**REVISED**

**SOCALGAS**

**DIRECT TESTIMONY OF CHRISTOPHER R. OLMSTED**

**(INFORMATION TECHNOLOGY)**

March 2015

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

Southern
California
Gas Company

A Sempra Energy utility®

Doc #295564

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# SUMMARY FOR SOUTHERN CALIFORNIA GAS INFORMATION TECHNOLOGY

| O&M | 2013 ($000) | 2016 ($000) | Change ($000) |
|---|---|---|---|
| Non-Shared | 6,941 | 7,640 | 699 |
| Shared | 11,995 | 15,984 | 3,989 |
| Total | **18,936** | **23,624** | **4,688** |

| Capital | 2014 ($000) | 2015 ($000) | 2016 ($000) |
|---|---|---|---|
| IT | 48,697 | 68,674 | 67,104 |
| Business | 55,042 | 51,242 | 37,692 |
| Total | 103,739 | 119,916 | 104,796 |

## Summary of Requests from SoGalGas IT

- 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

- Enhance and strengthen cybersecurity to ensure that ever-present security threats do not disrupt business operations and secure customer data to meet growing privacy regulations

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

- Address aging, end-of-life infrastructure, as well as provide upgrades in the information security area through capital expenditures for IT

1    **SOCALGAS DIRECT TESTIMONY OF CHRISTOPHER R. OLMSTED**

2                              **(INFORMATION TECHNOLOGY)**

3    **I.    INTRODUCTION**

4           **A.    Summary of Total IT Division Costs**

5           The IT Division is responsible for a majority of traditional technology-related services

6    and activities, including cybersecurity, for SoCalGas, San Diego Gas & Electric Company

7    ("SDG&E") and Sempra Energy Corporate Center ("Corporate Center").  These services include

8    supporting applications, hardware and software, some of which are used for risk assessment and

9    management across the company.  Our business clients rely on IT to provide support for

10   numerous areas to deliver safe and reliable service to our customers.  The areas include, but are

11   not limited to asset management, work management and measurement, fuel and power, outage

12   management, gas and electric facilities, transportation, procurement and settlement, financial

13   management , accounting, customer field operations, meter reading, customer energy

14   management, smart meter data management, routing, scheduling, dispatching, revenue cycle,

15   customer assistance and customer contact functions.  This is accomplished through the IT

16   Division's operation of company data centers that store and manage data, including those used

17   for risk assessments and development of related mitigation plans, as well as foundational

18   information security services to ensure security and privacy.  The costs for these services and

19   activities are attributed to cost centers at SoCalGas that I have described in this chapter of

20   testimony as well as to cost centers at SDG&E, which are described in the testimony of SDG&E

21   IT witness Stephen Mikovits (Ex. SDG&E-19-R).

22          Table CRO-1 below summarizes the overall costs for services and capital investments

23   provided by the IT Division.

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## TABLE CRO-1

### Test Year 2016 Summary of IT Division (SoCalGas and SDG&E) Total Costs

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| Shown in Thousands of 2013 Dollars | 2013 Adjusted-Recorded | TY2016 Estimated | Change |
| SoCalGas | 18,936 | 23,624 | 4,688 |
| SDG&E | 90,547 | 109,748 | 19,201 |
| **Total O&M** | **109,483** | **133,372** | **23,889** |

| | 2014 | 2015 | 2016 |
|---|---|---|---|
| SoCalGas | 103,739 | 119,916 | 104,796 |
| SDG&E | 94,274 | 62,084 | 35,388 |
| **Total Capital** | 198,013 | 182,000 | 140,184 |

## B. Forecast Methodology

The forecast methodology developed for IT costs is the base year (2013) recorded, plus adjustments. Using this methodology is most appropriate for numerous reasons. First, the pace of change in the technology industry continues to accelerate when compared to prior years. This is evidenced by growth in computing power at the hardware level as well as the number and diversity of applications at the software level. Factoring in emerging computing trends, such as cloud computing and the increasing commercialization of IT capabilities, directed us to use current data and adjustments rather than relying on historical averages that do not include these types of trends in our computing environment. Second, the rapidly changing security threat landscape drives our current cybersecurity risk management activities. These risks and our subsequent risk management activities did not necessarily previously exist in their current form, so they would not be fully accounted for in a historical average. Third, the evolving regulatory requirements around customer data privacy are not fully reflected in a historical average. Fourth, the level of support provided by the IT Division continues to grow as capital projects are implemented since projects that drive benefits and efficiencies within business units often create increased workload within the IT Division that would not have been reflected in our historical costs. As an example, SoCalGas has implemented a number of self-service projects in its customer interaction channels (e.g., interactive voice response ("IVR") and web channels) that allow customers to manage their own business transactions and stay informed during outages or emergencies. These projects have helped meet evolving customer interaction and service preferences and also contributed to increased self-service and paperless efficiencies as described

1    in Exhibit SCG-11, the prepared direct testimony of SoCalGas Customer Service and Office

2    Operations witness Evan Goldman.  However, these enhancements have also resulted in

3    additional functions and features that IT must support.

4         Using the base year, plus adjustments, methodology starts the IT Division at a lower

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

6    CRO-2).  Use of the base year, plus adjustments, methodology is consistent with SDG&E's

7    approach, as demonstrated in the testimony of SDG&E IT witness Stephen Mikovits (Ex.

8    SDG&E-19-R).  I have mentioned particular adjustments made in my testimony, as relevant.

9                                   **TABLE CRO-2[1]**

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

| 2013 Adjusted-Recorded | 5-Year Average | 4-Year Average | 3-Year Average |
|---|---|---|---|
| 109,483 | 111,741 | 111,578 | 111,192 |

11   **C.    Summary of SoCalGas IT Costs**

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

13   SoCalGas cost centers.  I am sponsoring the Test Year ("TY") 2016 forecasts for operations and

14   maintenance ("O&M") costs for both non-shared and shared services and capital costs for the

15   forecast years 2014, 2015, and 2016.  Table CRO-3 summarizes my SoCalGas IT sponsored

16   costs.

17                                   **TABLE CRO-3**

18                     **Test Year 2016 Summary of SoCalGas IT Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars** | 2013 Adjusted-Recorded | TY2016 Estimated | Change |
| Total Non-Shared | 6,941 | 7,640 | 699 |
| Total Shared Services (Incurred) | 11,995 | 15,984 | 3,989 |
| **Total O&M** | **18,936** | **23,624** | **4,688** |

19

| | 2014 | 2015 | 2016 |
|---|---|---|---|
| **Total Capital** | 103,739 | 119,916 | 104,796 |

20

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[1] 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.

Some of the costs shown in Table CRO-3 serve only SoCalGas, but in most cases, the costs are "shared" and thus serve SoCalGas as well as SDG&E and Corporate Center. Section II discusses non-shared costs that are incurred and activities performed solely for the benefit of SoCalGas. Section III discusses shared costs/activities that benefit SoCalGas, SDG&E and/or Corporate Center. Section IV discusses SoCalGas IT capital costs.

### D. Summary of Activities

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

- Applications – Applications support the development, implementation and maintenance of computer software utilized by customers, employees and/or vendor partners.

- Information Security – Information Security supports governance and compliance functions, corporate security policy framework, security risk management and exception tracking, project roadmap and portfolio management, and the fulfillment of statutory and regulatory requirements.

- 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).

- IT Support - this category of costs includes labor and non-labor for cost centers that are not specifically aligned with the other three IT areas described above.

### E. IT's Support of SoCalGas' Goals and Related Initiatives

As an organization that is pervasive across the company, the IT Division is involved in many of the goals and related initiatives of SoCalGas and SDG&E. I have briefly discussed the key areas where IT plays a significant role, specifically Cybersecurity and Risk Management, Customer Privacy and Customer Service Initiatives, New Technology, and Operational Efficiencies. These areas of focus are identical for SoCalGas and SDG&E.

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## 1. Cybersecurity and Risk Management

Cybersecurity in the utility business has become a significant source of attention and interest in the recent years. Publically disclosed attacks on customer information and critical infrastructure have been the focus of many discussions and proposed legislation in Sacramento and in Washington DC. Recent events, such as the Target breach[2] and the successful attack on the critical infrastructure at an unnamed utility,[3] highlight an ever increasing adversarial focus on our industry.

Illustrative examples of the types of cybersecurity risks facing the Sempra Energy Utilities ("SEu") include:

- Loss of industrial control systems, such as Supervisory Control and Data Acquisition ("SCADA");

- Malware on company computer systems;

- Release or corruption of customer information (especially Personally Identifiable Information); and

- Loss of data and/or data center computing equipment due to natural or man-made disasters.

IT operates the Information Security Program, which is designed to manage a variety of cybersecurity-related risks. The Information Security Program provides cybersecurity services to SDG&E, SoCalGas and Corporate Center and consists of Shared costs which are discussed below in Section III.D. The Information Security Program is structured into four basic areas designed to provide a holistic approach:

- <u>Governance and Compliance</u> - The Governance and Compliance functions of the Information Security Program provide security program strategy and oversight; a corporate security policy framework consisting of policies, standards, and guidelines; security risk management and exception tracking; project roadmap and portfolio management; security legislation and regulatory analysis; as well as

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[2] Target, a message from CEO Gregg Steinhafel about Target's payment card issues, December 20, 2013, available at https://corporate.target.com/discover/article/Important-Notice-Unauthorized-access-to-payment-ca (last accessed July 17, 2014).
[3] Jim Finkle, U.S. utility's control system was hacked, says Homeland Security, Reuters, May 20, 2014, available at ICS-CERT Utility Breach Report: http://www.reuters.com/article/2014/05/21/us-usa-cybercrime-infrastructure-idUSBREA4J10D20140521 (last accessed July 17, 2014).

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IT compliance associated with Sarbanes-Oxley Act Section 404 ("SOX") and North American Electric Reliability Corporation Critical Infrastructure Protection ("NERC CIP") regulations.

- Awareness and Outreach - The Information Security Program's focus on Awareness and Outreach is designed to provide security-oriented training and communication to all company employees through the use of newsletters, flyers, digital publications, town hall meetings, classroom and online training, and special events with cybersecurity experts.

- Security Engineering - The security engineering practice was established within the Information Security Program to provide security architecture, establish security controls (which are combinations of people, process, and/or technology elements that are designed to protect systems and data from harm), support the security operation capability, and consult with the business units on projects or programs implementing new technology and business systems to evaluate any risks they may pose and the controls necessary to mitigate those potential risks.

- Security Operations - Security Operations is one of the more dynamic and fast-paced functions within the Information Security Program. Security Operations focuses on the technical management of security infrastructure, such as firewalls and intrusion prevention systems, maintains process and procedure documentation, performs digital forensics and threat response, conducts vulnerability assessment and penetration testing, assesses threat intelligence information, operates enterprise access controls, performs around-the-clock security monitoring and analysis, and collaborates with government agencies and law enforcement partners on cybersecurity threat intelligence.

The Information Security Program relies on industry practices and is structured to reflect recognized security control frameworks, such as the National Institute of Standards and Technology ("NIST") 800-53 Rev. 4[4] and the SANS Institute Control Framework titled "The

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[4] National Institute of Standards and Technology and U.S. Department of Commerce, Security and Privacy Controls for Federal Information Systems and Organizations: JOINT TASK FORCE TRANSFORMATION INITIATIVE (NIST 800-53 Rev. 4), April 2013, available at http://nvlpubs.nist.gov/nistpubs/SpecialPublications/NIST.SP.800-53r4.pdf (last accessed July 3, 2014).

1  Critical Security Controls for Effective Cyber Defense" Ver. 5.[5]  These two control frameworks

2  are complimentary and enable SEu to leverage defined security frameworks to protect business

3  systems and critical infrastructure, while simultaneously maintaining regulatory compliance

4  objectives, such as those covered under the SOX regulations.

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**i.**      **Risk Management**

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6  The IT Division, and more specifically the Information Security Program, applies risk

7  management practices and processes to protect systems and data.  Specifically, the Information

8  Security Program aligns with the evolving enterprise risk management ("ERM") governance

9  processes at SoCalGas referenced in the testimony of SoCalGas Risk Management and Policy

10  witness Diana L. Day (Ex. SCG-02) to manage cybersecurity-related risks.

11  As described below, IT has tailored the evolving SoCalGas ERM governance process to

12  meet the unique and complex challenges associated with managing cyber-related risks in a

13  shared services organization.

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**ii.**      **Risk Management Framework**

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15  SEu's cybersecurity risk management framework is a straight-forward method of

16  assessment that uses ERM constructs, such as "likelihood," "severity" and "impact categories."

17  In essence, a cybersecurity risk assessment is based on several ERM factors including, but not

18  limited to, strength of controls, likelihood (or frequency) of a risk event occurring, and severity

19  (or impact) of the business consequence if the risk event occurs.  These factors are assessed

20  using a qualitative 1 to 5 scale against broad ERM categories of Financial, Operational, Safety

21  and Reputational impacts.  This cybersecurity risk management framework allows Information

22  Security to determine an overall risk rating for each of our defined cybersecurity controls.  The

23  collection of defined cybersecurity controls (i.e., the control framework) is considered when

24  attempting to determine Key Risk Indicators[6] and their application to the appropriate company

25  (e.g., SDG&E and/or SoCalGas).

26  As emphasized in the testimony of Ms. Day (Ex. SCG-02), the evolving SoCalGas ERM

27  process strives to ensure that risk management decisions are an integral part of key

28  organizational decision-making processes.  The IT Division's goal is to do the same.  For

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[5] Council on Cybersecurity, The Critical Security Controls for Effective Cyber Defense version 5, available at https://www.sans.org/media/critical-security-controls/CSC-5.pdf (last accessed July 3, 2014).
[6] Key Risk Indicators are discussed in greater detail below in Section I.E.1.iii of my testimony.

