar Rivera
00756S, RAMP - INCREMENTAL 84281 OSI PI GAS OPS DATA HISTORIAN & REPORTING	468	342	0	SCG-05 Omar Rivera
00756U, RAMP - INCREMENTAL 84298 RECORD & INFO MGMT SYSTEMS	275	0	0	SCG-05 Omar Rivera
00756V, RAMP - INCREMENTAL 84312 RECORDS & INFO MGMT CONSOLIDATED SOL	2,204	841	0	SCG-05 Omar Rivera
00756X, RAMP - INCREMENTAL 19131 HP GAS CONSTRUCT RECORDS & INFO MGMT SOLUTION PH2	0	4,187	2,271	SCG-05 Omar Rivera
00766B1, RAMP - INCREMENTAL 84232 VIRTUAL LEARNING INTEGRATION TO SAP	953	0	0	SCG-05 Omar Rivera
00772D, RAMP - INCREMENTAL 19078 Emergency Field Communication Services	0	1,549	0	SCG-13 Devin Zornizer
00774V, RAMP - INCREMENTAL 84309 CPD PHASE 3	2,685	0	0	SCG-05 Omar Rivera

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00776AD, RAMP - INCREMENTAL 81452 CLICK UPGRADE (CU)	926	0	0	SCG-05 Omar Rivera
00776AH, RAMP - INCREMENTAL 19125 GAS OPERATIONS DEPARTMENTAL WEBSITE REFRESH	575	0	0	SCG-05 Omar Rivera
00776F, RAMP - INCREMENTAL 19066 Enhanced M&R KPI and Analytic Reports	0	878	0	SCG-05 Omar Rivera
00776G, RAMP - INCREMENTAL 19067 Field Data Collection with eForm	0	1,903	1,903	SCG-05 Omar Rivera
00776, RAMP - INCREMENTAL 19068 Gas Distribution and M&R Improvements	1,126	1,886	904	SCG-05 Omar Rivera
00776I, RAMP - INCREMENTAL 19069 Gas Operations: Maintenance & Inspection Project (Phase II)	0	3,417	1,256	SCG-05 Omar Rivera
00776J, RAMP - INCREMENTAL 19070 High Pressure Construction (Move from My Projects to SAP)	0	3,575	14,107	SCG-05 Omar Rivera
00776K, RAMP - INCREMENTAL 19071 Measurement & Reliability Compliance (MRC) CPD Metrics & Analytics	620	334	0	SCG-05 Omar Rivera
00776L, RAMP - INCREMENTAL 19073 Enhanced Operations & Compliance Departmental Reporting System	1,337	0	0	SCG-05 Omar Rivera
00776M, RAMP - INCREMENTAL 19075 Gas Materials Traceability Wave 3 & Wave 4	181	3,106	263	SCG-05 Omar Rivera
00777L, RAMP - INCREMENTAL 84225 GIS UPGRADE	4,743	0	0	SCG-05 Omar Rivera
00777N, RAMP - INCREMENTAL 19122 MDT Refresh 2018-2020	0	2,574	2,574	SCG-05 Omar Rivera
00786A.001, RAMP - INCREMENTAL 19114 FoF - GOPA Phase 4	1,082	211	257	SCG-05 Omar Rivera
Total	**34,970**	**39,549**	**36,223**	

1   The specific RAMP risk mitigation efforts shown in the table above were initiated by a

2 need identified in other business units. Yet, these RAMP activities utilize information

3 technology. Accordingly, these RAMP activities will be managed in part by IT and by the

4 business unit that established its necessity. I present the costs of RAMP activities that have an IT

5 component. The referenced witness listed in the table above discuss the mitigation, how it

6 contributes to reducing the risk, and any alternatives that were considered to that project.

7   Because IT determines the cost for the requested technology service or application, an

8 evaluation was made by IT to determine the portion, if any, that was already performed as part of

9 historical activities (*i.e*., embedded base costs) and the portion, if any, that was incremental to

10 base year activities. As shown in the table above, all the IT-related RAMP capital projects were

11 determined to be RAMP Incremental because they are either new systems or enhancements to

12 existing services and applications.

13   While the starting point for consideration of the risk mitigation efforts and costs was the

14 RAMP Report, the incremental costs of risk mitigation presented in my testimony may differ

15 from those first identified in the RAMP Report due to further evaluation by IT or the referenced

16 witness area.

17   **B.   Safety Culture**

18   SoCalGas is committed to providing safe and reliable service to its customers. Our

19 safety-first culture focuses on public, customer, and employee safety, with this commitment

20 embedded in every aspect of our work. Our safety culture efforts include developing a trained

21 workforce, operating and maintaining energy infrastructure, and providing safe and reliable

22 service. IT is dedicated to all aspects of providing safe and reliable energy delivery while

23 protecting customer information and ensuring compliance with regulations. IT employees

24 participate in all Company-mandated safety training and ensure the availability and operability of

25 the technology that business clients rely on to run their operations.

26   As stated earlier in my testimony, the IT Division is responsible for many of the

27 technology-related services and activities for SoCalGas, SDG&E, and Corporate Center. The

28 services include supporting applications, hardware, and software - some of which are used for

29 risk assessment and management across the company. SoCalGas' safety culture places a strong

30 emphasis on customer, employee, and public safety. The IT Division works to fulfill that culture

31 by providing the technology support required by operating and business units to safely and

1 efficiently fulfill their objectives. As processes and operations become increasingly dependent

2 on technology for efficiencies and safety, the IT Division's business clients rely on IT to provide

3 support. SoCalGas and SDG&E's safety culture is evident in IT as it provides some of the

4 means with which the operating and business units are able to improve their safety performance.

5   Examples of areas in SoCalGas and SDG&E with which IT works includes asset

6 management, work management and measurement, fuel and power, outage management, gas and

7 electric facilities, transportation, procurement and settlement, financial management, accounting,

8 customer field operations, meter reading, customer energy management, smart meter data

9 management, routing, scheduling, dispatching, revenue cycle, customer assistance and customer

10 contact functions.

11 **III.   NON-SHARED COSTS**

12   "Non-Shared Services" are activities that are performed by SoCalGas solely for its own

13 benefit. Corporate Center provides certain services to SoCalGas, SDG&E, and its other

14 subsidiaries. For purposes of this GRC, SoCalGas treats costs for services received from

15 Corporate Center as non-shared services costs, consistent with any other outside vendor costs

16 incurred by the utility. Table CRO-8 summarizes the total non-shared O&M forecasts for the

17 listed cost categories.

18 **TABLE CRO-8**

19 **Non-Shared O&M Summary of Costs**

IT - INFORMATION TECHNOLOGY			
Shown in Thousands of 2016 Dollars			
Categories of Management	**2016 Adjusted-Recorded**	**TY 2019 Estimated**	**Change**
A. Applications	5,442	8,040	2,598
B. Infrastructure	8,368	14,677	6,309
C. IT Support	152	(1,640)	(1,792)
Total	**13,962**	**21,077**	**7,115**

20   **A.   Applications (Non-Shared)**

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

22   The SoCalGas non-shared IT Applications costs represent labor and non-labor for

23 systems where 100% of the activities directly support SoCalGas. The types of systems

24 supported in this area include, but are not limited to, customer field operations, work order

1	management, customer billing, service order routing, scheduling and dispatching, revenue cycle
2	processing, and customer assistance and customer contact functions, including self-service
3	capabilities via MyAccount. An example of a non-shared IT application cost for SoCalGas is its
4	Portable, Automated, Centralized, Electronic Retrieval (PACER) system. The PACER system is
5	a work order management system used only by SoCalGas customer service field personnel. The
6	PACER system schedules, routes, and dispatches work to SoCalGas field personnel. The
7	PACER tool collects specifics on work performed at a customer's premise, which is recorded
8	and returned to other SoCalGas systems for status and reporting. Providing the right information
9	in a timely manner helps ensure that SoCalGas field employees are able to perform their duties
10	and provide customer services in a safe and timely manner.