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example, the IT Division elevates the first of two types of risk – enterprise risks – to IT
management for decision making.  Illustrative examples of enterprise risks include potential
technology failures due to:

- data center environment disruptions

- destruction of computing infrastructure

- disruptions to automated system integration processes

- theft of computing infrastructure

The second type of risk – individual risks – are smaller in size, scope and/or potential
costs than enterprise risks.  Individual risks are those which typically involve only one system or
a single attack method as opposed to an enterprise risk which would result in a complete security
control failure across the corporation.  The IT Division evaluates individual risks the same way
as enterprise risks, notably they are assessed based on a combination of factors such as the nature
of the vulnerability, the likelihood (or frequency) of the vulnerability being exploited and the
business consequence (or impact) if exploitation actually occurs.

Risk mitigation generally involves the implementation of new technology, a new process,
and/or the addition of workforce labor.  Alternative risk treatments are considered by
Information Security as part of the evaluation process to determine how effective a control will
be in mitigating a particular risk.  Information Security works with the risk owner to develop
mitigation plans tailored to the particular type of risk being faced. For example, generally,
individual risks can be managed by making modifications to existing enterprise security controls.

On the other hand, enterprise risks demand additional effort to mitigate because of their
larger size, scope and/or potential cost.  For example, in some cases of an enterprise risk, such as
when new security technical controls are being considered, alternative treatments are considered
through a typical Request For Proposal ("RFP") process in order to obtain information from
potential security solution vendors about the availability, cost, implementation and ongoing
support requirements associated with a particular security product and/or service.  The RFP
process helps Information Security select a product or service that presents an effective approach
for reducing the enterprise risk under consideration.  For proposed enterprise risk treatments that
follow the business case process, the mitigation plans are incorporated into the materials used to
present IT management with a project concept document for approval.  These proposed project
concept documents are evaluated against both security and business factors to determine whether

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1    or not they will be approved.  If a proposed project concept is approved, it enters the business

2    case development phase, which is described below in Section IV.B.4 of my testimony.  A project

3    concept document template is provided attached hereto at Appendix A and a sample business

4    case template is provided in my supplemental workpapers at Exhibit SCG-18-SWP.

5           In some cases, this process also results in the identification of a control gap.[7]  Where

6    control gaps are identified, either related to a single application, system, project, or the SEu

7    enterprise, a determination is made of the risk rating that the control gap itself presents.

8           Once a risk or a control gap is identified, it is addressed by remediation, compensating

9    controls, and/or risk acceptance.  Risk acceptance decisions are tracked and reported to IT

10   management on a quarterly basis.  This tracking process was initiated in 2014.  On an

11   independent basis, the internal audit function also tracks and reports risks to the Sempra Energy

12   Audit Committee.

13                     **iii.        Key Risk Indicators**

14          The Information Security Program tracks cybersecurity risk using Key Risk Indicators

15   ("KRI's).  KRIs are meant to provide the earliest warning that a risk is exceeding a

16   predetermined threshold and may result in catastrophic consequences.  KRIs are used to measure

17   where specific cybersecurity risks may be present and provide management with the information

18   necessary to implement compensating controls, take remediation actions, or accept risk.  KRIs

19   used by the Information Security Program have several common characteristics; namely they are

20   quantifiable, serve as leading indicators, and provide consistent methods of measurement.

21          The Information Security Program primarily focuses on indicators that would provide the

22   earliest warning that a risk is exceeding a predetermined threshold and could result in

23   catastrophic consequences.  One example of a KRI is the number of cybersecurity events

24   reviewed and analyzed as compared to those that are not able to be reviewed or analyzed.

25   Another example of a relevant cybersecurity KRI is the number and severity of security events

26   per month (i.e., suspicious activities), such as a system outage or performance problem that

27   indicates a potential security breach could or has occurred.  The number of critical security

28   vulnerabilities not remediated within a set time frame is also a KRI. KRIs help provide a clear

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[7] A control gap is a deficiency or weakness in a security control that could result in a security incident.  A
simple example would be a manual process or procedure that should be followed by all personnel, but is
found to only be followed by some personnel.

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1 | picture of where problems might exist and enable management to prioritize and initiate actions to
2 | lower the risk profile.

### iv.       Monitoring Threats and Mitigation Plans

4 | Cybersecurity threat reports are most often derived from a combination of public and
5 | confidential sources.  Cyber threats, by their nature, move quickly and more often than not, they
6 | are discovered only after a security breach has occurred.  Monitoring for threats presents many
7 | challenges and heavily relies on personnel who have specialized training, demonstrated
8 | expertise, and industry specific knowledge in cyber threat analysis.  Once new threats are
9 | discovered, the focus immediately moves to establishing an adequate understanding of the threat,
10 | namely what it consist of and how it works.  As soon as those aspects are understood, an
11 | evaluation can be made by the Information Security team to determine the risk to the company,
12 | and effective mitigation plans can be devised and implemented.

13 | For each identified risk, specific mitigation plans are developed. These plans can vary in
14 | complexity and duration.  For example, a business case may need to be initiated for
15 | implementing a new technical security control, or routine maintenance may need to be performed
16 | in order to patch a vulnerable system.  For both types of mitigation plans, the risks are tracked
17 | through a risk exception process that requires multiple levels of management approval.

### 2.       Customer Privacy and Customer Service Initiatives

19 | Focus on customers, including the privacy of their data, is a key priority for SoCalGas
20 | and the IT Division needs to be funded and staffed to help meet this goal.  There is increased
21 | demand to add and enhance services for our customers while keeping their information secure,
22 | especially personally identifiable information.  IT supports these new and enhanced services and
23 | customer privacy efforts.  Discussions of specific initiatives are described in the testimony of
24 | witnesses representing SoCalGas business operations related to customer services, specifically
25 | SoCalGas Customer Service Office Operations witness Evan Goldman (Ex. SCG-11) and
26 | SoCalGas Customer Service Information witness Ann Ayres (Ex. SCG-12-R).

27 |

### 3. New Technology

The IT Division is constantly challenged by the pace of change in technology. We continuously assess these changes and their impact on prior investment decisions. Our goal is to exercise past technology investment decisions in IT assets as approved in prior General Rate Cases ("GRCs") through (and beyond) their useful life while simultaneously integrating new technologies into the asset mix. Part of the challenge we currently face is the financial treatment of these new technologies. In particular, many new technologies are treated as O&M, rather than capital costs. For example, we foresee cloud computing as a cost effective option to meet some of our computing requirements. However, the financial treatment of cloud technologies as an O&M cost typically creates additional upward pressure on annual operating costs because cloud technologies are generally not treated as assets (e.g., capital investments) within the utility industry. IT has been a good steward of its assigned funding levels, as demonstrated by 2013 costs when compared to historical averages (see Table CRO-2). We will continue to do so as we refresh our computing assets.

### 4. Operating Efficiencies

Seeking out ways to improve processes and increase productivity is an on-going effort within the IT Division. Examples of typical efficiency initiatives include workflow optimizations, reorganizations to consolidate management responsibilities, cross-training of technical staff, aggressive re-negotiation of external vendor licenses and maintenance contracts, and reductions in reimbursable employee expenses. These types of initiatives helped reduce operating costs in 2013 and are reflected in the base year costs for IT.

### F. SoCalGas IT Testimony Excludes Advanced Metering Infrastructure ("AMI")

Commission Decision ("D.") 10-04-027 authorized SoCalGas to deploy AMI to approximately 6 million customers over a period of 7 years. Based on this timing, SoCalGas will not complete AMI deployment until 2017. Accordingly, as described in Witness Rene F. Garcia's testimony (Ex. SCG-39), all SoCalGas forecasts presented in this TY2016 GRC, including the forecasts in this testimony, reflect business operations, processes and practices without AMI deployment (i.e., "business as usual"). However, it should be noted that implementation of AMI involves both costs (i.e., increases to revenue requirement) and benefits (i.e., decreases to revenue requirement). The combined result is a net revenue requirement that is then embedded in rates. Since a forecasted net revenue requirement for SoCalGas AMI over the

1   2010 through 2017 timeframe was already approved in a SoCalGas Advice Letter,[8] a net revenue

2   requirement is already embedded in SoCalGas rates.  Accordingly, if the Commission authorizes

3   operating expenses in this GRC that are materially different than those assumed in SoCalGas'

4   approved AMI net revenue requirement that is currently in rates, then the differences will need to

5   be reconciled in an updated advice letter to ensure that embedded AMI operating benefits are

6   consistent with, and no more or no less, than what is authorized in this TY2016 GRC.

7   **II.     NON-SHARED COSTS**

8        **A.     Introduction**

9        Table CRO-4 summarizes the total non-shared O&M forecasts for the listed cost

10  categories.  These costs are related to activities that are performed solely for the benefit of

11  SoCalGas.

12                          **TABLE CRO-4**

13                            **SoCalGas**

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

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars** | | | |
| **Categories of Management** | **2013 Adjusted-Recorded** | **TY2016 Estimated** | **Change** |
| A. Applications | 2,853 | 2,853 | 0 |
| B. Infrastructure | 4,047 | 4,456 | 409 |
| C. IT Support | 41 | 331 | 290 |
| **Total** | **6,941** | **7,640** | **699** |

15       **B.     Applications (Non-Shared)**

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

17       The SoCalGas Non-Shared IT Applications costs represent labor and non-labor for

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

19  supported in this area include, but are not limited to, customer field operations, routing,

20  scheduling and dispatching.  An example of a non-shared IT application cost for SoCalGas is its

21  PACER system. The PACER system is a work order management system used only by

22  SoCalGas customer service field personnel.  The PACER system schedules, routes and

23  dispatches work to SoCalGas field personnel.  The PACER tool collects specifics on work

24  performed at a customer's premise, which is recorded and returned to other SoCalGas systems

25  for status and reporting.  Providing the right information in a timely manner helps ensure that

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[8] SoCalGas Advice Letter 4110, effective April 8, 2010.

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1  SoCalGas field employees are able to perform their duties and provide customer services in a

2  safe and timely manner.

3                              **TABLE CRO-5**

4                                **SoCalGas**

5                    **Non-Shared O&M Application Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars** | | | |
| **A. Applications** | **2013 Adjusted-Recorded** | **TY2016 Estimated** | **Change** |
| 1. Applications | 2,853 | 2,853 | 0 |
| **Total** | **2,853** | **2,853** | **0** |

6          **2.     Cost Drivers**

7          It is expected that the 2013 expenditures that have been recorded in SoCalGas Non-

8  Shared IT Applications cost centers will continue through TY2016.  This will allow SoCalGas IT

9  to continue to support the business functions and features provided by systems booked to non-

10  shared cost centers that it has supported in past years.

11          **C.     Infrastructure (Non-Shared)**

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

13          The SoCalGas Non-Shared IT Infrastructure costs represent labor and non-labor for the

14  infrastructure area where 100% of the activities are for SoCalGas.  These costs are for IT-related

15  infrastructure found at or providing service to SoCalGas facilities (e.g., operating bases and the

16  contact center).  SoCalGas non-shared IT Infrastructure activities include, but are not limited to,

17  preventive maintenance, problem diagnosis and resolution, and service request processing and

18  implementation.  Examples of non-shared IT infrastructure costs for SoCalGas include, but are

19  not limited to, wired and wireless networks, field area networks and backhaul supporting

20  telemetry/ SCADA and field workforce.

21

**TABLE CRO-6**

**SoCalGas**

**Non-Shared O&M Infrastructure Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| Shown in Thousands of 2013 Dollars | | | |
| B. Infrastructure | 2013 Adjusted-Recorded | TY2016 Estimated | Change |
| 1. Infrastructure | 4,047 | 4,456 | 409 |
| **Total** | **4,047** | **4,456** | **409** |

**2.      Cost Drivers**

The increased costs proposed for SoCalGas Non-Shared IT Infrastructure are for

telecomm equipment upgrades needed at various SoCalGas facilities (e.g., foundation and guy

wire improvements to enhance tower safety) and two additional network engineering full time

equivalents ("FTEs") required to meet increased demands in connectivity and capacity (voice

and data) required across SoCalGas' service territory and related employee expenses.

**D.      IT Support (Non-Shared)**

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

The costs in SoCalGas Non-Shared IT Support cover non-labor expenses recorded by the

Vice President of IT and the labor and non-labor expenses recorded by the Construction Planning

and Design ("CPD") project support team.

**TABLE CRO-7**

**SoCalGas**

**Non-Shared O&M IT Support Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| Shown in Thousands of 2013 Dollars | | | |
| C. IT Support | 2013 Adjusted-Recorded | TY2016 Estimated | Change |
| 1. IT Support | 41 | 331 | 290 |
| **Total** | **41** | **331** | **290** |

**2.      Cost Drivers**

The "increase" in costs for SoCalGas Non-Shared IT Support is attributed to the re-

distribution of CPD costs across IT and business unit cost centers.  Through 2013, CPD O&M

costs were recorded to SoCalGas IT cost centers.  To provide better transparency to the

ownership of the costs, adjustments were made to align IT-related costs to IT cost centers and

1  align business-related costs to Gas Distribution cost centers.  In order to achieve this cost

2  realignment, historical costs through 2013 were transferred to Gas Distribution.  This resulted in

3  historical IT costs, including for base year 2013, essentially being zeroed out.  Forecasts were

4  then added back to IT cost centers that were in-line with the original plans to address IT-related

5  CPD work.  Business costs related to CPD are represented in workpapers sponsored by

6  SoCalGas Gas Distribution witness Gina Orozco-Mejia (Ex. SCG-04-WP-R).

7  **III.    SHARED COSTS**

8      **A.    Introduction**

9      IT is a shared organization that provides system-wide services for SoCalGas, SDG&E

10  and Corporate Center.  Most of the IT cost centers assigned to SoCalGas share a portion of their

11  costs with SDG&E and/or Corporate Center ("shared services").  As a result, the bulk of the cost

12  increases I am requesting on behalf of SoCalGas IT are found in this section of my testimony.  I

13  am sponsoring the forecasts on a total-incurred basis, as well as the shared services allocation

14  percentages related to those costs.  The allocation percentages are determined by cost center

15  owners based upon appropriate metrics (e.g., number of users, amount of storage, number of

16  servers) to distribute costs across companies.  Those percentages are presented in my shared

17  services workpapers, along with a description explaining the activities being allocated (Ex. SCG-

18  18-WP-R).  The dollar amounts allocated to affiliates are presented in the testimony of SDG&E

19  Shared Services and Shared Assets Billing Policies and Process witness Mark Diancin (Ex.

20  SDG&E-26-R).  Table CRO-8 summarizes the total shared O&M forecasts for the listed cost

21  categories.

22  **TABLE CRO-8**

23  **SoCalGas**

24  **Shared O&M Summary of Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars Incurred Costs (100% Level)** | | | |
| **Categories of Management** | **2013 Adjusted-Recorded** | **TY2016 Estimated** | **Change** |
| A. Applications | 6,363 | 8,258 | 1,895 |
| B. Infrastructure | 4,944 | 6,650 | 1,706 |
| C. Information Security | 628 | 788 | 160 |
| D. IT Support | 60 | 288 | 228 |
| **Total Shared Services (Incurred)** | **11,995** | **15,984** | **3,989** |

1    **B.**    **IT Applications (Shared)**

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

3        The Shared IT Application costs charged to SoCalGas cost centers represent labor and

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

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

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

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

8 management, distribution work management, transportation, procurement, settlement, financial,

9 customer energy management, revenue cycle, customer assistance and customer contact

10 functions. As an example, Sharepoint is an application that is used across the Sempra Energy

11 organization. SoCalGas payrolled employees who provide support for Sharepoint have their

12 time allocated to SoCalGas, SDG&E and Corporate Center based on an allocation methodology

13 determined to most accurately distribute costs accordingly.

14                              **TABLE CRO-9**

15                                 **SoCalGas**

16                  **Shared O&M Applications Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars** | | | |
| **A. Applications** | **2013 Adjusted-Recorded** | **TY2016 Estimated** | **Change** |
| 1. Applications | 6,363 | 8,258 | 1,895 |
| **Total** | **6,363** | **8,258** | **1,895** |

17        **2.**    **Cost Drivers**

18        Business demand for IT services continues to grow. New functions and features are

19 being requested by business units to meet safety, reliability and regulatory (e.g., customer

20 privacy) initiatives. Adoption of geographic information system ("GIS") capabilities by

21 SoCalGas business units is also increasing rapidly. In addition, the IT Applications portfolio

22 continues to grow as a result of capital project implementations on behalf of business clients.

23 The increases presented for Shared IT Applications charged to SoCalGas cost centers area are

24 seventeen additional FTEs needed to meet these increased business demands, along with related

25 employee expenses.

26

1    **C.    IT Infrastructure (Shared)**

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

3    The Shared IT Infrastructure costs charged to SoCalGas cost centers represent labor and

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

5    SoCalGas, SDG&E and Corporate Center.  The majority of these costs are labor utilized to run

6    the Monterey Park data center (i.e., servers, storage, routers) and support network activities.

7    Services include, but are not limited to, providing support for the design, deployment and

8    support of hardware and software systems relating to distributed (e.g., UNIX and Windows) and

9    enterprise (e.g., IBM Z/OS) class servers, disaster recovery, data storage systems, web-based

10   applications middleware, and services infrastructure.

11       Note the costs in Table CRO-10 only represent the shared Infrastructure costs based at

12   SoCalGas.  However, the shared Infrastructure costs are primarily based out of SDG&E and

13   charged to SDG&E cost centers.  SoCalGas is charged for the service through sharing

14   mechanisms.  See the testimony of SDG&E IT witness Stephen Mikovits (Ex. SDG&E-19-R) for

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

16   charged to SDG&E cost centers.

17                          **TABLE CRO-10**

18                             **SoCalGas**

19               **Shared O&M IT Infrastructure Costs**

| IT - INFORMATION TECHNOLOGY |  |  |  |
|---|---|---|---|
| Shown in Thousands of 2013 Dollars |  |  |  |
| B. Infrastructure | 2013 Adjusted-Recorded | TY2016 Estimated | Change |
| 1. Infrastructure | 4,944 | 6,650[9] | 1,706 |
| **Total** | **4,944** | **6,650** | **1,706** |

20       **2.    Cost Drivers**

21   As the IT Applications portfolio grows, so does the amount of support needed at the IT

22   Infrastructure level.  New systems and additional functions and features introduced by the

23   Applications teams to meet business requirements also requires additional IT infrastructure, such

24   as additional servers, storage, databases, and network connections, all of which must be

25   implemented and supported by the IT Infrastructure teams.  Eleven additional FTEs and related

---

[9] SoCalGas' request for Shared IT O&M Infrastructure Costs includes costs for supporting our mainframe environment.  At the time of the Application filing, SoCalGas is analyzing outsourcing this service to a third party.  If this occurs, SoCalGas will update the record as appropriate.

1  employee expenses are being requested to support the IT infrastructure needs required by the

2  business units.  Other drivers for Shared IT Infrastructure costs charged to SoCalGas cost centers

3  include costs for the development of a network strategy to leverage emerging technologies for

4  improved reliability and performance of our network environment.  IT Infrastructure's ability to

5  support reliability and performance of its services as required by business clients will be limited

6  without the additional resources and funding.

7      **D.      Information Security (Shared)**

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

9      The Shared Information Security costs charged to SoCalGas cost centers represent labor

10  and non-labor for activities performed that benefit SoCalGas, SDG&E and Corporate Center.

11  Shared activities performed by Information Security include but are not limited to, security

12  engineering, firewall management, intrusion prevention, identity and access management and

13  security architecture.  These activities address the cybersecurity as well as customer privacy risks

14  and privacy requirements.

15      Note the costs in Table CRO-11 only represent the shared Information Security costs

16  based at SoCalGas.  However, the shared Information Security costs are primarily based out of

17  SDG&E and charged to SDG&E cost centers.  SoCalGas is charged for the service through

18  sharing mechanisms.  See the testimony of SDG&E IT witness Stephen Mikovits (Ex. SDG&E-

19  19-R) for information about the historical costs and forecasted amounts for shared Information

20  Security costs charged to SDG&E cost centers.

21                      **TABLE CRO-11**

22                      **SoCalGas**

23              **Shared O&M Information Security Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| Shown in Thousands of 2013 Dollars | | | |
| C. Information Security | 2013 Adjusted-Recorded | TY2016 Estimated | Change |
| 1. Information Security | 628 | 788 | 160 |
| **Total** | **628** | **788** | **160** |

24          **2.      Cost Drivers**

25      The cost increases presented for Shared SoCalGas Information Security charged to

26  SoCalGas cost centers are for two additional FTEs to meet increased demand in information

27  security activities along with related employee expenses.

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1    **E.    IT Support (Shared)**

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

3    The costs for Shared IT Support charged to SoCalGas cost centers cover non-labor

4    expenses recorded by the Vice President of IT, the business planning group that supports all of

5    IT with budget planning and reporting, and the IT Associate program, which is a three-year

6    program for newly hired IT employees that provides them with rotational assignments within IT.

7                            **TABLE CRO-12**

8                              **SoCalGas**

9                    **Shared O&M IT Support Costs**

| IT - INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars** | | | |
| **C. IT Support** | **2013 Adjusted-Recorded** | **TY2016 Estimated** | **Change** |
| 1. IT Support | 60 | 288 | 228 |
| **Total** | **60** | **288** | **228** |

10        **2.    Cost Drivers**

11    The cost drivers behind the Shared IT Support charged to SoCalGas cost centers forecast

12    are labor increases to support one additional FTE in the business planning group needed to

13    support the expanding IT portfolio (e.g., professional services agreements, software license and

14    maintenance agreements) and two FTEs in the IT Associate program to be assigned to SoCalGas

15    IT groups.

16    **IV.    CAPITAL**

17        **A.    Introduction**

18    Table CRO-13 summarizes the total SoCalGas IT capital forecasts for 2014, 2015, and

19    2016. Table CRO-13 shows the full complement of IT projects being proposed by SCG in this

20    filing. In other words, Table CRO-13 is composed of both business unit-sponsored IT capital

21    projects, as well as IT Division-sponsored IT capital projects. The costs depicted in Table CRO-

22    13 below are the total costs to be incurred by the proposed capital projects and charged to

23    SoCalGas cost centers. They do not reflect adjustments that may result due to sharing of project

24    costs across SDG&E and Corporate Center, if appropriate.

25    Included in Table CRO-13 are projects sponsored by the business units that include IT

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

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

| | | |
|---|---|---|
| 1 | Customer Service - Field & Meter Reading | Franke (Ex. SCG-10) |
| 2 | Customer Service – Office Operations | Goldman (Ex. SCG-11) |
| 3 | Customer Service – Information | Ayres (Ex. SCG-12-R) |
| 4 | Engineering & ES | Stanford (Ex. SCG-13) |
| 5 | Environmental | Tracy  (Ex. SCG-17) |
| 6 | Gas Distribution | Ayala (Ex. SCG-04) |
| 7 | Supply Management | Hobbs (Ex. SCG-14-R) |

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

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

10 below in Section IV.C.

11

**TABLE CRO-13**

12

**SoCalGas**

13

**Capital Expenditures Summary of Costs**

| INFORMATION TECHNOLOGY | | | |
|---|---|---|---|
| **Shown in Thousands of 2013 Dollars** | | | |
| **Categories of Management** | **Estimated 2014** | **Estimated 2015** | **Estimated 2016** |
| A. Customer Services - Field & SoCalGas Meter Reading | 3,096 | 437 | 7,217 |
| B. Customer Services - Office Operations | 17,610 | 14,645 | 6,967 |
| D. Customer Services- Information | 4,411 | 12,717 | 2,478 |
| E. Gas Engineering | 2,231 | 4,639 | 8,893 |
| F. Environmental | 524 | 259 | 0 |
| G. Gas Distribution | 23,446 | 16,052 | 11,868 |
| H. Information Technology | 48,697 | 68,673 | 67,103 |
| J. Supply Management | 3,724 | 2,493 | 269 |
| **Total** | **103,739** | **119,915** | **104,795** |

14 Additional information about the cost assumptions for several of the capital projects is provided

15 in Appendix B of my testimony.  Information on Commission decisions that impact certain

16 capital projects and their cost assumptions is provided in Appendix D.

17

18

## B. Capital Project Approval

Before an IT capital project is funded and moves into development, it must go through the Capital Project Approval process. The Capital Project Approval process has several distinct stages, as described below.

### 1. IT Division Capital Plan Development

First, the IT Division prepares a Capital Plan, which is the sum of proposed plans of IT and business sponsored projects that utilize IT capital budget. The Capital Plan includes both ongoing projects and anticipated needs. The Plan 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 (see Appendix A for a concept document summary template) 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. All of 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, regulatory requirements, critical service maintenance needs and/or cost benefit analyses. The projects in the narrowed Capital Plan list are then prioritized by likely impact on IT capability and services. The annual capital budget allocation processes for SoCalGas is administered by the Central Business Planning group on behalf of the Executive Finance Committee ("EFC"). Details of the capital planning process are presented in the testimony of SoCalGas Rate Base witness Garry Yee (Ex. SCG-26-R).

### 4. Business Cases

Once funding is approved by the Central Business Planning group for a concept, a complete business case must be prepared and approved before work begins. Business cases are developed jointly by representative(s) from the sponsoring IT department, representative(s) from the sponsoring business department (when applicable) and a representative from the IT Project Management Office ("IT PMO"). 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.

A near final draft of the business case is provided to Information Security for review and comment. A sample business case template has been included in my supplemental workpapers (Ex. SCG-18-SWP).

### 5. Cost Sharing Mechanisms

A sharing mechanism must be determined for any project that will be utilized across SoCalGas, SDG&E and/or Corporate Center. As part of the business case development, a project team will include a recommendation of how costs will be shared for consideration during the capital approval process based on its assessment of project scope.

### C. IT-Sponsored Capital Projects

The remainder of the IT capital costs I am requesting is for SoCalGas IT-sponsored capital projects. I have listed the largest capital projects sponsored by IT below in Table CRO-14. The individual projects listed in Table CRO-14 are estimated to be in excess of $2 million dollars each and cumulatively represent approximately 70% of the projected capital planned for SoCalGas IT cost centers. I have included additional information about these projects below. Information on the remaining SoCalGas IT-sponsored capital projects can be found in my capital

1   workpapers (Ex. SCG-18-CWP).  In addition, the entire list of SoCalGas IT division-sponsored

2   capital projects is provided in Appendix C.