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2.   **Cost Drivers**

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Table CRO-9 below lists the forecasted increases associated with non-shared O&M related to Applications.

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TABLE CRO-9

Non-Shared O&M Cost Drivers – Applications (000's)

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Cost Driver Descriptions	TY 2019 Estimated
A. Incremental resources to support new functions/features implemented by capital projects	1,336
B. CIS/PACER Replacement Study	1,250
C. Contracts – additions and escalations	13
Total	**2,599**

B.   **Infrastructure (Non-Shared)**

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

The SoCalGas non-shared IT Infrastructure costs represent labor and non-labor for the infrastructure area where 100% of the activities are for SoCalGas. These costs are for IT-related infrastructure found at or providing service to SoCalGas-only facilities (*e.g.*, operating bases and the contact center). SoCalGas non-shared IT Infrastructure activities include, but are not limited to, preventive maintenance, problem diagnosis and resolution, and service request processing and implementation. Examples of non-shared IT infrastructure costs for SoCalGas include, but are not limited to, wired and wireless networks, field area networks and backhaul supporting telemetry/ Supervisory Control and Data Acquisition (SCADA) and field workforce.

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1   **2.**   **Cost Drivers**

2   Table CRO-10 below lists the forecasted increases associated with non-shared O&M

3 related to Infrastructure.

4   **TABLE CRO-10**

5   **Non-Shared O&M Cost Drivers – Infrastructure (000's)**

Cost Driver Descriptions	TY 2019 Estimated
A. Operational Data Center/Infrastructure enhancements	2,700
B. Office 365 annual subscription	1,937
C. Incremental resources to support new functions/features implemented by capital projects	1,672
Total	**6,309**

6   **C.**   **IT Support (Non-Shared)**

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

8   The costs in SoCalGas non-shared IT Support cover costs and savings associated with

9 IT's FOF initiatives.

10   **2.**   **Cost Drivers**

11   Table CRO-11 below lists the forecasted reductions associated with non-shared O&M

12 related to IT Support. The FOF implementation costs listed are forecasts for FOF that did not

13 meet capital requirements. It is estimated that approximately 10% of the anticipated work will

14 be charged to O&M activities. The on-going benefits reflect the savings IT expects to see as a

15 result of FOF implementations. Examples include removing desktop phones, application

16 rationalization (reducing and/or eliminating duplicate or low value applications), establishing a

17 vendor management office to optimize spending with third parties, reducing customization of

18 purchased software, standardized infrastructure, and procurement and sourcing savings.

19   **TABLE CRO-11**

20   **Non-Shared O&M Cost Drivers – IT Support (000's)**

Cost Driver Descriptions	TY 2019 Estimated
A. FoF Implementation Costs	1,390
B. FoF On-going Benefits	(3,182)
Total	**(1,792)**

1 | **IV.**   **SHARED COSTS**

2 | **A.**   **Introduction**

3 | As described in the testimony of James Vanderhye (Ex. SCG-34), shared services are

4 | activities performed by a utility shared services department (*i.e*., functional area) for the benefit

5 | of: (i) SoCalGas or SDG&E, (ii) Sempra Energy Corporate Center, and/or (iii) any unregulated

6 | subsidiaries. The utility providing shared services allocates and bills incurred costs to the entity

7 | or entities receiving those services.

8 | Table CRO-12 below summarizes the total shared O&M forecasts for the listed cost

9 | categories.

10 | **TABLE CRO-12**

11 | **Shared O&M Summary of Costs**

IT - INFORMATION TECHNOLOGY			
Shown in Thousands of 2016 Dollars Incurred Costs (100% Level)			
Categories of Management	**2016 Adjusted-Recorded**	**TY 2019 Estimated**	**Change**
A. Applications	5,115	6,160	1,045
B. Infrastructure	5,153	5,332	179
C. IT Support	358	358	0
Total Shared Services (Incurred)	**10,626**	**11,850**	**1,224**

12 | I am sponsoring the forecasts on a total incurred (100% level) basis, as well as the shared

13 | services allocation percentages related to those costs, which are provided in my shared services

14 | workpapers with a description explaining the activities being allocated. See Ex. SCG-26-WP.

15 | The dollar amounts allocated to affiliates are presented in Mr. Vanderhye's testimony (Ex. SCG-

16 | 34).

17 | **B.**   **Applications (Shared)**

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

19 | The shared IT Application costs charged to SoCalGas cost centers represent labor and

20 | non-labor for systems where activities performed are shared among SoCalGas, SDG&E, and/or

21 | Corporate Center. They are comprised of a diverse portfolio of IT applications in place that

22 | require investments to manage ongoing requirements of our business users who rely on these

23 | systems to perform their daily tasks. The types of systems supported in this area include asset

24 | management, distribution work management, procurement, supply chain, and financial systems.

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1 In general, this diverse portfolio of existing IT applications requires frequent investments to

2 satisfy the changing requirements of our business users who rely on these systems to perform

3 their daily tasks. For example, Systems Applications and Products (SAP) is an application that is

4 used across the Sempra Energy organization. SoCalGas payrolled employees that provide

5 support for SAP have their time allocated to SoCalGas, SDG&E, and Corporate Center based on

6 the number of users of the SAP system for each company.

7 **2.   Cost Drivers**

8 Table CRO-13 below lists the forecasted increases associated with shared O&M related

9 to Applications.

TABLE CRO-13

Shared O&M Cost Drivers – Applications (000's)

Cost Driver Descriptions	TY 2019 Estimated
A. Incremental resources supporting Advanced Meter functions/features	700
B. Incremental resources to support new functions/features implemented by capital projects	345
Total	**1,045**

12 **C.   Infrastructure (Shared)**

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

14 The shared IT Infrastructure costs charged to SoCalGas cost centers represent labor and

15 non-labor for the infrastructure area where the system-wide activities performed benefit

16 SoCalGas, SDG&E, and/or Corporate Center. Examples of these activities include operating the

17 data centers around the clock (*e.g.*, servers, storage, routers), integrating with cloud service

18 providers, manning the enterprise command center that monitors IT systems and services,

19 supporting the phone system, and operating the IT help desk. Services include, but are not

20 limited to, providing support for the design, deployment, and support of hardware and software

21 systems relating to distributed (*i.e.*, UNIX and Windows) and enterprise (*i.e.*, IBM Z/OS) class

22 servers, disaster recovery, production management, data storage systems, service and help desk

23 management, web-based applications middleware, and services infrastructure.

24 The costs in Table CRO-14 below only represent the shared Infrastructure costs, which

25 are captured in SoCalGas cost centers. There are some shared Infrastructure costs, which are

1   primarily based out of SDG&E and charged to SDG&E cost centers. SoCalGas is charged for

2   such service through sharing mechanisms. See my SDG&E IT testimony (Ex. SDG&E-24) for

3   information about the historical costs and forecasted amounts for shared Infrastructure costs

4   charged to SDG&E cost centers.

5   **2.   Cost Drivers**

6   Table CRO-14 lists the forecasted increases associated with shared O&M related to

7   Infrastructure.

8   **TABLE CRO-14**

9   **Shared O&M Cost Drivers – Infrastructure (000's)**

Cost Driver Descriptions	TY 2019 Estimated
A. Incremental resources to support new functions/features implemented by capital projects	179
Total	**179**

10   **D.   IT Support (Shared)**

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

12   The costs for shared IT Support charged to SoCalGas cost centers cover non-labor

13   expenses recorded by the Vice President of IT and the IT Associate program, which is a three-

14   year program for newly hired IT employees that provides them with rotational assignments

15   within the IT division.

16   **2.   Cost Drivers**

17   It is expected that the 2016 expenditures that have been recorded in SoCalGas IT Support

18   cost centers will continue through TY 2019.

19   **V.   CAPITAL**

20   **A.   Introduction**

21   Table CRO-15 summarizes the total SoCalGas IT capital forecasts for 2017, 2018, and

22   2019. Table CRO-15 shows the full complement of IT projects being proposed by SoCalGas in

23   this filing. In other words, Table CRO-15 is composed of both business unit-sponsored IT

24   capital projects, as well as IT Division-sponsored IT capital projects. The costs depicted in

25   Table CRO-15 below are the total costs to be incurred by the proposed capital projects and

26   charged to SoCalGas cost centers. They do not reflect adjustments that may result due to sharing

27   of project costs across SDG&E and Corporate Center, if appropriate.