3   **TABLE CRO-14**

4   **SoCalGas**

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

| Shown in Thousands of 2013 Dollars | | | | |
|---|---|---|---|---|
| **Information Technology** | **Work Paper (Ex. SCG-18-CWP)** | **Estimated 2014** | **Estimated 2015** | **Estimated 2016** |
| 1.  SoCalGas Desktop Hardware Refresh | 00760B | - | - | 7,072 |
| 2.  Web Application Database Firewalls | 00770AA | - | - | 3,129 |
| 3.  Server Replacement (AIX) | 00770AE | 2,351 | 547 | - |
| 4.  Refresh Out-of-Warranty Servers | 00770AG | 4,520 | 1,794 | 695 |
| 5.  End Point Security | 00770C | 2,541 | 532 | - |
| 6.  Logging Infrastructure Refresh | 00770D | - | 2,769 | - |
| 7.  Storage Area Network Expansion | 00770R | - | - | 6,052 |
| 8.  Virtual Desktop Infrastructure ("VDI") | 00770X | - | - | 2,632 |
| 9.  Intrusion Protection System Refresh | 00770Y | - | - | 2,887 |
| 10. SoCalGas Field Area Network | 00772A | - | 17,874 | 1,429 |
| 11. System Management and Automation | 00772C | - | 2,140 | 1,003 |
| 12. Local Area Network Refresh | 00772D | 2,478 | 3,450 | 4,164 |
| 13. Converged Computing Infrastructure | 00772H | - | 16,072 | - |
| 14. Wide Area Network  Refresh | 00772P | - | - | 4,464 |
| 15. SoCalGas Private Network Expansion | 00772R | - | - | 2,148 |
| 16. Private Network Expansion | 00772W | 2,797 | 1,661 | - |
| 17. Data Center Network Rebuild | 00772X | 4,661 | - | - |

| | | | | |
|---|---|---|---|---|
| 18. Business Planning Simulation Replacement | 00776B | 1,860 | 859 | - |
| 19. Geographic Information System- Systems Applications and Products ("SAP") Integration | 00776M | - | 1,240 | 1,275 |
| 20. Financial Asset Management | 00776X | 3,179 | - | - |
| 21. SharePoint | 00778A | 2,588 | 4,463 | 2,512 |
| 22. Data Loss Prevention | 00778B | 2,184 | - | - |
| 23. Travel and Expense Mobility | 00778C | - | 2,382 | - |
| 24. Identity & Access Management, Phase 2 - 4 | 00780A | 2,678 | 1,027 | 1,067 |
| **Sub-Total** | | **31,837** | **56,811** | **40,530** |
| Remaining IT Projects (See Appendix C) | | 16,860 | 11,863 | 26,574 |
| **Total** | | **48,697** | **68,674** | **67,104** |

### 1. SoCalGas Desktop Hardware Refresh

SoCalGas laptops and desktop have a useful life cycle of five years. After five years of service they will be out of warranty and no longer fit for their intended purpose. Also, the asset will not have the technical capability to meet the business's needs, and out-of-warranty failures are expected to exceed 10% a year after five years of service. It is common for the availability of spare parts to be limited after five years, increasing the possibility that repairs may not be feasible for failed assets. Once an asset reaches its fifth year of service it should be proactively replaced to ensure the business has an asset fit for its intended purpose and to mitigate as many failures as possible to reduce the impact on production. The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00760B).

### 2. Web Application Database Firewalls

There are many web applications across multiple business units and areas of SEu. As changes and updates occur to company web applications and malicious capabilities advance, SEu may be vulnerable to attacks on critical business systems. Implementing a Web Application/Database Firewall ("WAF") will provide an added layer of protection to block and send alerts of these attacks. This project will implement new technology at the Rancho Bernardo and Monterey Park data centers to monitor for attacks from the internet. They may also be placed

1    in key locations for internal web facing applications as required.  The specific details regarding

2    this project are found in my capital workpapers (Ex, SCG-18-CWP-00770AA).

<p style="text-align:center">3    <strong>3.      Server Replacement (AIX)</strong></p>

4    The primary goal of the AIX Server Replacement project is to replace the aged IBM

5    Power frames with the new standard Cisco Unified Computing System ("UCS") servers and

6    replace the AIX 5.3 operating system with Linux.  The hosted applications will be migrated by

7    the application owners in coordination with infrastructure personnel following a formal process

8    of testing and acceptance.  This project will ensure high performance and reliability on the new

9    hardware and the new operation system, while increasing efficiencies in the deployment of the

10    hardware.  The refreshment of aging IBM Power frame hardware infrastructure with new Cisco

11    UCS hardware will help relieve crucial data center space by reducing three racks to one rack and

12    provide reduced environmental requirements (e.g., power and cooling requirements). The

13    specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-

14    00770AE).

<p style="text-align:center">15    <strong>4.      Refresh Out-of-Warranty Servers</strong></p>

16    There are in excess of 2,850 physical servers of varying ages that make up our distributed

17    environment in Rancho Bernardo and Monterey Park data centers and other distributed locations.

18    These servers are dedicated to specific purposes – Applications, Databases and Network

19    Management.

20    A significant number of these servers (1,503 servers) have reached their out-of-warranty

21    state of support from the vendor and/or end-of-life of the operating system (Windows Server

22    2003).  As a result, migration to a new server and a supported version of the Microsoft Windows

23    Operating System are required.  The scope of this project will cover the 426 out-of-warranty

24    servers and the 1,077 servers that require migration from Windows Server 2003 to a current

25    Windows Server operating system.

26    The out-of-warranty servers have reached the end of their useful technology lives and are

27    subject to hardware and operating system failure. They are covered by extended vendor support

28    at a significant additional cost of $794K over a three-year period.  By replacing these out-of-

29    warranty servers and end of operating system life for servers with new Intel based servers, this

30    refresh project will address the additional support costs of out-of-warranty hardware and mitigate

31    the risk of hardware and operating system failures.  Implementation of the new server

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environment will eliminate the extended server support costs. The project will standardize on a current Microsoft Windows Server operating system. The new servers will be virtualized, installed with a new supported operating system and optimized for simplified disaster recovery capabilities. Additional benefits include centralized server provisioning, reduced overall power consumption and reduced data center floor footprint. The specific details regarding this project are found in my capital workpapers (Ex. SCG-CWP-18-00770AG).

### 5. End Point Security

The End Point Security project will evaluate advanced anti-malware security controls for client technology to augment the current standard (Trend Micro) anti-virus solution. The controls will include both end point- and network-based solutions. The project will assess controls that function at a network level for all devices connected to the Sempra network, and at the end point for Sempra supported systems. Collectively, these solutions would be capable of supporting Bring Your Own Device ("BYOD") and third party contractors. An RFP followed by a Proof of Concept will be conducted to evaluate and compare solution capabilities. The project will implement network-based detection and prevention capabilities for advance malware. Tuning will advance over time as the standard implementation process necessary to tune the solution for optimum results improves with minimal negative impact on clients and systems. The project will implement, through a phased deployment, specific configurations of the advanced malware agent to Sempra Energy standard host computing systems. Solution, incident response, process and handling procedures training and improvements will be delivered to accommodate the advanced technology capabilities. The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00770C).

### 6. Logging Infrastructure Refresh

The Logging Infrastructure Refresh project will replace the current core security log monitoring and incident investigation infrastructure, which has reached end-of-life and end-of-support from its manufacturer. Replacement of this core infrastructure will occur at the Rancho Bernardo and Monterey Park data center facilities. This investment will compliment recent investments in logging capabilities at critical infrastructure facilities by replacing the data center core systems to enhance reliability, increase capacity, and reduce ongoing support costs. The Logging Infrastructure Refresh project will purchase new servers and software licensing to sustain current load, allow for anticipated growth, allow for long term archival of security data,

1 | reduce data retrieval times of first responders, and efficiently analyze long term trends in
2 | archived security log data.  The specific details regarding this project are found in my capital
3 | workpapers (Ex. SCG-18-CWP-00770D).

### 7. Storage Area Network ("SAN") Storage Expansion

5 | The SAN Storage Expansion Project will purchase, install, and allocate physical Storage
6 | Area Network  storage arrays (i.e.., mechanical disks, flash memory, power supplies and network
7 | interfaces) in the Rancho Bernardo and Monterey Park data centers. The storage arrays
8 | implemented by this project will increase available storage capacity by approximately 20
9 | terabytes ("TB") at each data center location.  This project implements storage capacity to be
10 | used for rapid provisioning ("on-demand") for small to medium sized operation and project
11 | needs. The increased storage capacity will also expand the volume of computer systems that can
12 | be self-provisioned by end-users and clients and delivered in a matter of hours.  The specific
13 | details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00770R).

### 8. Virtual Desktop Infrastructure

15 | The Virtual Desktop Infrastructure project will deploy an enterprise solution that will
16 | expand the existing hardware and software virtualized infrastructure.  The current Citrix XenApp
17 | is an application-only delivery platform and is becoming outgrown.  A new, more robust
18 | virtualized solution will be deployed.  The solution will provide more robust function and
19 | features (e.g., ease of use, ease of administration and scalability).  The Virtual Desktop
20 | Infrastructure project will provide a production environment to fully support day-to-day load.
21 | Additionally, a non-production environment will be deployed that will support 25% to 50% of
22 | production.  The specific details regarding this project are found in my capital workpapers (Ex.
23 | SCG-18-CWP-00770X).

### 9. Intrusion Protection System Refresh

25 | The Intrusion Projection System Refresh project will replace the Intrusion Prevention
26 | Systems ("IPS") at the Rancho Bernardo and Monterey Park data center facilities that have
27 | reached end-of-life and end-of-support from their manufacturers.  The new system will allow the
28 | company to continue protecting assets and data from malicious attempts to compromise the
29 | security of IT systems.  The specific details regarding this project are found in my capital
30 | workpapers (Ex. SCG-18-CWP-00770Y).

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## 10. SoCalGas Field Area Network

SoCalGas plans to build and place in service by TY2016 the SoCalGas Field Area Network. This is a suite of private communication infrastructures supporting field voice communication for Customer Service Field, Distribution & Transmission and Storage. It includes a Land-Mobile-Radio ("LMR") network and voice dispatch console system. The console systems are end-of-life and either already are, or will soon be, without vendor support. The dispatch system is limited to a finite number of console positions that no longer meet the needs of the business. The radio system also requires the use of other legacy network infrastructure that needs to be retired from the environment. These systems are critical to business operations, especially during emergencies, as the primary voice channel during incident management, priority work orders and emergency response. The call recording system used by dispatch is also end-of-life and incompatible with newer dispatch console systems. Communication for fixed assets in the field, including remote terminal units ("RTU") on pipelines, currently served by AT&T 3002 circuits needs to be addressed due to aged infrastructure and lack of investment by AT&T. A digital LMR and Internet Protocol ("IP")-based console system has been evaluated as the solution. The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772A). Additional information about the cost assumptions for this project is included in Appendix B.

## 11. System Management and Automation

The System Management and Automation project will provide centralized configuration management of infrastructure devices, network and server, which will allow for remote management, notification, and verification. It will create an automated provisioning environment allowing for future improvements in speed, quality, and ease of use. Additionally, The System Management and Automation project will allow for the deployment of Windows Server 2012. The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772C).

## 12. Local Area Network ("LAN") Refresh

Sempra has adopted a 5-year refresh cycle for LAN switching infrastructure. The existing infrastructure was installed between 2007 and 2009. The current LAN infrastructure is out-of-warranty and out-of-support; software updates and patches are no longer available for a large number of the devices. The availability of technical support could also become limited or

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non-existent.  The LAN project will replace 644 Ethernet LAN switches with 35,000 individual ports at more than 110 Sempra locations.  These switches support the delivery of voice-over-internet protocol ("VoIP") telephone and data to all SEu users, Substation Security, and Electric and Gas Transmission and Operations.  The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772D).

### 13.    Converged Computing Infrastructure

The requests and needs of business units are dynamic and often require computing infrastructure to be delivered quickly.  Current "just-in-time" infrastructure purchasing is not nimble enough to meet the needs of clients for small-to-medium sized projects or for organic growth of existing computing environments as data volume increases.  Existing computing systems will continue to reach vendor end-of-life and end-of-support dates and will need to be replaced or upgrade to provide reliable and available IT systems.  This Converged Computing Infrastructure project will provide on-demand and elastic computing capacity to meet business needs without the delays associated with just-in-time infrastructure purchases.  This project will increase the capacity and functionality of the computing self-provisioning portal empowering clients to fulfill their computing requests without involving the IT infrastructure department, resulting in a reduced delivery time.  Aging systems will be replaced or upgraded providing higher reliability and performance for business applications as systems reach end-of-life or end-of-support.  As aging systems are replaced or upgraded, annual maintenance costs, required data center floor space, and power consumption will all be reduced.  The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772H).  Additional information about the cost assumptions for this project is included in Appendix B.

### 14.    Wide Area Network ("WAN") Refresh

The WAN project will deploy the incremental capacity and technology upgrades required to support ongoing projects and increasing business demands for a robust, reliable and efficient WAN network.  The WAN project will include the retirement and upgrade of end-of-life WAN hardware (approximately 555 routers) and efforts to increase the efficiency of managing the network through software enhancements and technologies to remotely manage devices.  The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772P).

### 15. SoCalGas Private Network Expansion

The SoCalGas Private Network Expansion project will extend SoCalGas' microwave network to areas currently not covered and will replace end-of-life technology with new Ethernet/Hybrid radios. The private network expansion is covered in two workpaper entries; this entry requests funding in 2016. Funding requested for 2014 and 2015 can be found in the Private Network Expansion project (Ex. SCG-18-CWP-00772W). This project will help minimize lease costs to SoCalGas bases and operational centers and will enable backhaul for pipeline security and expanding pipe operations. An expansion of network protection for existing pipeline telemetry and corporate data and voice needs will also be possible as a result. The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772R).