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1   Included in Table CRO-15 are projects sponsored by the business units that include IT

2 technology solutions to meet business demand. The business justifications for the business

3 sponsored projects are included in the testimony of the associated business witnesses:

Accounting and Finance/Legal Regulatory Affairs/External Affairs	Lee (Ex. SCG-33)
Customer Services – Field & Meter Reading	Marelli (Ex. SCG-18)
Customer Services – Information	Cheung (Ex. SCG-20)
Customer Services – Office Operations	Baldwin (Ex. SCG-19)
Gas Control and System Operations/Planning	Zornizer (Ex. SCG-13)
Fleet Services and Facility Operations	Herrera (Ex. SCG-23)
Gas Procurement	Lazarus (Ex. SCG-16)
Gas System Integrity	Rivera (Ex. SCG-05)
Human Resources Department/Safety, Long-Term Disability & Workers' Compensation	Gevorkian (Ex. SCG-32)
Supply Management, Logistics, & Supplier Diversity	Willoughby (Ex. SCG-22)
Advanced Metering Infrastructure Policy	Garcia (Ex. SCG-17)
Corporate Center – General Administration	DeMontigny (Ex. SCG-28)

19 My workpapers contain the cost justifications for the IT portion of these business-unit sponsored

20 capital projects. I provide additional information about IT Division-sponsored IT capital projects

21 below in Section IV.C. Table CRO-15 summarizes the total capital forecasts for 2017, 2018, and

22 2019.

TABLE CRO-15

Capital Expenditures Summary of Costs

INFORMATION TECHNOLOGY (In 2016 $)			
Categories of Management	**Estimated 2017 (000s)**	**Estimated 2018 (000s)**	**Estimated 2019 (000s)**
A. Controller, Reg Affrs, Legal	847	1,192	1,123
B. CS – Field	6,838	5,040	3,472
C. CS – Information	4,464	6,510	12,483
D. CS - Office Operations	13,190	12,412	23,663
E. Gas System Operations	3,401	3,806	4,771

F. Fleet Services	502	2,387	7,601
G. IT	50,879	73,648	81,227
H. Procurement	2,201	270	0
I. Gas System Integrity	34,970	38,000	36,223
J. HR	300	491	791
K. Supply Management	2,657	2,547	0
L. AM Infrastructure	0	1,768	4,815
M. Corporate	2,404	427	0
Total	**122,653**	**148,498**	**176,169**

B.   Forecast Methodology

Before an IT capital project is funded and moves into development, it must go through SoCalGas' capital project approval process, which has several distinct stages, as described below.

1.   IT Division Capital Plan Development

The IT Division first prepares a capital plan, which is the sum of proposed plans of IT and business sponsored projects that utilize the IT capital budget. The capital plan includes both ongoing projects and anticipated needs, and is usually developed in the fourth quarter of a fiscal year in preparation for upcoming years. At this stage, the composite capital plan consists of a long list of viable capital projects, each with the potential to beneficially impact IT capability and services. Supporting documentation is developed by way of concept documents and business cases to be utilized as part of the prioritization and approval process.

2.   Concept Documents

Concept documents are high-level assessments developed for review during the capital planning process. The concept document contains typical project elements, such as cost estimates, business benefits and project schedules. It also provides project teams the opportunity to document alternative options considered, as well as business risks and implications of not proceeding with the project. These elements are available for consideration during project prioritization and approval. The Central Business Planning group then decides whether to approve funding as part of its prioritization and approval process.

3.   Project Prioritization and Approval

The concept documents provided by projects teams are utilized for prioritization purposes. Rankings are determined based on various factors including, but not limited to,

1   regulatory requirements, critical service maintenance needs, and/or cost benefit analyses. The

2   projects in the narrowed capital plan list are then prioritized by likely impact on IT capability and

3   services. The annual capital budget allocation processes for SoCalGas is administered by the

4   Central Business Planning group on behalf of the Executive Finance Committee (EFC). Details

5   of the capital planning process are presented in the testimony of SoCalGas' Rate Base witness

6   Patrick Moersen (Ex. SCG-35).

4. Business Cases

8   Once funding is approved by the Central Business Planning group for a concept, a

9   complete business case must be prepared and approved before work begins. Business cases are

10   developed jointly by representative(s) from the sponsoring IT department, the sponsoring

11   business department (when applicable), and the IT Project Management Office (IT PMO).

12   Others may be added to the team as required.

- The sponsoring IT department is primarily responsible for defining the project scope, identifying the technical approach, and generating the basis of estimate for the capital costs and ongoing O&M support costs.
- The business representatives are primarily responsible for confirming the business requirements, calculating the business benefits, and ensuring that the proposed solution meets the business objectives.
- The IT PMO ensures that the templates are completed correctly, that the budgets are calculated and characterized correctly, and that the proposed scope is consistent with policy.

22   A near final draft of the business case is provided to Information Security for review and

23   comment.

5. Cost Sharing Mechanisms

25   A cost sharing mechanism must be determined for any project that will be utilized across

26   SoCalGas, SDG&E, and/or Corporate Center. As part of the business case development, a

27   project team will include a recommendation of how costs will be shared for consideration during

28   the capital approval process based on its assessment of project scope.

1   **C.   IT-Sponsored Capital Projects**

2   The remainder of the IT capital costs I am requesting is for SoCalGas IT-sponsored

3   capital projects. Table CRO-16 below provides a summary of costs for the IT-sponsored capital

4   projects. Summary descriptions of the projects are provided in the subsections below and details

5   can be found in my capital workpapers for each project (Ex. SCG-26-CWP).

6   **TABLE CRO-16**

7   **Capital Expenditures Summary of Costs – IT Projects Only**

Shown in Thousands of 2016 Dollars				
Information Technology	**Work Paper (Ex. SCG-26-CWP)**	**Estimated 2017**	**Estimated 2018**	**Estimated 2019**
1. GEARS Upgrade - Ent. GIS 10.x	00756K	901	844	314
2. Sempra Lease Accounting and Reporting System	00756L	981	758	-
3. SCG Virtual Desktop Expansion (VDI)	00766A	1,528	-	-
4. SCG Out of Band Mgmt	00770A	351	-	-
5. SCG Self Support Small Cap 2017 - 2019 (Routine)	00770B	944	944	944
6. SCG FAN - Voice Radio & Dispatch	00772A	9,525	6,542	4,519
7. SCG Comm Tip Top Shelter Replacement	00772B	553	-	-
8. SCG Comm Mount David Shelter Replacement	00772C	457	-	-
9. Communications Reliability Shelter Replacement (Blythe)	00772E	456	697	436
10. Communications Reliability Shelter Replacement (Cactus City Ridge)	00772F	-	74	662
11. Communications Reliability Shelter Replacement (Mt Soloman)	00772G	-	74	662
12. Communications Reliability Shelter Replacement (White Water)	00772H	-	74	662
13. SEU Session Border Controllers Refresh	00772I	71	-	-
14. Software Defined Data Center	00776AF	4,516	-	-
15. Office 365 Enablement & Adoption	00776AG	853	-	-
16. SAP ECC on HANA	00776C	8,159	3,645	-

17. GIS Mobile Replacement	00776D	974	-	-
18. Sensitive Data Protection	00776N	-	5,593	3,286
19. Web Portal and Application Modernization	00776O	-	905	-
20. Software Defined Data Center Refresh 2019	00776P	-	-	10,905
21. Big Data Advanced Analytics Enablement on SAS	00776Q	-	857	-
22. Enterprise BPM Workflow	00776R	-	1,789	-
23. Environmental Tracking System Enhancements	00776S	-	700	-
24. SAP BI & Analytics Platform Upgrade	00776T	-	613	-
25. Source Code Management Modernization	00776W	-	429	-
26. Enterprise Data Layer Ph1	00776Y	-	3,076	3,076
27. Network Core Refresh (Qfabric Refresh)	00777A	876	-	-
28. SCG Enterprise Desktop Refresh	00777B	6,359	3,097	-
29. Business Continuity Enhancement	00777C	6,828	23,795	33,609
30. Converged Computing Infrastructure 2018-2019	00777D	-	3,270	9,361
31. Local Area Network Refresh (2018)	00777E	-	2,455	-
32. Local Area Network Refresh (2019)	00777F	-	-	2,455
33. Private Network Refresh (2018)	00777G	-	4,055	-
34. Private Network Refresh (2019)	00777H	-	-	4,925
35. Wide Area Network Refresh (2018)	00777I	-	3,774	-
36. SCG Conf Room AV Upgrade	00777J	-	2,877	-
37. Wide Area Network Refresh (2019)	00777M	-	-	2,512
38. Converged Computing Infrastructure	00777O	223	-	-
39. Pure Storage Upgrade	00777P	6,324	-	-
40. FoF - Operational Awareness	00786B	-	2,711	2,899
Total		50,879	73,648	81,227

1   **1.   GEARS Upgrade - Ent. GIS 10.x**

2   The forecast for the Geographic Environmental Analysis and Reporting System

3   (GEARS) Upgrade – Ent. GIS 10.x project for 2017, 2018, and 2019 is $901K, $844K, and

4    $314K, respectively. SoCalGas plans to build and place this project in-service by the test year.

5   The GEARS application consists of three primary components: a GIS based data processing

6   tool, map services, and an environmental reporting application. Environmental Services spends

7   significant time gathering information from disparate sources to produce annual reports.

8   Improved data accuracies will save Environmental Services significant labor hours for annual

9   reporting. This project will expand functionality, improve efficiency for the users and refine the

10   work hierarchy, which will enable more accurate and timely reporting. Updating the data

11   processing models will improve system maintenance and improves environmental and

12   compliance reporting. The upgrade to GEARS must align with the Enterprise GIS 10.x Upgrade

13   project in order to keep the versioning of the two applications in sync. The specific details

14   regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 314).

15   **2.   Sempra Lease Accounting and Reporting System**

16   The forecast for the Sempra Lease Accounting and Reporting System for 2017, 2018, and

17   2019 is $981K, $758K, and $0, respectively. SoCalGas plans to build and place this project in-

18   service by the test year. The Financial Accounting Standards Board's (FASB) new lease

19   accounting standard (ASU 2016-02, Lease Accounting (Topic 842) and International Financial

20   Reporting Standards (IFRS) 16), was issued on February 25, 2016. The new lease accounting

21   standard requires that all leases be reported on each company's balance sheet (i.e., as a capital

22   lease) for financial accounting purposes. It is mandatory that the new standard is in practice by

23   December 15, 2018. Regulatory accounting treatment may need to continue to recover lease

24   expenses as O&M (but CPUC guidance related to this new Generally Accepted Accounting

25   Principles (GAAP) standard has not been issued at this time). A challenging aspect of this

26   project will be the identification, recording, and records management of operating leases that

27   have not previously had stringent reporting requirements. Clarification with FASB on a two-

28   year historical "look back" reporting requirement to 2017 is being pursued, which will involve

29   some level of historical lease data to be loaded into the proposed new system. Additionally,

30   there may be tax and budget impacts due to the potential reclassification of previously O&M

categorized expenses to capital expenditures. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 537).

3. SCG Virtual Desktop Expansion (VDI)

The forecast for the SCG Virtual Desktop Expansion project for 2017, 2018, and 2019 is $1,528K, $0, and $0, respectively. SoCalGas plans to build and place this project in-service by the test year. This project will expand the capacity of the current Virtual Desktop Infrastructure (VDI) to support the decommissioning of the Citrix environment, add necessary redundancy to enhance the reliability of the VDI infrastructure, create development environment(s) to reduce resource impact to production, and procure "Enterprise VDI licensing" with tool sets necessary to support VDI's ever growing client base and support requirements. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 321).

4. SCG Out-of-Band Management

The forecast for the SCG Out-of-Band Management project for 2017, 2018, and 2019 is $351K, $0, and $0, respectively. SoCalGas plans to build and place this project in-service by the test year. The project will implement an out-of-band management solution for 412 locations across the SoCalGas and SDG&E service territories. The project scope will include procurement, deployment, and configuration of 700 out-of-band Management devices. Providing this out-of-band management solution allows for network support personnel to remotely connect to all sites throughout the service territory regardless of the network state. This will enable faster response time and provide for continued coverage and support with limited resource availability. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 326).

5. SCG Self Support Small Cap 2017 – 2019 (Routine)

The forecast for the SCG Self Support Small Cap 2017 - 2019 (Routine) project for 2017, 2018, and 2019 is $944K, $944K, and $944K, respectively. SoCalGas plans to build and place this project in-service by the test year. Small Cap 2017 will cover individual capital purchases benefitting the overall network, security, collaboration, and operational efficiency. All purchases will fall within the confines of the capitalization rules, including some of the following guidelines:

1. Primary use is to purchase replacements for defective, broken, or expired infrastructure. Utilization to address critical capacity issues is also acceptable.

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1   2.   Hardware and hardware labor only.

2   3.   Quotes should have line item detail to ensure compliance with capitalization

3   policy

4   4.   No asset bundling or grouping.

5   5.   SQL Server licenses not eligible.

6 The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-

7 CWP, p. 347).

6.   SCG FAN – Voice Radio & Dispatch

9   The forecast for the SCG Field Area Network (FAN) - Voice Radio & Dispatch project

10 for 2017, 2018, and 2019 is $9,525K, $6,542K, and $4,519K, respectively. SoCalGas plans to

11 build and place this project in-service by the test year. The SCG FAN (Voice and Dispatch)

12 project was developed to refresh our critical dispatch and voice radio system. This will ensure

13 business continuity, enhance safety, and increase reliability and capacity for field area

14 communications by replacing the current private obsolete communication infrastructure. The

15 current dispatch system is at end-of-sale and services. The specific details regarding this project

16 are found in my capital workpapers (Ex. SCG-26-CWP, p. 352).

7.   SCG Comm Tip Top Shelter Replacement

18   The forecast for the SCG Communications Tip Top Shelter Replacement project for

19 2017, 2018, and 2019 is $553K, $0, and $0, respectively. SoCalGas plans to build and place this

20 project in-service by the test year. This project replaces the current Tip Top fiberglass and wood

21 shelter with a new concrete shelter. The new shelter will be purchased and transported to

22 Monterey Park, and stored in a place where telecommunications staff can ready it for production.

23 Pre-deployment work includes installation of new electrical, new DC plant, and cable tray. Also,

24 new footings to support the cement shelter on Tip Top will be built. The specific details

25 regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 359).

8.   SCG Comm Mount David Shelter Replacement

27   The forecast for the SCG Communications Mount David Shelter Replacement project for

28 2017, 2018, and 2019 is $457K, $0, and $0, respectively. SoCalGas plans to build and place this

29 project in-service by the test year. Recently Verizon retired the shelter and microwave tower

30 located on Mount David, which is next door to the SoCal Gas site. SoCal Gas purchased

31 Verizon's site and now owns the old Verizon shelter, which is a reinforced concrete block

1 building. This project consists of remodeling the old Verizon site, moving SoCal Gas's

2 telecommunications hardware from our old shelter to the former Verizon site, and dismantling

3 and hauling away the old Sempra Energy shelter and tower. The specific details regarding this

4 project are found in my capital workpapers (Ex. SCG-26-CWP, p. 364).

9.   Communications Reliability Shelter Replacement (Blythe)

6   The forecast for the Communications Reliability Shelter Replacement (Blythe) project for

7 2017, 2018, and 2019 is $456K, $697K, and $436K, respectively. SoCalGas plans to build and

8 place this project in-service by the test year. The new shelter will be purchased and transported

9 to Monterey Park, and stored in a place where telecommunications staff can ready it for

10 production. Pre-deployment work includes installation of new electrical, new DC plant, and

11 cable tray. Also, new footings to support the new shelter at the mountain top location will be

12 built. The specific details regarding this project are found in my capital workpapers (Ex. SCG-

13 26-CWP, p. 369).