### 16. Private Network Expansion

The Private Network Expansion project will extend SoCalGas' microwave network to areas currently not covered, and will replace end-of-life technology with new Ethernet/Hybrid radios. The private network expansion is covered in two workpaper entries; this entry requests funding for 2014 and 2015. Funding requested for 2016 can be found in the SoCalGas Private Network Expansion project (Ex. SCG-18-CWP-00772R). This project will help minimize lease costs to SCG bases and operational centers and will enable backhaul for pipeline security and expanding pipe operations. An expansion of network protection for existing pipeline telemetry and corporate data and voice needs will also be possible as a result. The specific details regarding this project are found in my capital workpapers (Ex. SCG-CWP-00772W).

### 17. Data Center Network Rebuild

Identified infrastructure has reached vendor end-of-support and/or end-of-life resulting in no access to software updates for security vulnerabilities or feature enhancements, technical support, or replacement hardware should a failure occur. Due to the age of the infrastructure, reliability is not predictable, increasing the potential for unplanned outages to critical SAP applications used by business and applications used by our customers. The Data Center Network Rebuild project will replace a selected subset of aging, end-of-support/end-of-life data center network access infrastructure to increase reliability, performance, and scalability for critical data center services. The specific details regarding this project are found in my capital workpapers (Ex. SCG-18-CWP-00772X).

## 18. Business Planning Simulation ("BPS") Replacement

The SAP BPS module was implemented in 2006 and is used primarily by 100 business planners at SCG and SDG&E. Over the last seven years, the budgeting and planning needs of the business have surpassed the functional capabilities of BPS. As a result, clients have developed workarounds (many of which are manually intensive) and/or have implemented other budget planning tools such as IBM's TM1 system. It should be noted that SAP stopped supporting BPS in March 2010. Continued use of a non-supported system exposes SEu to significant security and supportability risks.

The Business Planning and Simulation Replacement project would replace BPS with a system that provides capabilities and flexibility that can be easily driven by the business with minimal reliance on IT. It will provide budget planners with more intuitive and common front ends (web, MS Office, etc.) that will require less training and have a higher adoption rate. Capabilities should include O&M and capital budgeting, earnings plan development and forecasting of financial results. The new planning and budgeting system will provide administrative tools for central planning to easily manage access, permit status monitoring, and implement global adjustments. The new planning and budgeting system will enable process improvements, such as implementing an 18- to 24-month rolling budget. The specific details regarding this project are found in my capital workpapers (Ex. SCG-CWP-00776B).

## 19. GIS-SAP Integration

The GIS SAP Integration project will integrate SAP's Plant Maintenance module with GIS to reduce the duplication of data and improve data integrity. Leak survey footage will be maintained graphically in GIS and footage measurements will be provided to SAP for Leak Survey. Manual data uploads will be replaced with real-time integration reducing manual intervention and improving data quality. Both SAP and GIS asset data will be provided to users in the field to improve decision making while on-site, i.e., reduce duplication by displaying leaks in the path of survey for a survey crew. A graphical tool for analysis will be provided that integrates critical data from both systems, i.e., improves area planning by providing a graphical representation of the area(s) in question. The specific details regarding this project are found in my capital workpapers (Ex. SCG-CWP-00776M).

1     **20.**     **Financial Asset Management**

2     The new financial asset management system will provide application modules to

3 automate analysis and reduce the risk of human error in the current manual processes by

4 providing standard functions to maximize the tax calculations in the areas of tax repair, in-

5 service acceleration, retirement, and removal management. The new financial asset management

6 system will improve functionality for major plant accounting processes, such as analysis of rate

7 base, assets, construction work-in-progress ("CWIP"), depreciation expense and studies,

8 property and deferred tax, capital forecasting, and other supporting modules. The new financial

9 asset management system will reduce regulatory and IRS risk by providing support and detailed

10 analysis of depreciation, retirements, and tax repairs, and will reduce the amount of

11 disallowances caused by the inability to substantiate asset related tax deductions. The specific

12 details regarding this project are found in my capital workpapers (Ex. SCG-CWP-00776X).

13     **21.**     **SharePoint**

14     The SharePoint project has two phases. The first phase is to implement SharePoint 2013,

15 which offers out-of-the-box social features, including micro blogging and feeds, communities,

16 badges, reputations and more. SharePoint 2013 improvements in authentication will allow for

17 enabling external collaboration with vendors as well as a more seamless user experience for

18 participating SEu employees. In addition, SEu is seeking ways to lead the utility industry in

19 deriving business insight from data while empowering this business with increased self-service.

20 SharePoint 2013 leverages user driven business intelligence with built-in dashboard reporting

21 tools that offers both graphical and granular data information at one's fingertips. These include

22 business connectivity services that integrate multiple databases and consolidate into a single

23 presentation in SharePoint, Structured Query Language ("SQL") Reporting Services integration,

24 as well as Performance Point Services' drilldown capabilities.

25     The second phase will create an automated, efficient and effective centralized business

26 solution, which is required to ensure that the Records Management ("RM") Program meets all

27 regulatory and legal compliance policies while minimizing associated risks. This project will

28 provide the ability to oversee and ensure compliance with the records management policy

29 through automatically enforcing some of the policy requirements and/or flexible reporting

30 capabilities. The scope includes unstructured electronic data (i.e., both records and non-records).

31 This project proposes to implement a Records Management system that will leverage SharePoint

1    by using Microsoft Record Center, as well as another third party tool to fully meet Sempra

2    Records Management requirement.  The specific details regarding this project are found in my

3    capital workpapers (Ex. SCG-CWP-00778A).

### 22.  Data Loss Prevention

5    The Data Loss Prevention project will deploy discovery and prevention tools and controls

6    for employees copying and carrying sensitive information on an unencrypted storage device,

7    sending sensitive information via instant messaging service or transferring sensitive information

8    from corporate computers to home computers or BYOD systems used at work.  It will also

9    include web email containing sensitive company information to coworkers or vendors.   The

10    project will reduce the risk of unauthorized disclosure of customer data (i.e., accidental

11    disclosure); liability from breach of sensitive customer data (i.e., malicious attack); create the

12    ability to discover and report on customer and personal identifiable information ("PII") on file

13    shares, user end points and internet bound communications; and implement automated system

14    policies that monitor inbound/outbound traffic containing unencrypted customer and PII to all

15    end point devices, including BYOD. The specific details regarding this project are found in my

16    capital workpapers (Ex. SCG-CWP-00778B).

### 23.  Travel and Expense Mobility

18    Currently the submission and approval for employee expense reimbursement can only be

19    accomplished by using the functionality provided by the Travel & Expense application in the

20    SAP Portal or through the SAP Graphical User Interface ("GUI"). Many other companies,

21    including Sempra's unregulated businesses, have the ability to use mobile technologies to

22    simplify and improve the accuracy of employee requests for reimbursement.  The Travel and

23    Expense Mobility project is designed to purchase and deploy SAP's mobile solution for Travel

24    and Expense along with the required foundational components.  The specific details regarding

25    this project are found in my capital workpapers (Ex. SCG-CWP-00778C).

### 24.  Identity & Access Management, Phases 2 -4

27    The Identity & Access Management project ("IAM") will consist of the identification,

28    development, and deployment of Role Based Access Management.  The Project will establish

29    singular access controls and expand system functionality in the following areas: Automated

30    provisioning and de-provisioning of access based on employment status; identity access tracking

1   and reporting; access attestation for system, group, and employment type; and increased system

2   integrations to comply with centralized access controls.

3       By implementing Role Based Access Management, SoCalGas will maintain a singular

4   system of record for assignment, management, and tracking of access within our

5   infrastructure.  With this, there will be increased enforcement of the Access Management

6   Standard through least privilege access, separation of duties, and access reporting.

7       Integrated administration console provides a common interface for all user provisioning

8   and de-provisioning activities allowing for granular access and policy management.  Centralized

9   security console reduces the chance of unauthorized access going unnoticed.  Regulatory

10  compliance, such as NERC, FERC, HIPPA and SOX, requires SoCalGas to establish a secure

11  access control infrastructure.

12  Additional details regarding this project are found in my capital workpapers (Ex. SCG-CWP-

13  00780A).

14  **V.    CONCLUSION**

15      This concludes my revised prepared direct testimony.

## VI.    WITNESS QUALIFICATIONS

My name is Christopher R. Olmsted and I currently serve as the Director for Application Services at SoCalGas.  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.  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 – SEU IT PROJECT CONCEPT DOCUMENT TEMPLATE**

**SUMMARY PAGE**

CRO-A

# SoCalGas IT Project Concept Document Summary Page Template

| Project Name and Contacts | | | | Version | |
|---|---|---|---|---|---|
| **Project Name** | | | | | |
| **Primary Funding Source** | Choose One | | **Priority Group** | | |
| **IT / Non IT Funded** | IT | | **Business VP Organization** | | |
| **IT Director Sponsor** | | | **Business VP Sponsor** | | |
| **IT Line Manager** | | | **Business Director Sponsor** | | |
| **IT Project Manager** | | | **Business Line Manager** | | |
| **Last Updated Date** | | | **Business Project Manager** | | |

## Project Description and Details    on Continued" worksheet if additional space is required

| | |
|---|---|
| **Project Description:** Describe the business problem and the options that will be investigated to solve the problem. | |
| **Project Scope:** Provide a brief description of the project's scope. | |
| **Project SOFT Benefits:** Provide a brief description of the project's soft benefits. | |
| **Project 'Base' Estimate Assumptions:** | |
| **Project 'High' Estimate Assumptions:** | |
| **Project 'Low' Estimate Assumptions:** | |
| **Project Risks:** | |
| **Must Complete By:** Complete date & reason (If applicable) | |
| **Dependencies TO:** If this project depends on OTHER project, name other project | |
| **Dependencies FROM:** If OTHER project depends on this project, name other project | |
| **Business Implications of NOT Implementing Project:** | |

**Privacy:** Does the project involve creating, accessing (or allowing another to access), storing, sharing or disposing customer information?

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# SoCalGas IT Project Concept Document Summary Page Template

## Project Estimate and Dates Summary

| Funding - See Business Planning for Questions | | | | Loaders- (Loaders highlighted in yellow apply to Capital and O&M) | |
|---|---|---|---|---|---|
| | **Contingency** | 0.00% | | **Loader Source:** | SCG |
| **Asset Allocation** | SDGE | 0% | | **Labor Loader** | |
| | SCG | 0% | | **Non-Labor Loader** | |
| | Corp | 0% | | **Admin & General Loader** | |
| | Total | 0% | | **AFUDC** | |

### Dates and Milestones

| | | **Milestones** Significant milestones on a quarterly basis | |
|---|---|---|---|
| Business Case Start | | | |
| Business Case Completion | | | |
| Project Start | | | |
| Project In Service Date | | | |
| Project Complete | | | |

### Project Costs (Complete 2-Annual Estimate worksheet to populate Base estimate)

| | | IRR % | Less than 0% | **Loaded Estimate** (In Thousands) | | |
|---|---|---|---|---|---|---|
| Labor SDS % | 0% | | | | | **Base** |
| Non Labor SDS % | 0% | NPV $ | #REF! | **Low** | **High** | |
| **O&M** | Business Case Development O&M | | | $0 | $0 | $0 |
| | Project Incremental O&M | | | $0 | $0 | $0 |
| | Administrative & General Loader | | | $0 | $0 | $0 |
| | **SubTotal Estimate** | | | $0 | $0 | $0 |
| **Capital** | Project Capital | | | $0 | $0 | $0 |
| | Administrative & General Loader | | | $0 | $0 | $0 |
| | **SubTotal Estimate** | | | $0 | $0 | $0 |
| | AFUDC | | | $0 | $0 | $0 |
| | **SubTotal Estimate + AFUDC** | | | $0 | $0 | $0 |

### Annual Benefits and Costs (Post Project) (Complete 2-Annual Estimate worksheet to populate Base Estimate)

| | | **Loaded Estimates Including A&G** (In Thousands) | | |
|---|---|---|---|---|
| Asset Life Years | 5 | **Low** | **High** | **Base** |
| Total Benefits | | $0 | $0 | $0 |
| Total Incremental O&M | | $0 | $0 | $0 |
| Total Benefits - Total O&M | | $0 | $0 | $0 |
| Average Yearly Benefits or O&M Cost | | $0 | $0 | $0 |

# SoCalGas IT Project Concept Document Summary Page Template

| Project Scores | | |
|---|---|---|

**Operational Necessity**
*Select all that apply*

| Score | Category | Anchors |
|---|---|---|
| 0 | Mandated | Project is mandated, the proposed solution is the only viable option, and:<br>20 - Delay is a realistic option; highly unlikely or minimal penalties - and - no significant negative publicity for non-compliance or there is a less expensive solution.<br>40 - Delay is a potential option; penalties and/or negative publicity are significant but very unlikely to occur.<br>75* - Delay is not an option; substantial penalties -and/or - negative publicity for non-compliance will occur |
| | | Provide the name of the legal, regulatory, fed., state agency or internal policy (info. security, etc.) requiring this work, and any penalties that will be incurred: |
| 0 | Capacity | **\*Skip section if mandated = 75**<br>Capacity for the existing application, infrastructure or business processes:<br>10 - is at risk of not meeting significant business requirements, but we can wait 1 to 2 years before starting work<br>20 - is at risk of not meeting significant business requirements and work must start within 12 months<br>30 - is currently unable to function at business-acceptable levels |
| 0 | Reliability | **\*Skip section if mandated = 75**<br>The project is being pursued to increase application or infrastructure reliability where:<br>10 - The existing application and/or infrastructure is approaching it's end of useful life but work can start within 1 to 2 years.<br>20 - The existing application and/or infrastructure is approaching it's end of useful life and work must start within 12 months.<br>30 - The existing application and/or infrastructure has reached it's end of useful life and business processes are currently at risk |
| **1** | **Operational Necessity Score.** Note: Default Score = 1 | |

**Economic Justification.** Note: Default Score = 1

| Score | Category | Anchors | |
|---|---|---|---|
| **1** | **Economic Justification (Calculated)** | 1 - Payback > 10 years<br>20 - Payback > 6 years to <= 10 years<br>40 - Payback > 4 years to <= 6 years | 60 - Payback >= 2 years to <= 4 years<br>80 - Payback < 2 years<br>**100 - Financial penalty and/or negative publicity avoided if compliant with mandate.** |

**Business Opportunity/Value**
*Can project support/enable specific SEu Objectives:*

| Score | Category | Anchors |
|---|---|---|
| 0 | Operational Excellence for our Core Business | The project will help achieve operational excellence for our core business by:<br>20 - Leveraging technology and system re-engineering to increase efficiency and reduce costs<br>40 - Supporting the execution of major projects/initiatives (enabling major projects/programs such as OpEx, Advanced Meter)<br>60 - Creating opportunities to improve employee and/or customer safety (such as Pipeline Integrity) |
| 0 | Maximize Technology | This project or IT strategic initiative will enable us to maximize technology for SEu by:<br>20 - Creating new business growth opportunities (new products and/or services)<br>40 - Enhancing our customer experience/interactions |
| **1** | Business Opportunity/Value Score. Note: Default Score = 1 | |

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# APPENDIX B – CAPITAL PROJECTS – BASIS ASSUMPTIONS
## (SELECT PROJECTS

CRO-B

**SCG Project**

| Work Paper ID | 810B |
|---|---|
| Project Name | SCG Construction, Planning and Design (CPD) Enhancements Phase 1 |
| Version | 1 |

**Basis of Estimate**

| Component or Phase | System Deployments |
|---|---|
| Description | The Construction, Planning and Design (CPD) Enhancements Phase 1 project is a follow-on project to the OpEx CPD project. The original OpEx CPD project began in mid-2010 as the final project of the OpEx program. The CPD system is primarily comprised of SAP, ClickSoftware and Schneider Electric Graphic Work Design (GWD) integrated software as well as interfaces with several legacy systems. CPD replaces the existing construction work management system (CMS) which has reached end-of-life.<br><br>The first deployment of CPD was completed on July 29, 2013 at Inland (597 users). The scope of the CPD Enhancements Phase 1 project is to complete all remaining deployments as well as implement a number of system enhancements. The deployments in scope of this project are as follows:<br><br>  Region               Deployment Date          Number of Users<br>Pacific              March 10, 2014*            426<br>Orange             July 14, 2014*             370<br>Northern         November 10, 2014        540<br><br>*As of November 5th, all deployments have been completed as planned on the dates depicted above. |

| Labor Estimate | $1,007,000 | Basis Type | Analogous |
|---|---|---|---|
| Basis Explanation | To complete all remaining deployments, estimated that a project staff comparable in size to the original CPD implementation project would be necessary. Based on this experience with the prior deployment on July 29, 2013, it was determined that approximately 11 full-time equivalent (FTE) employees are necessary to support the deployment schedule shown above. | | |
| Non-Labor Estimate | $4,904,000 | Basis Type | Analogous |
| Basis Explanation | Based on initial OpEx CPD implementation project, estimated that on average 33 contractors (16 FTE's) are necessary for portions of their time to complete deployments as well as complete enhancements described below. Estimates were based on known contractor rates and estimated hours from two primary vendors that participated on the initial OpEx CPD project. The two primary vendors, in addition to several smaller vendors, continue to provide contractors on the CPD Enhancement Phase 1 project. | | |

| Component or | System Enhancements |
|---|---|

| Phase | |
|---|---|
| Description | The Construction, Planning and Design (CPD) Enhancements Phase 1 project is a follow-on project to the OpEx CPD project. The original OpEx CPD project began in mid-2010 as the final project of the OpEx program. The CPD system is primarily comprised of SAP, ClickSoftware and Schneider Electric Graphic Work Design (GWD) integrated software as well as interfaces with several legacy systems. CPD replaces the existing construction work management system (CMS) which has reached end-of-life.<br><br>In addition to completing remaining deployments described above, the scope of this project includes completing enhancements to improve system functionality for end-users. During the months following initial deployment in 2013, enhancements have been logged, prioritized and completed. From January 1, 2014, through June 30, 2014, 394 enhancements have been completed specifically relating to SCG as well as 80 that benefit both SCG and SDG&E. |

| Labor Estimate | $1,235,000 | Basis Type | Analogous |
|---|---|---|---|
| Basis Explanation | To complete enhancements in addition to remaining deployments discussed above, estimated that a project staff comparable in size to the original CPD implementation project would be necessary. Based on the number of employees assigned to the OpEx CPD project we estimated that approximately 14 full-time equivalent (FTE) employees are necessary to support enhancement delivery activities. Many enhancements are very complicated and require a number of individuals to define requirements, work with developers to design changes, develop solutions, test and rollout to end-users | | |

| Non-Labor Estimate | $5,059,000 | Basis Type | Analogous |
|---|---|---|---|
| Basis Explanation | Based on initial CPD implementation project, estimated that on average 33 contractors (16 FTEs) are necessary for portions of their time to complete enhancements as well as complete remaining deployments described above. Estimates were based on known contractor rates and estimated hours from two primary vendors that participated on the initial CPD project. The two primary vendors, in addition to several smaller vendors, continue to provide contractors on the CPD Enhancement Phase 1 project. Total non-labor projected for 2014 (including deployment activities described above) is $8.9 million. Year-to-date non-labor spending on both deployments and enhancements is $5.0 million. | | |

**SCG Project**

| Work Paper ID | 776A |
|---|---|
| Project Name | Click Upgrade |
| Version | 1.6 |

**Basis of Estimate**

| Component or Phase | Internal Labor for Click Upgrade | | |
|---|---|---|---|
| Description | Includes all internal labor needed to complete requirements, build upgraded system environments; finalize test readiness preparation; and perform functional, non-functional and user acceptance testing for all phases of the project. | | |
| Labor Estimate | $2,810,000 | Basis Type | Parametric / Analogous |
| Basis Explanation | The project internal labor estimate is based upon an estimated timeline and resourcing requirements provided by Click Software for the technical upgrade. The estimated timeline for the technical upgrade is 21 months including 6 months for Design, 3 months for Build, 3 months for Test, and 9 months to Deploy in an area by area rollout. Internal resources required include a business subject matter expert (SME), dispatcher 1, dispatcher 2, field representative 1, field representative 2, database administrator, representative from the CPD project, and an a subject matter expert for the OMS/DMS system. In addition to the resources identified by Click Software, the internal resource estimate includes the addition of 2 new software developers. All of these resources were planned to be internal employees with the exception of the Project Manager and IT SME who are external consultants and excluded from the internal labor estimate.<br><br>The estimated internal labor cost for the user acceptance test (UAT) was determined analogously based on previous Click Release projects at Sempra. Historically the estimated effort to complete a user acceptance test for a Click release is twelve weeks with twenty people.<br><br>The project is a three phase project, with usability and timekeeping / payroll redesign phase following the technical upgrade phase. | | |
| Non-Labor Estimate | $0 | Basis Type | None. |
| Basis Explanation | No non-labor is required for this component. | | |

| Component or Phase | Non-Labor  for Click Upgrade | | |
|---|---|---|---|
| Description | Non-Labor estimate for Click Upgrade includes vendor services, hardware, software licensing of new timekeeping software on the mobile, and employee travel expenses required to deliver the Click technical upgrade, usability, and timekeeping enhancements. | | |
| Labor Estimate | $0 | Basis Type | None |
| Basis Explanation | No internal labor is required for this component. | | |
| Non-Labor Estimate | $7,921,000 | Basis Type | Parametric / Analogous |
| Basis Explanation | The non-labor estimate includes vendor services, hardware, software, and other miscellaneous expenses.<br><br>There are five primary vendor service providers included in the non-labor estimate for the Click Upgrade effort.<br><br>The estimate software is based upon the project timeline and resourcing requirements provided by vendor for the technical upgrade. The estimated timeline for the technical upgrade is 21 months including 6 months for design, 3 months for build, 3 months for test, and 9 months to deploy in an area by area rollout.  Required resources includes a project manager, business analyst, solution architect, senior technical consultant, quality assurance personnel, logistics, and ICE India.<br><br>SCG engaged a consulting company to conduct a design assessment and produce a detailed findings report.<br><br>The SCG project manager and the SCG IT subject matter expert are both consultants. These two resources are required through the duration of all three phases of the project and are estimated based on their actual billing rate and an average of 155 hours per month for the duration of the project.<br><br>The vendor services estimate also includes professional testing services.  The initial estimate of $570,000 was based on professional judgment.  A subsequent estimate was obtained from a vendor but for $520,000.<br><br>The Hardware estimate is based on configuration information provided by the selected vendor.  The vendor recommended a 1-to-1 replacement of existing servers. The current production hardware environment has 40 application servers and 2 database servers.<br><br>The estimated application server costs are based on recent server purchase: 40 X $15,000 plus tax (46,500) and shipping (300) for a total of $646,800<br><br>The estimated database server costs are based on recent data base server purchases: 2 X $25,000 plus tax (3,875) and shipping (500) for a total of $54,375<br><br>Total Hardware Estimate is $701,175.<br><br>The estimated software estimates are based on configuration information provided by | | |

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| | the selected vendors. |
|---|---|
| | License fees are estimated to be $588,326 based on recent purchases and the estimated number of cores for the database. |
| | Total estimated software costs are $839,000 |
| | Miscellaneous costs of $6,000 have been included to cover travel and local mileage. |

Appendix B
Capital Projects - Basis Assumptions

**SCG Project**

| Work Paper ID | 772A |
|---|---|
| Project Name | SCG Field Area Network |
| Version | 1.1 |

**Basis of Estimate**

| Component or Phase | Field  Radio Communication Hardware and Construction Services | | |
|---|---|---|---|
| Description | Field radio communication hardware includes microwave radios, switches, routers, antennas, cabling, power, and ancillary hardware elements.  Radio hardware is required for a total of 37 sites and 3,400 mobile radio units.<br><br>Construction services include the retrofit of 26 existing communication sites and the construction of 11 new sites. The construction estimates includes labor and services required to permit, design, construct, install and test the 37 sites. | | |
| Labor Estimate | $1,498,500 | Basis Type | Analogous |
| Basis Explanation | Based on our previous experience constructing similar microwave and field area network communication systems  (SGCS, SCADA, Private Network Expansion), we estimated the following internal labor requirements:<br><br>• One  Network  Engineer, one Radio Frequency Engineer and one Information Security Engineer to support requirements, design, staging & product test and construction over the period of 24 months (11,100  labor hours).<br>• Six Network Operation Engineers to support production cutover over the period of 12 months (11,470 labor hours).<br>• Two management resources supporting project management, supply chain and project closeout over the period of 24 months (7,400 labor hours). | | |
| Non-Labor Estimate | $11,028,066 | Basis Type | Quote / Analogous |
| Basis Explanation | Hardware estimates are based on vendor discussions and quotes, as well as past experience with similar construction projects.  Specific elements of cost include:<br><br>• Radio, antennas, cabling and power supplies are based on vendor quotes ($6.1MM);<br>• Network routers, switches and microwave radios are based on recent purchases of similar equipment ($1M).  Quantity details provided on attached spreadsheet.<br>• The radio and telephone interoperability feature cost estimates were provided by vendor during meeting April 18,2014 ($925K);<br>• Sales tax at 9% ($724K), shipping and handling at 5% ($402K), and warehousing costs at $67K/month ($402K) were added to vendor quotes;<br>• Radio spectrum cost at $9.7K for 25 additional channels ($242K).<br>• Construction costs ($1.2M) to cover any additional jurisdictional needs and structural modification on 26 retrofit ($19K/site), 11 new sites ($65K/site) | | |

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| | |
|---|---|
| | based on the similar project under SGCS program. |

| | |
|---|---|
| Component or Phase | Dispatch Voice Communication System Hardware and Installation Services |
| Description | Includes procurement and installation of the scout console packages, 19" LCD touch screens, headsets, desk microphone, gateway nodes and endpoints. Console packages covers 131 dispatch positions. |

| Labor Estimate | $1,506,500 | Basis Type | Analogous |
|---|---|---|---|
| Basis Explanation | Based on our previous experience of constructing similar microwave and field area network systems (SGCS, SCADA, Private Network Expansion), we estimated the following internal labor requirements.<br><br>• One  Network Engineer, one Radio Frequency Engineer, one Information Security Engineer, one Customer Services Engineer to support requirements, design, staging & product test and construction over the period of 24 Months. (14,410  labor hours)<br>• Four Network Operation Engineers to support production cutover over the period of 12 months.  (14,410 labor hours)<br>• Two management resources supporting project management, supply chain and project closeout over the period of 24 months.  (1,310 labor hours) | | |
| Non-Labor Estimate | $4,779,770 | Basis Type | Quote |
| Basis Explanation | Hardware estimates are based on vendor discussions and quotes, as well as past experience with similar construction projects.  Specific elements of cost include:<br><br>• Console packages, 19" LCD touch screens, headsets, desk microphone, gateway nodes and endpoints ($3.6M);<br>• Sales tax at 9% ($328K), shipping and handling at 5% ($182K), warehousing costs at $31K/month ($182K); and<br>• Custom configuration at $3.3K per dispatch position ($437K). | | |

**SCG Project**

| Work Paper ID | 774L |
|---|---|
| Project Name | My Account Tech Refresh |
| Version | 1.1 |