10.   Communications Reliability Shelter Replacement (Cactus City Ridge)

15   The forecast for the Communications Reliability Shelter Replacement (Cactus City

16 Ridge) project for 2017, 2018, and 2019 is $0, $74K, and $662K, respectively. SoCalGas plans

17 to build and place this project in-service by the test year. The new shelter will be purchased and

18 transported to Monterey Park, and stored in a place where telecommunications staff can ready it

19 for production. Pre-deployment work includes installation of new electrical, new DC plant, and

20 cable tray. Also, new footings to support the new shelter at the mountain top location will be

21 built. The specific details regarding this project are found in my capital workpapers (Ex. SCG-

22 26-CWP, p. 376).

11.   Communications Reliability Shelter Replacement (Mt. Soloman)

24   The forecast for the Communications Reliability Shelter Replacement (Mt. Soloman)

25 project for 2017, 2018, and 2019 is $0, $74K, and $662K, respectively. SoCalGas plans to build

26 and place this project in-service by the test year. The new shelter will be purchased and

27 transported to Monterey Park, and stored in a place where telecommunications staff can ready it

28 for production. Pre-deployment work includes installation of new electrical, new DC plant, and

29 cable tray. Also, new footings to support the new shelter at the mountain top location will be

30 built. The specific details regarding this project are found in my capital workpapers (Ex. SCG-

31 26-CWP, p. 382).

12. Communications Reliability Shelter Replacement (White Water)

The forecast for the Communications Reliability Shelter Replacement (White Water) project for 2017, 2018, and 2019 is $0, $74K, and $662K, respectively. SoCalGas plans to build and place this project in-service by the test year. The new shelter will be purchased and transported to Monterey Park, and stored in a place where telecommunications staff can ready it for production. Pre-deployment work includes installation of new electrical, new DC plant, and cable tray. Also, new footings to support the new shelter at the mountain top location will be built. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 388).

13. SEU Session Border Controllers Refresh

The forecast for the Sempra Energy Utilities (SEU) Session Border Controllers (SBC) Refresh project for 2017, 2018, and 2019 is $71K, $0, and $0, respectively. SoCalGas plans to build and place this project in-service by the test year. This project will refresh the current shared SBC hardware and enhance visibility and management of the SBCs by acquiring the Enterprise Operations Manager and Enterprise Communication Broker software. The current configuration of one SBC in each data center will be upgraded to a HA (Highly Available) configuration with two SBCs in each data center. The HA configuration provides continuous service in the event one SBC fails. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 394).

14. Software Defined Data Center

The forecast for the Software Defined Data Center (SDDC) project for 2017, 2018, and 2019 is $4,516K, $0, and $0, respectively. SoCalGas plans to build and place this project in-service by the test year. SDDC is the next logical investment for the company as it would strengthen the data center foundation by integrating our current virtual machine environment with future technology investments such as Juniper 10K/QFX, VMware Network Virtualization (NSX), and vRealize Network Insight. The integrated technologies will allow the server and their network configurations and firewall rules to be managed by a single standardized set of tools. This project will also migrate existing switch configurations to NSX, integrate existing Juniper 10K/QFX switch infrastructure with NSX, and migrate existing zone-based security rule sets to host-based configurations managed by vRealize. Additionally, this project lays the ground work to run, manage, and secure applications across various platforms and devices;

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1 including the cloud. The specific details regarding this project are found in my capital

2 workpapers (Ex. SCG-26-CWP, p. 399).

3   **15.   Office 365 Enablement & Adoption**

4   The forecast for the Office 365 Enablement & Adoption project for 2017, 2018, and 2019

5 is $853K, $0, and $0, respectively. SoCalGas plans to build and place this project in-service by

6 the test year. This project will enable/implement the core Office 365 tool suite, to include

7 associated information governance and information security controls, in order to span the

8 following set of services/systems:

9   1.   Email – Hybrid (cloud-on w/ minimal on-premise) implementation of Exchange

10   Online-Exchange 2016.

11   2.   Build new scaled down on-premise Exchange environment.

12   3.   Collaboration – Hybrid (cloud-on premise) implementation of SharePoint Online-

13   SharePoint 2016.

14   4.   Conferencing/Instant Messaging – Hybrid (cloud-on premise) implementation of

15   Skype for Business; integration with (and limited refresh of) legacy conference

16   room technology (Polycom, Telepresence).

17   5.   Personal Storage – OneDrive for Business.

18   6.   Identity Management/Federation – Implement Azure Active Directory (AD)

19   Premium, Active Directory Federation Services (ADFS) and Identity

20   Management (limited scope).

21   7.   Voice – Integration with Skype; pilot Skype voice and softphone.

22   8.   Network – Enable high-bandwidth connectivity with Microsoft data centers;

23   expand internal capacity as needed to ensure minimal performance issues with

24   cloud based Office 365 services.

25 The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-

26 CWP, p. 404).

27   **16.   SAP ECC on HANA**

28   The forecast for the Systems Applications and Products (SAP) Enterprise Central

29 Component (ECC) on High-Performance Analytic Appliance (HANA) project for 2017, 2018,

30 and 2019 is $8,159K, $3,645K, and $0, respectively. SoCalGas plans to build and place this

31 project in-service by the test year. The project will enhance the SAP ECC system, with

1 application and database upgrades, from Oracle database to the SAP HANA platform. The

2 following additional upgrades for connected SAP solutions are in scope for this project: SAP

3 Process Integration (PI), SAP Portal, Adobe Document Services (ADS) and Solution Manager

4 (SolMan). Replacement of the disaster recovery (DR) environment is in-scope for the systems

5 listed above, and for the reclassification of those SAP solutions to a DR Tier 1 (24 hour

6 recovery) from the current DR Tier 3 (5 days recovery), including changes to process and

7 technology. Also in scope is the implementation of a new project environment with production

8 system change management processes to enable ongoing system updates in order to maintain

9 vendor supportability and security compliance. Test management transformation and

10 modernization are scoped into this project and include test automation and ongoing organization

11 change management (people, process, technology) to maintain current test cases and position the

12 Company for applying regular SAP patches, support packs, and upgrades once this project is

13 complete. Data archiving is also included and may utilize the existing solution (Auritas) or

14 implement SAP's ILM (Information Lifecycle Management) pending a technical alternatives

15 evaluation. The specific details regarding this project are found in my capital workpapers (Ex.

16 SCG-26-CWP, p. 408).

17.   GIS Mobile Replacement

18   The forecast for the Geographic Information System (GIS) Mobile Replacement project

19 for 2017, 2018, and 2019 is $974K, $0, and $0, respectively. SoCalGas plans to build and place

20 this project in-service by the test year. This project will focus on selecting and implementing a

21 new mobile software application that is based on new technology that will resolve the current

22 performance, ease-of-use and replications obstacles. Selected software will be based on

23 providing more conducive redlining and workflow options/considerations that will support such

24 needs as service order processing, damage assessment and Geographic Mapping Discrepancy

25 Transmittal (GMDT) posting (GIS correction administration). Software can provide an

26 efficient/effective interface to Click Mobile (map display of scheduled work) and will be

27 compatible with Windows 7/8/10, Android and iOS, providing a common look and feel across

28 multiple hardware platforms. From a support standpoint, selection will provide the ability to

29 automatically push application updates (Sync) to clients through network connection. This

30 project will be phased: Phase 1 will include SDG&E with limited electric-only deployment in

31 2016; Phase 2 will include remaining SDG&E Gas and Electric users; and Phase 3 will include

1   SoCalGas' deployment in 2016-2017. In 2016, the project will administer two checkpoints

2   (September and December) with Gas Engineering & System Integrity and Gas Operations to

3   assess viability of joint users (gas/electric) and current state of new ESRI Utility and Pipeline

4   Data Model (UPDM). The specific details regarding this project are found in my capital

5   workpapers (Ex. SCG-26-CWP, p. 416).

18.   Sensitive Data Protection

7   The forecast for the Sensitive Data Protection project for 2017, 2018, and 2019 is $0,

8   $5,593K, and $3,286K, respectively. SoCalGas plans to build and place this project in-service

9   by the test year. Sempra Energy and the utilities have embarked on a journey to mature its

10 existing data protection capabilities. Data protection is more than just implementing a

11 technology solution; it also includes a sustainable data governance and data protection program.

12 In the second quarter of 2016, Sempra Energy Corporate engaged Pricewaterhouse Coopers

13 (PwC) for the purpose of understanding:

14   1.   How much sensitive data does Sempra Energy and the utilities have?

15   2.   Where is the sensitive data located?

16   3.   Who has access to the sensitive data?

17   4.   What are the specific controls for each sensitive data "set"?

18 One of the key deliverables of this effort was a set of repeatable processes that would enable

19 Sempra Energy and the utilities to conduct a sensitive data inventory, in addition to a roadmap

20 for implementing a data governance and data protection program. The purpose of this project is

21 to implement the processes and technologies identified in the roadmap for protecting Sempra

22 Energy's and the utilities' sensitive data. The specific details regarding this project are found in

23 my capital workpapers (Ex. SCG-26-CWP, p. 543).

19.   Web Portal and Application Modernization

25 The forecast for the Web Portal and Application Modernization project for 2017, 2018,

26 and 2019 is $0, $905K, and $0, respectively. SoCalGas plans to build and place this project in-

27 service by the test year. The enterprise web environment (EWE) will be retired and replaced

28 with a new standardized web hosting environment. EWE is currently on Windows 2003

29 (unsupported) and Windows 2008 physical servers. A self-service web portal (Azure) and

30 application modernization effort is proposed to re-engineer the EWE associated applications.

31 The EWE environment has experienced hardware failures and as such, vulnerability protection

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software was purchased. The new solution will provide an enterprise, virtualized, agile, and scalable solution. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 422).

20.   Software Defined Data Center Refresh 2019

The forecast for the Software Defined Data Center Refresh 2019 project for 2017, 2018, and 2019 is $0, $0, and $10,905K, respectively. SoCalGas plans to build and place this project in-service by the test year. This project continues with the strategic approach from the SDDC project (discussed above) and will strengthen the data center foundation by integrating all of our current VMware environment with future technology investments. The integrated technologies will significantly increase efficiencies through automation of server provisioning, their network configurations, and firewall rules. The project will advance the existing switch configurations to the latest version of NSX, integrate existing Juniper 10K/QFX hardware infrastructure with NSX, and migrate existing zone-based security rule sets to host-based configurations. In addition, this project will advance the effectiveness of managing the operation of secure applications across various platforms and devices, including hybrid internal/external cloud. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 428).

21.   Big Data Advanced Analytics Enablement on SAS

The forecast for the Big Data Advanced Analytics Enablement on Statistical Analysis System (SAS) project for 2017, 2018, and 2019 is $0, $857K, and $0, respectively. SoCalGas plans to build and place this project in-service by the test year. This project will enable business areas with the capabilities to perform advanced analytics using huge amounts of diverse data from Hadoop, HANA, and SAP/BW platforms. The current SAS platform lacks the tools to meet the growing demands to analyze huge amount of data sets in the Hadoop, HANA or SAP. It is also vulnerable with only one single production server in place, without any capabilities to test new software, patches or to troubleshoot issues affecting production. Finally, there is no simple tool for data scientists to load SAS datasets or other important ad-hoc data into Hadoop without writing complex MapReduce codes or requiring IT help. This project will build a strong SAS analytics platform to enable Big Data analytics, as well as provide self-service tools to empower users to perform analytics faster and in more iterations, which will enable the business

CRO-31

1 to make more effective data-driven decisions. The specific details regarding this project are

2 found in my capital workpapers (Ex. SCG-26-CWP, p. 433).

22. Enterprise BPM Workflow

4 The forecast for the Enterprise BPM Workflow on SAS project for 2017, 2018, and 2019

5 is $0, $1,789K, and $0, respectively. SoCalGas plans to build and place this project in-service

6 by the test year. This project will implement an automated business process management

7 (BPM)/workflow/case management tool across the enterprise and automate current manual

8 business processes (*i.e.*, items that require a wet signature or email approval, routing work across

9 multiple business groups, etc. The project will also provide core IT tool/capability to enable

10 retirement of legacy/home grown systems (*e.g.*, Access DBs, Cold Fusion, WOT, etc.) and

11 develop/implement a joint IT-business competency center, which would be responsible for

12 developing/maintaining workflows. The specific details regarding this project are found in my

13 capital workpapers (Ex. SCG-26-CWP, p. 439).

23. Environmental Tracking System Enhancements

15 The forecast for the Environmental Tracking System (ETS) Enhancements project for

16 2017, 2018, and 2019 is $0, $700K, and $0, respectively. SoCalGas plans to build and place this

17 project in-service by the test year. The Environmental department requires several applications

18 (Desktop, Web, GEARS and ETS) for its daily operations. This project will provide

19 enhancements/upgrades and data model expansions to keep pace with escalating regulatory,

20 reliability, safety, service, efficiency, and growth requirements. The specific details regarding

21 this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 445).

24. SAP BI & Analytics Platform Upgrade

23 The forecast for the SAP Business Intelligence (BI) & Analytics Platform Upgrade

24 project for 2017, 2018, and 2019 is $0, $613K, and $0, respectively. SoCalGas plans to build

25 and place this project in-service by the test year. The SAP BI & Analytics Platform is made up

26 of various SAP software components including Business Warehouse (BW) HANA, Enterprise

27 HANA, Business Objects BI (BOBJ), Information Steward, and Business Objects Data Services

28 (BODS). Each of these individual components runs on one or more servers with base operating

29 systems like Red Hat Linux (RHEL) or Windows 2008/2012. SAP releases upgrades, patches,

30 and service packs for these components on a frequent basis to resolve known issues, address

31 security vulnerabilities, and to improve performance/functionality. Our platform is currently

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running on outdated software versions and releases, which has resulted in some of the following issues: users have experienced browser incompatibility issues with Internet Explorer (IE)10; Information Security has identified security vulnerabilities with BOBJ 4.1 that are remediated by BOBJ 4.2; an inability to support on-premise predictive analytics; and an increase in maintenance support due to non-standard or outdated versions. In addition, the server operating systems also need to be upgraded to the latest releases to stay current with ever-increasing demands of the applications that they host as well as patching security vulnerabilities that are identified by Information Security. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 450).

25. Source Code Management Modernization

The forecast for the Source Code Management Modernization project for 2017, 2018, and 2019 is $0, $429K, and $0, respectively. SoCalGas plans to build and place this project in-service by the test year. This project will replace the current MKS Integrity application source code management (SCM) tool with Subversion (SVN) and Git. MKS Integrity is our current SCM application for non-mainframe and non-SAP development; however, it is outdated, no longer supported, and does not meet the developers' needs. A standardized suite of tools is needed to replace MKS Integrity. This project will also address the requirements of the distributed application teams that require the Git SCM tool. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 455).

26. Enterprise Data Layer Ph1

The forecast for the Enterprise Data Layer Phase 1 project for 2017, 2018, and 2019 is $0, $3,076K, and $3,076K, respectively. SoCalGas plans to build and place this project in-service by the test year. One of the key challenges for every project is bringing together data from disparate and complex data sources to satisfy reporting and analytics requirements. Doing so typically involves integrating data from different vendor/ technology platforms based on different schemas (or naming conventions), which is a very complex task. In most cases, these projects take anywhere from 9-12 months to complete. A significant portion of this time is spent defining, architecting, and building out the data integration or the data "plumbing." Once built, this data plumbing is not reusable because it is specifically built based on the project requirements. As a result, each project builds its own data integration to meet its own specific reporting and analytics requirements. Such an approach does not enable re-use of the data

integration across commonly-used data sources. The purpose of this project is to build an

Enterprise Data Layer (EDL) that supports re-usability of data integration across common data

sources. This re-usability will ultimately enable the delivery of analytics in an agile and

accelerated manner. This will also help to reduce the needless replication of data. The specific

details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 460).