**Basis of Estimate**

| Component or Phase | Hardware | | |
|---|---|---|---|
| Description | Implementation of nine brand new technical environments for supporting software development, integration and testing activities. Specific hardware components included are multiple application servers, Oracle RAC databases and storage. Cost estimates based on input from Information Technology (IT) Infrastructure support team's and software development vendor partner selected via formal "Request for Proposal (RFP)" process. | | |
| Labor Estimate | $0 | Basis Type | None |
| Basis Explanation | No internal labor is required for this component. | | |
| Non-Labor Estimate | $837,000 | Basis Type | Parametric |
| Basis Explanation | • Based on technology refresh roadmap preparation and detailed architectural and planning activates.<br>• Experience on My Account End-to-End Environments. | | |

| Component or Phase | Software | | |
|---|---|---|---|
| Description | Software licenses cost covering Oracle WebCenter Suite, Oracle eBilling Suite, Oracle databases, Red Hat Linux Enterprise.  These software licenses are required implement software development infrastructure and run time environments. | | |
| Labor Estimate | $0 | Basis Type | None |
| Basis Explanation | No labor required for this component | | |
| Non-Labor Estimate | $1,400,000 | Basis Type | Parametric |
| Basis Explanation | • Software license | | |

| Component or Phase | Software Architecture and Development | | |
|---|---|---|---|
| Description | Includes all labor and vendor services required for architecting, designing and developing application software and project management of such efforts/activities. | | |
| Labor Estimate | $2,712,000 | Basis Type | Parametric /Analogous |

| Basis Explanation | • Labor allocation and costs based on detailed analysis of business requirements, software development estimates (Release 1 RICEFS, software development Sprints)<br>• Prior experience with similar software development projects such as My Account Usability and Accessibility (MAAUI), eServices Phase 6 and 7, My Account End-to-End Environments<br>• Input from vendor partner selected via a formal RFP process. | | |
|---|---|---|---|
| Non-Labor Estimate | $6,848,882 | Basis Type | Parametric /Analogous |
| Basis Explanation | • These non-labor costs include vendor partners software architects, developers and project management personnel<br>• Estimated developed based on formal RFP process and resulting bids and estimates<br>• Prior experience with similar software development projects such as My Account Usability and Accessibility (MAAUI), eServices Phase 6 and 7 and My Account End-to-End Environments | | |

| Component or Phase | Testing | | |
|---|---|---|---|
| Description | Includes all labor and services required for project testing phase | | |
| Labor Estimate | $489,000 | Basis Type | Analogous |
| Basis Explanation | • Labor allocation and costs based on detailed analysis of business requirements, software development estimates (Release 1 RICEFS, software development Sprints)<br>• Prior experience with similar software development projects such as My Account Usability and Accessibility (MAAUI) and eServices Phase 6 and 7<br>• Input from vendor partner selected via a formal RFP process. | | |
| Non-Labor Estimate | $1,200,000 | Basis Type | Contract |
| Basis Explanation | Vendor statements of work (SoW) | | |

**SCG Project**

| Work Paper ID | 772H |
|---|---|
| Project Name | SE Converged Computing Infrastructure |
| Version | 1.1 |

**Basis of Estimate**

| Component or Phase | Hardware: servers, networks, storage and backups and installations. | | | |
|---|---|---|---|---|
| Description | Building of the converged computing infrastructure in 2015 and 2016 through acquisition and installations of servers, network equipment and storage in both Rancho Bernardo and Monterey Park data centers. Infrastructure provides additional compute capacity to meet the expected needs for small-to-medium sized projects, requests, and refresh of existing computing systems. | | | |
| Labor Estimate | $62,000 | Basis Type | | Analogous |
| Basis Explanation | Based on experience developed through execution of similar infrastructure projects performing weekly one hour oversight touch point meetings. Internal labor estimate of $62,000 is primarily for weekly oversight and status review functions.  A project manager, project coordinator, infrastructure architect, and technical lead will each expend, on average, four hours a week for the duration of the project in order to oversee vendor contract performance. | | | |
| Non-Labor Estimate | $12,501,816 | Basis Type | | Quotes |
| Basis Explanation | Hardware estimate is prepared for Rancho Bernardo and Monterey Park data centers based on the current size and age and condition of the equipment. Hardware is divided into four categories: 1) server and network equipment, 2) Storage, 3) backup and 4) installations – electrical, cables and racks. The table below summarizes the hardware assumptions: | | | |

| Hardware | Quantity | Unit Cost | Extended Cost | Reference Based on similar equipment and installation work |
|---|---|---|---|---|
| Server racks & Network equipment - Each rack is made up of 32 high capacity servers and all of the required network equipment. | 12 racks | $415,911 | $4,978,932 | Vendor Quote |
| Storage equipment – expansion of existing controllers and additional storage capacity. | 3,000 Terabytes | $1,915.58 | $5,746,761 | Vendor Quote |
| Enterprise backup equipment – additional controllers | 520 Terabytes | $2,527.16 | $1,314,123 | Vendor Quote |

|  | and switches. |  |  |  |  |
|---|---|---|---|---|---|
|  | Electrical and cable, racks and installations | 12 Installations | $38,500 | $462,000 | Vendor Quote |
|  | Totals |  |  | **$12,501,816** |  |

| Component or Phase | Design and implementation of converged computing infrastructure. |
|---|---|
| Description | The assumption calls for extensive use of external labor in the design and implementation of the hardware. The work is completed through seven step lifecycle. The steps include 1) Discovery, 2) Requirements, 3) Design, 4) Installations, 5) Testing, 6) Cutover and 7) Decommissions. |

| Labor Estimate | $0 | Basis Type | None |
|---|---|---|---|

| Basis Explanation | The assumption calls for extensive use of external labor in the design and implementation of the hardware. |
|---|---|

| Non-Labor Estimate | $3,489,560 | Basis Type | Analogous |
|---|---|---|---|

| Basis Explanation | Estimate is based on a statement of work from a similar project, being planned. |
|---|---|

**APPENDIX C – IT DIVISION-SPONSORED IT CAPITAL PROJECTS FOR SCG**

CRO-C

| **Shown in Thousands of 2013 Dollars** | | | | |
|---|---|---|---|---|
| **Information Technology** | **Work paper (SCG - 18 - CWP)** | **Estimated 2014** | **Estimated 2015** | **Estimated 2016** |
| SCG Desktop Hardware Refresh | 760B | - | - | 7,072 |
| Web Application Database Firewalls & Security Testing Platform | 770AA | - | - | 3,129 |
| SERVER REPLACEMENT-AIX RETIREMENT | 770AE | 2,351 | 547 | - |
| ROWS Refresh Out of Warranty Servers. | 770AG | 4,520 | 1,794 | 695 |
| End Point Security | 770C | 2,541 | 532 | - |
| Logging Infrastructure Refresh | 770D | - | 2,769 | - |
| SE SAN Storage Expansion | 770R | - | - | 6,052 |
| SE 2016 VMware View Virtual Desktop Infrastructure | 770X | - | - | 2,632 |
| IPS Refresh | 770Y | - | - | 2,887 |
| SCG Field Area Network | 772A | - | 17,874 | 1,429 |
| SE System Management and Automation | 772C | - | 2,140 | 1,003 |
| SE Local Area Network Refresh | 772D | 2,478 | 3,450 | 4,164 |
| SE Converged Computing Infrastructure | 772H | - | 16,072 | - |
| SE Wide Area Network Refresh | 772P | - | - | 4,464 |
| SCG Private Network Expansion | 772R | - | - | 2,148 |
| PRIVATE NETWORK EXPANSION AND REFRSH | 772W | 2,797 | 1,661 | - |
| Data Center Network Rebuild | 772X | 4,661 | - | - |
| Business Planning Simulation (BPS) Replacement Project | 776B | 1,860 | 859 | - |
| GIS SAP Integration | 776M | - | 1,240 | 1,275 |
| FINANCIAL ASSET MGMT (FAM) | 776X | 3,179 | - | - |
| SharePoint 2013 & Records Management | 778A | 2,588 | 4,464 | 2,513 |
| Data Loss Prevention | 778B | 2,184 | - | - |
| Travel and Expense Mobility | 778C | - | 2,382 | - |
| Identity & Access Management, Phase 2 - 4 | 780A | 2,678 | 1,027 | 1,067 |
| SAP SUPER USER PROVISIONING | 751A | 17 | - | - |
| 2016 GRC Results of Op Model | 756C | 162 | - | - |
| ITSM Tool Optimization | 760A | 689 | 477 | - |
| SE 2015 Mainframe Expansion | 760C | - | - | 1,818 |
| eGRC Infrastructure Refresh | 760D | - | - | 1,990 |
| Forensics Lab Infrastructure Refresh | 760E | - | - | 1,822 |
| Data Center Network Core | 760F | 1,133 | - | - |
| SCG 2014 Active Directory Refresh | 762A | - | 865 | - |
| SCG WAN REBUILD PH IV | 762B | 778 | - | - |
| SE Network Attached Storage (NAS) Replacement | 762C | 1,148 | - | - |
| SEu Wireless/Sempra Virtual Office Upgrade and Expansion | 762D | 662 | - | - |
| CIS Frontend Architecture Optimization | 764I | - | - | 1,544 |
| SAP ECC and BI Archiving | 768A | 802 | - | - |
| Business Objects Upgrade | 768B | - | 648 | - |
| Microsoft Business Intelligence (BI) Enterprise Platform | 768C | - | - | 461 |
| SEu Web-Audio Conferencing and Instant Messaging Refresh | 770A | 264 | 1,089 | - |
| WINDOWS 7 PLATFORM REPLACEMENT (W7U) | 770AB | 1,409 | - | - |
| ENTERPRISE MESSAGING INFRASTRUCTURE | 770AC | 978 | - | - |
| EDIX Enhancement - Phase 2 | 770AD | 397 | 123 | - |
| Enterprise Voice System Refresh | 770AF | 214 | - | - |
| Seu Call Recording Replacement | 770AH | 786 | - | - |
| Backup Services Enhacement | 770AI | 849 | - | - |
| Mobile Device Management Infrastructure | 770B | 1,023 | 87 | - |
| Gas SCADA Perimeter Refresh | 770E | 829 | - | - |
| Information Security - Infrastructre Reliability | 770F | 350 | 350 | 350 |
| SEu Enterprise Call Recording Refresh | 770H | 341 | - | - |

| **Shown in Thousands of 2013 Dollars** | | | | |
|---|---|---|---|---|
| **Information Technology** | **Work paper (SCG - 18 - CWP)** | **Estimated 2014** | **Estimated 2015** | **Estimated 2016** |
| Web Application Firewall | 770K | - | - | 1,511 |
| Enterprise Risk and Compliance (eGRC) Archer expansion | 770L | - | - | 659 |
| Enterprise Social Computing | 770M | - | - | 590 |
| ITCS - App-V and UE-V | 770N | - | 608 | 1,296 |
| SCG Video-enabled Collaboration Room Upgrade | 770O | - | 394 | - |
| SEu TelePresence Upgrade | 770P | - | 1,097 | - |
| SCG Infrastructure Rooms (Compton Headquarter | 770Q | - | - | 117 |
| SE 2015 VMware View Virtual Desktop Infrastructure | 770S | - | 1,514 | 186 |
| SCG Infrastructure Rooms (Anaheim IDF/Server Room) | 770T | - | 81 | - |
| SE Infrastructure Enabling Services (DNS, DHCP, NTP) | 770U | - | - | 806 |
| SE SCOM 2012 Upgrade | 770V | - | - | 571 |
| Source Code Security | 770Z | - | - | 909 |
| SCG 2014 CI Small Cap Project | 772B | 500 | 500 | 500 |
| SE Enterprise Application Messaging and Caching Platform | 772E | - | 675 | - |
| SCG GAS SCADA Convert | 772G | - | - | 1,499 |
| SE Backup Systems | 772I | - | - | 702 |
| SCG Communications Shelte | 772J | - | 244 | - |
| SE EWE Self Service Web provision/deployment | 772K | - | - | 236 |
| SCG Communications Shelter | 772M | - | 383 | - |
| SE Backup Systems | 772N | - | - | 356 |
| 2016 SCG Communication Shelter | 772O | - | - | 821 |
| SCG Communication Shelter (Box Springs) | 772Q | 145 | 193 | - |
| SCG Communication Shelters (Double Mountain) | 772S | 145 | 232 | - |
| SE Remote Access Services (VPN) Refresh | 772T | - | - | 797 |
| SCG BATTERY REPLACEMENT REENGINEER PROJE | 772U | 149 | - | - |
| CORE NETWORK DESIGN | 772V | 536 | - | - |
| TELECOMMUNICATIONS EXPENSE MANAGEMENT | 773A | 693 | - | - |
| In House EDI X12 Services | 774F | - | 456 | 108 |
| SAP Business Warehouse 7.3 Upgrade | 776J | - | 497 | - |
| Employee Care Services iVOS Claims System  AON eSolutions | 776L | - | - | 1,754 |
| DESIGN ENGINEERING SW Replacement | 776U | 1,089 | 158 | - |
| Small Cap Requests (Banctec) | 777B | - | 132 | - |
| Identity & Access Management Infrastructure Refresh | 780B | - | - | 1,727 |
| PT81451 Mandiant Expansion | 780C | 453 | - | - |
| SE Application Platform Technology Refresh | 782A | - | 609 | 984 |
| Enterprise BI Analytics and Dashboards - 2014 | 788A | 319 | 451 | - |
| Enterprise BI Analytics and Dashboards - 2015 | 788B | - | - | 769 |
| Enterprise Analytics System (EAS) Phase II | 788C | - | - | 452 |
| Enterprise Analytics System (EAS) Phase III | 788D | - | - | 470 |
| Enterprise BI Analytics and Dashboards | 788E | - | - | 769 |
| **Grand Total** | | **48,697** | **68,674** | **67,104** |