27.   Network Core Refresh (Qfabric Refresh)

The forecast for the Network Core Refresh (Qfabric Refresh) project for 2017, 2018, and

2019 is $876K, $0, and $0, respectively. SoCalGas plans to build and place this project in-

service by the test year. This project will implement two standardized data center core

networking infrastructures at the Rancho Bernardo (RB) data center in support of delivering

reliable and consistent networking services across the enterprise. The project will specifically

address the following urgent mission-critical objectives:

1.   Create two networking infrastructures in RB – a) Remediate existing risks by
       replacing legacy networks cores, and b) create new greenfield network core to
       support application high-availability.

2.   Enable migration of storage services from Fibre Channel over Ethernet (FCOE) to
       Internet Small Computer System Interface (iSCSI).

3.   Remove barriers that have resulted in limiting or restricting changes to the
       network core in support of new projects.

The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 468).

28.   SCG Enterprise Desktop Refresh

The forecast for the SCG Enterprise Desktop Refresh project for 2017, 2018, and 2019 is

$6,359K, $3,097K, and $0, respectively. SoCalGas plans to build and place this project in-

service by the test year. This project will:

1.   Procure, configure, and deploy approximately 3,800 Windows 10 workstations to
       office-based SoCalGas employees. Workstations include a combination of
       desktops, laptops, and tablets (2-in-1s). Laptops include a docking station, with
       an option for adapters/dongles, headset, case, an monitor (analog monitors must

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1   be replaced). There is one workstation per employee. An allowance for

2   replacement of approximately 10% of monitors/peripherals is included.

3   2.   Perform foundational work to support deployment, including identification, of

4   hardware standards and Windows 10 image development and testing.

5   3.   Assess, test, remediate, and validate the compatibility of various applications on

6   the Windows 10 platform. Remediation may include minor code changes,

7   application virtualization (App-V), or other workarounds (*i.e.*, VDI running

8   Windows 7).

9   4.   Deploy Office 365 tools to same users as part of desktop refresh, including but

10   not limited to OfficeProPlus, Skype for Business, SharePoint Online, and

11   OneDrive. Project has a strong dependency on Office 365 Adoption Project for

12   organizational change management.

13   5.   Update configuration management database (CMDB) and solidify asset

14   management process to ensure accurate asset tracking.

15 The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-

16 CWP, p. 473).

17   **29.**   **Business Continuity Enhancement**

18   The forecast for the Business Continuity Enhancement project for 2017, 2018, and 2019

19 are $6,828K, $23,795K, and $33,609K, respectively. SoCalGas plans to build and place this

20 project in-service by the test year. The project will enhance the business continuity capabilities

21 of the data center infrastructure services by implementing high-availability (HA) computer,

22 storage, and network services. The project will migrate the Company's most critical applications

23 to the new HA services, providing the ability for select applications to remain operational during

24 planned and unplanned outages (failover to be measured in minutes, not multi-hours or days).

25 The project will implement automation services to facilitate the provisioning, decommissioning,

26 and typical day-to-day operations in the HA environment simplifying common tasks and

27 reducing mean-time-to-restore (MTTR). The specific details regarding this project are found in

28 my capital workpapers (Ex. SCG-26-CWP, p. 479).

29   **30.**   **Converged Computing Infrastructure 2018-2019**

30   The forecast for the Converged Computing Infrastructure 2018-2019 project for 2017,

31 2018, and 2019 is $0, $3,270K, and $9,361K, respectively. SoCalGas plans to build and place

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1	this project in-service by the test year. The project takes a holistic view of IT infrastructure
2	requirements and plans a phased approach to build out capacity for computer, storage, backup,
3	and network to meet the demand of all IT capital projects and O&M efforts. The project will
4	also refresh obsolete hardware to improve reliability. The specific details regarding this project
5	are found in my capital workpapers (Ex. SCG26-CWP, p. 486).

31.   Local Area Network Refresh (2018)

7	The forecast for the Local Area Network (LAN) Refresh (2018) project for 2017, 2018,
8	and 2019 is $0, $2,455K, and $0, respectively. SoCalGas plans to build and place this project in-
9	service by the test year. Sempra Energy has adopted a 5-year refresh cycle for LAN switching
10	infrastructure. The existing infrastructure was installed between 2007 and 2009. The current
11	LAN infrastructure is out of warranty and out of support, and software updates and patches are
12	no longer available for a large number of the devices. The availability of technical support may
13	also become limited or non-existent. The specific details regarding this project are found in my
14	capital workpapers (Ex. SCG-26-CWP, p. 492).

32.   Local Area Network Refresh (2019)

16	The forecast for the Local Area Network Refresh (2019) project for 2017, 2018, and 2019
17	is $0, $0, and $2,455K, respectively. SoCalGas plans to build and place this project in-service
18	by the test year. Sempra Energy has adopted a 5-year refresh cycle for LAN switching
19	infrastructure. The existing infrastructure was installed between 2007 and 2009. The current
20	LAN infrastructure is out of warranty and out of support, and software updates and patches are
21	no longer available for a large number of the devices. The availability of technical support has
22	also become limited or non-existent. The infrastructure is no longer meeting the technical
23	requirements necessary to implement new office productivity solutions (such as Office 365,
24	Skype, and OneDrive) reliability and at the required performance capacity. The specific details
25	regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 497).

33.   Private Network Refresh (2018)

27	The forecast for the Private Network Refresh (2018) project for 2017, 2018, and 2019 is
28	$0, $4,055K, and $0, respectively. SoCalGas plans to build and place this project in-service by
29	the test year. The project will replace obsolete radio equipment that is at end-of-life and end-of-
30	support, and for which it is difficult to find replacement parts. The project will also replace
31	aging microwave components with new higher capacity infrastructure. This project will help to

1 further enable the conversion of the SoCalGas microwave system to native Ethernet transport.

2 The specific details regarding this project are found in my capital workpapers (Ex. SCG26--

3 CWP, p. 502).

34.   Private Network Refresh (2019)

5 The forecast for the Private Network Refresh (2019) project for 2017, 2018, and 2019 is

6 $0, $0, and $4,925K, respectively. SoCalGas plans to build and place this project in-service by

7 the test year. The project will replace obsolete radio equipment that is at end-of-life and end-of-

8 support, and for which it is difficult to find replacement parts. The project will also replace

9 aging microwave components with new higher capacity infrastructure. This project will help to

10 further enable the conversion of the SoCalGas microwave system to native Ethernet transport.

11 The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-

12 CWP, p. 507).

35.   Wide Area Network Refresh (2018)

14 The forecast for the Wide Area Network Refresh (2018) project 2017, 2018, and 2019 is

15 $0, $3,774K, and $0, respectively. SoCalGas plans to build and place this project in-service by

16 the test year. Sempra Energy has adopted a 5-year refresh cycle for wide area network (WAN)

17 routing infrastructure. The existing infrastructure was installed starting in 2009 and has started

18 to become end-of-sale and end-of-support, limiting access to replacement hardware,

19 software/firmware updates, and technical assistance. The specific details regarding this project

20 are found in my capital workpapers (Ex. SCG-26-CWP, p. 512).

36.   SCG Conf Room AV Upgrade

22 The forecast for the SCG Conference Room Audio Visual (AV) Upgrade project for

23 2017, 2018, and 2019 is $0, $2,877K, and $0, respectively. SoCalGas plans to build and place

24 this project in-service by the test year. The majority of SoCalGas' conference rooms are

25 outfitted with legacy and non-functional AV equipment. In many cases, the equipment is not

26 only out-of-support but no longer functional due to incompatible technologies (*i.e.*, analog vs.