# APPENDIX D – STATUTES AND COMMISSION DECISIONS RELEVANT TO BUSINESS JUSTIFICATIONS FOR CAPITAL PROJECTS

| Workpaper | Project Name | Areas where GIS data is use as a supporting tool. | Statute or Commission Decision/Order | Link |
|---|---|---|---|---|
| 0776AA | SCG GIS Gas Enhancements[1] | The required periodic reports from a GO/CFR that we file routinely using GIS data. | ○ *49 CFR §191.11 - Distribution system: Annual report.*<br>　■ (a) General. Except as provided in paragraph (b) of this section, each operator of a distribution pipeline system must submit an annual report for that system on DOT Form PHMSA F 7100.1-1. This report must be submitted each year, not later than March 15, for the preceding calendar year.<br><br>○ G.O. 112E Section 123.1 Annual Reports<br>　■ Each operator shall submit to the DOT, with a copy to the CPUC, annual reports required by sections 191.11 and 191.17 of 49 CFR Part 191. Such reports shall be submitted in the manner prescribed in 49 CFR Part 191. | http://www.ecfr.gov/cgi-bin/text-idx?SID=92c40638b2371d1c9db862d57305d3d1&node=pt49.3.191&rgn=div5<br><br>http://docs.cpuc.ca.gov/PUBLISHED/GENERAL_ORDER/126869.htm |
| | | Special assessment procedures (DIMP) for which we use GIS data | **Subpart P:  Distribution Integrity Management Program (DIMP)**<br><br>49 CFR §192.1007: What are the required elements of an integrity management<br>　■ (e) Measure performance, monitor results, and evaluate effectiveness.<br>　　(1) Develop and monitor performance measures from | http://www.ecfr.gov/cgi-bin/text-idx?SID=92c40638b2371d1c9db862d57305d3d1&node=pt49.3.192&rgn=div5#sp49.3.192.p |

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[1] The table above identifies several of the citations for a few of the periodic regulatory reports and filings that must be submitted by SoCalGas and are relevant to the GIS Gas Enhancement project. Many of those reports require geographical or schematic mapping information as well as specific information on gas facilities. The GIS system acts not only as a facilities mapping system, but also as an asset management repository in which the data necessary to complete those reports is maintained. This data not only serves for the fulfillment of reporting requirements, but also for the daily operations, inspection, condition evaluation, asset health, maintenance and emergency response management for the SoCalGas system.

| | | | an established baseline to evaluate the effectiveness of its IM program. An operator must consider the results of its performance monitoring in periodically re-evaluating the threats and risks. These performance measures must include the following:<br><br>    (i) Number of hazardous leaks either eliminated or repaired as required by § 192.703(c) of this subchapter (or total number of leaks if all leaks are repaired when found), categorized by cause;<br><br>    (iv) Total number of leaks either eliminated or repaired, categorized by cause;<br><br>    (v) Number of hazardous leaks either eliminated or repaired as required by § 192.703(c) (or total number of leaks if all leaks are repaired when found), categorized by material; and<br><br>    (vi) Any additional measures the operator determines are needed to evaluate the effectiveness of the operator's IM program in controlling each identified threat.<br><br>Subsection (g) **Report results.** Report, on an annual basis, the four measures listed in paragraphs (e)(1)(i) through (e)(1)(iv) of this section, as part of the annual report required by § 191.11. An operator also must report the four measures to the state pipeline safety authority if a state exercises jurisdiction over the operator's pipeline. | |
| | | Routine surveys, inspections, and/or information where the resultant data is incorporated into the GIS datasets | o  *49 CFR §192.491  Corrosion control records.*<br>   ▪ (a) Each operator shall maintain records or maps to show the location of cathodically protected piping, cathodic protection facilities, galvanic anodes, and | http://www.ecfr.gov/cgi-bin/text-idx?SID=9f28be74bb16185d88f87fd0da6f4fcb&node=se49.3.192_1491&rgn=div8 |

| | | | | |
|---|---|---|---|---|
| | | | neighboring structures bonded to the cathodic protection system.  Records or maps showing a stated number of anodes, installed in a stated manner or spacing, need not show specific distances to each buried anode.<br>▪ (c)  Each operator shall maintain a record of each test, survey, or inspection required by this subpart in sufficient detail to demonstrate the adequacy of corrosion control measures or that a corrosive condition does not exist.  These records must be retained for at least 5 years, except that records related to §§192.465(a) and (e) and 192.475(b) must be retained for as long as the pipeline remains in service. | |
| | | Emergency Response requirements of the GO/CFR/PHMSA for which we utilize GIS systems and data | ***49 CFR §192.615   Emergency plans.***<br><br>(a) Each operator shall establish written procedures to minimize the hazard resulting from a gas pipeline emergency. At a minimum, the procedures must provide for the following:<br><br> (4) The availability of personnel, equipment, tools, and materials, as needed at the scene of an emergency.<br><br>(6) Emergency shutdown and pressure reduction in any section of the operator's pipeline system necessary to minimize hazards to life or property.<br><br>(9) Safely restoring any service outage. | http://www.ecfr.gov/cgi-bin/text-idx?SID=92c40638b2371d1c9db862d57305d3d1&node=pt49.3.192&rgn=div5#se49.3.192_1615 |

| Workpaper | Project Name | CPUC Ruling | Relevant Language |
|---|---|---|---|
| 0754A | Third Party Data Request | D.14-05-016<br>http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M090/K845/90845985.PDF | OPs 2-13, which establish the Data Request and Release Process (OP 8), the Energy Data Access Committee (OP 10), and memorandum account treatment with cost recovery through the GRC (OP 13). |
| 0770AH | SEu Call Recording Replacement | D.98-03-073 at Attachment B (Remedial Measure #14)<br>http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/66766.PDF<br>http://docs.cpuc.ca.gov/PublishedDocs/WORD_PDF/FINAL_DECISION/132884.PDF | "The SoCalGas Gas Select EBB shall be the primary means of communication between Gas Operations and any shipper on the SoCalGas system, including Gas Acquisition. Telephonic and facsimile communications between Gas Operations and any shipper on the SoCalGas system, including Gas Acquisition, shall be limited to the status and administration of that shipper's transportation and storage capacity, volumes, and, if relevant, expected gas usage. Telephonic communications shall be tape recorded. In addition, SoCalGas shall permit a representative of the CPUC and/or the California Power Exchange to audit or monitor the application of the procedures and protocols being used to operate the system and respond to the service requests of all system users." (Remedial Measure 14.) |

# APPENDIX E – GLOSSARY OF TERMS

The following list includes all abbreviations and terms used in my testimony and/or work papers.

| Term | Acronym | Description |
|---|---|---|
| Advanced Metering Infrastructure | AMI | Project that is adding automated reading device to installed gas meters. |
| AIX | --- | IBM's Unix-based operating system, which runs on its midrange computers and mainframes. |
| Bring your Own Device | BYOD | Refers to the policy of permitting employees to bring personally owned mobile devices (laptops, tablets, and smart phones) to the workplace, and to use those devices to access privileged company information and applications |
| Business Planning and Simulation | BPS | SAP module utilized for budgeting and planning purposes. |
| Cloud Computing | --- | System architecture that uses shared infrastructure (a "cloud") to support multiple software applications. Traditionally, high-performance IT applications used dedicated, single-purpose computing infrastructure – e.g., dedicated servers and storage for that single application. A computing cloud can be external (sold by a service provider) or internal (hosted by the end-use company). |
| Construction Planning and Design | CPD | Project that integrates planning, sketching, supply management, accounting and project costing for large construction projects. |
| Construction Work In Progress | CWIP | Long term asset account that accumulates the cost of a project that has not yet been placed into service. |
| Enterprise Risk Management | ERM | An evolving approach at SoCalGas that includes a comprehensive risk management policy and guidelines, with defined, substantive roles and responsibilities established throughout the organization and transparent repeatable processes to support assessment of key risks. |
| Executive Finance Committee | EFC | Committee comprised of senior management leadership that is responsible for financial decisions at SoCalGas. |
| Full Time Equivalents | FTE | A unit that indicates the workload of an employed person in a way that makes workloads comparable across various contexts. |
| Geographic Information System | GIS | Computer system designed to capture, store, manipulate, analyze, manage, and present all types of geographical data. |
| Graphical User Interface | GUI | A human-computer interface (i.e., a way for humans to interact with computers) that uses windows, icons and menus. |
| Identity and Access Management | IAM | Initiative to improve the way people and systems gain access to online systems and data. Both people and digital systems need to connect with production data systems, and the Identity and Access Management initiative seeks to improve both security and efficiency of those connections. |

| Information Technology Program Management Office | IT PMO | IT department that is responsible for delivery of IT projects. The department is comprised of project managers and specialists that are involved with project governance, concept document and business case development, project delivery and budget and status reporting. |
|---|---|---|
| Interactive Voice Response | IVR | Technology that allows a computer to interact with humans through the use of voice and tones input via keypad. |
| Internet Protocol | IP | The principal communications protocol in the Internet protocol suite for relaying datagrams across network boundaries. |
| Intrusion Prevention System | IPS | Network security appliances that monitor network and/or system activities for malicious activity. The main functions of intrusion prevention systems are to identify malicious activity, log information about this activity, attempt to block/stop it, and report it |
| Key Risk Indicators | KRI | Used to measure where specific cybersecurity risks may be present and provide management with the information necessary to implement compensating controls, take remediation actions, or accept risk. |
| Land Mobile Radio | LMR | Wireless communications system intended for use by users in vehicles (mobiles) or on foot (portables). |
| Linux | --- | Unix-like computer operating system assembled under the model of free and open source software development and distribution. |
| Local Area Network | LAN | A type of network network that interconnects computers within a limited area. |
| North American Electric Reliability Corporation Critical Infrastructure Protection | NERC CIP | Committee formed to help NERC advance the physical security and cybersecurity of the critical electricity infrastructure of North America. |
| Operating System | OS | Software that manages computer hardware resources and provides common services for other computer programs. The operating system is an essential component of the system software in a computer system. |
| Personal Identification Information | PII | Information that can be used on its own or with other information to identify, contact, or locate a single person, or to identify an individual in context. |
| Records Management | RM | Professional practice or discipline of controlling and governing what are considered to be the most important records of an organization throughout the records life-cycle, which includes from the time such records are conceived through to their eventual disposal. |
| Remote Terminal Units | RTUs | Electronic device that interfaces objects in the physical world to a distributed control system or SCADA system by transmitting telemetry data to a master system, and by using messages from the master supervisory system to control connected objects. |
| Request for Proposal | RFP | A Supply Management process used to enable potential |

CRO-E-2

| | | suppliers to submit business proposals to SDG&E for the procurement of a commodity, service or asset. |
|---|---|---|
| San Diego Gas & Electric Company | SDG&E | An investor-owned, Sempra Energy utility. |
| Sarbanes-Oxley | SOX | An act passed by U.S. Congress in 2002 to protect investors from the possibility of fraudulent accounting activities by corporations. Mandated strict reforms to improve financial disclosures from corporations and prevent accounting fraud. |
| Sempra Energy Utilities | SEu | SDG&E and SoCalGas, collectively |
| Southern California Gas Company | SoCalGas | An investor-owned, Sempra Energy utility. |
| Storage Area Network | SAN | Dedicated network that provides access to consolidated, block level data storage. SANs are primarily used to enhance storage devices, such as disk arrays, tape libraries, and optical jukeboxes, accessible to servers so that the devices appear like locally attached devices to the operating system. |
| Structured Query Language | SQL | Standard way to communicate with relational data base management systems. SQL is among the oldest IT system standards, dating back to the 1970s. |
| Supervisory Control and Data Acquisition | SCADA | Type of industrial control system (ICS). Industrial control systems are computer-based systems that monitor and control industrial processes that exist in the physical world. |
| Systems Applications and Products | SAP | Developers of enterprise software and software-related services. Headquartered in Walldorf, Germany, with locations in more than 130 countries. |
| United Computing System | UCS | Server platform provided by Cisco. |
| Unix | --- | Multitasking, multiuser computer operating system. |
| Virtual Desktop Infrastructure | VDI | A virtualization technique enabling access to a virtualized desktop, which is hosted on a remote service over the Internet. It refers to the software, hardware and other resources required for the virtualization of a standard desktop system. |
| Voice-Over-Internet Protocol | VoIP | Methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol ("IP") networks, such as the Internet. |
| Web Application Firewall | WAF | Appliance, server plugin, or filter that applies a set of rules to an HTTP conversation. Generally, these rules cover common attacks such as cross-site scripting and SQL injection. |
| Wide Area Network | WAN | A type of network that covers a broad area (i.e., any telecommunications network that links across metropolitan, regional, national or international boundaries) using leased telecommunication lines. |

**SoCal Gas 2016 GRC Testimony Revision Log – March 2015**

| Exhibit | Witness | Page | Line | Revision Detail |
|---------|---------|------|------|-----------------|
| *SCG-18* | *Olmsted* | *CRO-iv* | | *Changed table values from 55,700 & 104,397 to 55,042 & 103,739* |
| *SCG-18* | *Olmsted* | *CRO-2* | *3* | *Changed table values from 104,397 to 103,739* |
| *SCG-18* | *Olmsted* | *CRO-3* | *19* | *Changed table values from 104,397 to 103,739* |
| *SCG-18* | *Olmsted* | *CRO-10* | *26* | *Change Gwen Marelli to Ann Ayres* |
| *SCG-18* | *Olmsted* | *CRO-20* | *13* | *Updated values from 104,397 to 103,739 and 5,069 to 4,411* |
| *SCG-18* | *Olmsted* | *CRO-D-4* | | *Removed line item for California Producer Envoy* |
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CRO-E-4