27 digital and VGA adapter not present on current laptops). Additionally, the current conference

28 rooms lack the ability to integrate with our current web and audio conferencing solution, Skype

29 for Business. This project will implement a solution to upgrade the AV components in

30 SoCalGas' conference rooms and ensure strategic integration with our backend conferencing

1 solutions. The specific details regarding this project are found in my capital workpapers (Ex.

2 SCG-26-CWP, p. 517).

3   **37.   Wide Area Network Refresh (2019)**

4   The forecast for the Wide Area Network Refresh (2019) project for 2017, 2018, and 2019

5 is $0, $0, and $2,512K, respectively. SoCalGas plans to build and place this project in-service

6 by the test year. Sempra Energy has adopted a 5-year refresh cycle for WAN routing

7 infrastructure. The existing infrastructure was installed starting in 2009 and has started to

8 become end-of-sale and end-of-support, limiting access to replacement hardware,

9 software/firmware updates, and technical assistance. The specific details regarding this project

10 are found in my capital workpapers (Ex. SCG-26-CWP, p. 522).

11   **38.   Converged Computing Infrastructure**

12   The forecast for the Converged Computing Infrastructure project for 2017, 2018, and

13 2019 is $223K, $0, and $0, respectively. SoCalGas plans to build and place this project in-

14 service by the test year. The primary driver of this project is ensure sufficient capacity for

15 upcoming business demands in Converged infrastructure. This project takes a holistic view of

16 the capacity demands and translates them into infrastructure requirements. The project also

17 plans a phased approach to build the computing capacity through the acquisition, design, and

18 implementation of components that includes servers, in-rack networking components and data

19 center improvements to accommodate the planned expansion and refresh of the aging hardware.

20 Once implemented these components are integrated to form computing capacity needed to meet

21 the demands of IT capital projects and O&M efforts. Additionally, this project will also refresh

22 obsolete hardware to improve reliability and reduce overall cost of computing capacity. It will

23 start deploying iSCSI as a storage transport, however, it will not convert the existing FCoE

24 infrastructure to iSCSI. The formal capacity planning efforts with our business stakeholders will

25 streamline hardware purchases and generate volume discounts and efficiencies. At the end of the

26 project a ll HP servers and UCS blade servers will be retired. The specific details regarding this

27 project are found in my capital workpapers (Ex. SCG-26-CWP, p. 527).

28   **39.   Pure Storage Upgrade**

29   The forecast for the Pure Storage Upgrade project for 2017, 2018, and 2019 is $6,324K,

30 $0, and $0, respectively. SoCalGas plans to build and place this project in-service by the test

31 year. The purpose of this project is to address the following needs:

1.   1.   Provide 100% replication of all data on the Pure Storage Array. This will provide
2.   assurance that SoCalGas and SDG&E will have access to all data in the event of a
3.   planned or unplanned event.
4.   2.   Migrate all existing data off the Legacy Storage Arrays (3Par, IBM SVC, EMC
5.   Spinning Disks and XtremeIO) to the Pure Storage Array.
6.   3.   Retire all Legacy Storage Arrays post migration.

7.   4.   Provide additional network monitoring capability that will allow us to
8.   troubleshoot issues from the network layer up to the application layer.

The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 532).

40.   FOF – Operational Awareness

The forecast for the FOF - Operational Awareness project for 2017, 2018, and 2019 is $0, $2,711K, and $2,899K, respectively. SoCalGas plans to build and place this project in-service by the test year. Currently, there is a gap in IT's ability to comprehensively identify, understand, and react to critical information regarding infrastructure and applications. This project will implement tools and processes to bring visibility to events and impacts in order to not only resolve outages quicker, but to proactively understand what is taking place and prevent outages before they can occur. The lack of a comprehensive system and application monitoring impairs our support teams, including the Network Operations Center (NOC), from proactively detecting and identifying system issues. The lack of this capability increases our time to identify and restore services and requires many subject matter experts from many domains to be involved with the triage process. One option to address this issue is to implement a comprehensive application monitoring solution that is capable of detecting issues and deviations as the transaction traverses the infrastructure, systems and applications along its path. Application performance management (APM) tools and processes is a crucial capability that is needed to ensure timely detection, identification, and restoration of a failed application or service and infrastructure. The specific details regarding this project are found in my capital workpapers (Ex. SCG-26-CWP, p. 549).

VI.   CONCLUSION

This concludes my prepared direct testimony.

VII.   WITNESS QUALIFICATIONS

My name is Christopher R. Olmsted. My business address is 555 W. Fifth Street, Los Angeles, CA 90013. I am employed by SoCalGas as the Director of Application Services. In this role, I am responsible for the development and maintenance of application solutions related to customer lines of business at SoCalGas.

I have been a member of the IT department since 1995. I have held several positions during my career, all of which have focused on customer applications. The majority of my time has been spent working with SoCalGas' Customer Information System (CIS). I held various roles of increasing responsibility over the years, resulting in my assignment as Manager of the CIS in 2002. In 2008 I joined the team that developed the business case for SoCalGas' Advanced Meter initiative. I assumed responsibility for the IT aspects of the project after California Public Utilities Commission approval and remained on the team until being assigned to my current role in 2012.

Prior to joining SoCalGas, I was employed as a consultant with Andersen Consulting (1989 – 1995). My main focus during this time was the development and implementation of an open standards shop floor application for the manufacturing environment. The last two years at Andersen I was as a senior consultant/manager on CIS implementations at SoCalGas and SDG&E.

I received a Bachelor of Science degree in Computer Information Systems from California Polytechnic State University at San Luis Obispo in 1989.

I have previously testified before the California Public Utilities Commission.

APPENDIX A - GLOSSARY OF TERMS

AD: Active Directory

ADFS: Active Directory Federation Services

ADMS: Advanced Distribution Management System

ADS: Adobe Document Services

AMI: Advanced Metering Infrastructure

APM: Application Performance Management

AV: Audio Visual

BI: Business Intelligence

BOBJ: Business Objects BI

BODS: Business Objects Data Services

BPM: Business Process Management

BW: Business Warehouse

CPU: Central Processing Unit

CPUC: California Public Utilities Commission

DR: Disaster Recovery

DW: Data Warehouses

ECC: Enterprise Central Component

EFC: Executive Finance Committee

EDL: Enterprise Data Layer

ETS: Environmental Tracking System

EWE: Enterprise Web Environment

FAN: Field Area Network

FASB: Financial Accounting Standards Board

FCOE: Fibre Channel over Ethernet

FHS: Field Hardware Support

FOF: Fueling Our Future

GAAP: Generally Accepted Accounting Principles

GEARS: Geographic Environmental Analysis and Reporting System

GIS: Geographic Information System

CMDB: Configuration Management Database

GRC: General Rate Case

HA: Highly Available

HANA: High-Performance Analytic Appliance

HW: Hardware

IE: Internet Explorer

IFRS: International Financial Reporting Standards

ILM: Information Lifecycle Management

CRO-A-1

IT: Information Technology

IT PMO: Information Technology Project Management Office

iSCSI: Internet Small Computer System Interface

LAN: Local Area Network

MDT: Mobile Data Terminals

MTTR: Mean-Time-to-Restore

NMS: Net Minecraft Server

NSX: Network Virtualization

NOC: Network Operations Center

O&M: Operations and Maintenance

PACER: Portable, Automated, Centralized, Electronic Retrieval

PI: Process Integration

PwC: Pricewaterhouse Coopers

RB: Rancho Bernardo

RHEL: Red Hat Linux

SAP: Systems Applications and Products

SAS: Statistical Analysis System

SBC: Session Border Controllers

SCADA: Supervisory Control and Data Acquisition

SCG: Southern California Gas Company

SCM: Source Code Management

SDDC: Software Defined Data Center

SDG&E: San Diego Gas & Electric Company

SoCalGas: Southern California Gas Company

SolMan: Solution Manager

SORT: Service Order Routing Technology

SVN: Subversion

TDM: Time Division Multiplexing

TY: Test Year

UPDM: Utility and Pipeline Data Model

VDI: Virtual Desktop Infrastructure

VM: Virtual Machine

WAN: Wide Area Network