Application of Southern California Gas Company for authority to update its gas revenue requirement and base rates effective on January 1, 2012. (U904G)

Application 10-12-___
Exhibit No.: (SCG-12)

PREPARED DIRECT TESTIMONY OF

JEFFREY C. NICHOLS

ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

DECEMBER 2010

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PREPARED DIRECT TESTIMONY OF
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ON BEHALF OF SOUTHERN CALIFORNIA GAS COMPANY
(INFORMATION TECHNOLOGY)

I. INTRODUCTION

A. Purpose of Testimony

The following testimony describes the operations, policies, procedures and costs of Southern California Gas Company's ("SoCalGas" or "SCG") and San Diego Gas and Electric Company's (SDG&E's) (collectively, the "Utilities"[1]) Information Technology Services (IT) division. Specifically, this testimony presents the Test Year (TY) 2012 forecast of Operations and Maintenance (O&M) expenses as well as the planned Capital expenditures (2010 through 2012) of the IT division as they pertain to SoCalGas. The testimony describes changes to the O&M expenses from Base Year (BY) 2009 levels, and why the changes are appropriate and necessary to maintain required levels of safe and reliable service to SoCalGas ratepayers. Similarly, the specific technology projects and investments associated with the capital expenditures planned for this period are also described. Both Shared Services and Non-Shared services are presented in this testimony.[2] The costs being presented in this testimony are direct costs only and are in non-escalated 2009 dollars.

Table JCN-1 & 1B below provides an overview of the planned O&M and Capital expenditures. As will be described in detail in subsequent sections of this testimony, these expenditures are required to support (1) a continued increase in demand for information technology services from utility business and operations, (2) the incorporation of new operations tasks following completion of several large capital projects, (3) technology upgrades due to obsolescence, (4) enhancing IT's capability to withstand increasing security threats, and (5) additional IT requirements dictated by new or enhanced regulatory mandates.

[1] Also referred to herein as the Sempra Energy Utilities (SEU).

[2] Non-Shared Services: activities provided by functional areas at one utility that benefit only the utility performing the activity, the costs of which do not need to be allocated and billed out to other entities. Non-Shared Services costs are costs incurred by a utility for its sole benefit, and may include labor costs and non-labor costs. Costs for services provided to the utility by Corporate Center are treated as Non-Shared Services costs by the utility, consistent with how outside vendor costs are treated.
Shared Services: activities performed by functional areas at one utility for the benefit of (i) the other utility, (ii) Corporate Center, and/or (iii) an unregulated affiliate. A utility providing Shared Services will allocate and bill its costs for providing those services to the entity or entities receiving the service. A utility receiving Shared Services from the other utility will include in its own book expense any costs allocated and billed to for the services received.

Table JCN - 1
Summary of Non-Shared and Shared Services
2009$ (000)

Functional Area: INFORMATION TECHNOLOGY				
Description	**2009 Adjusted-Recorded**	**TY2012 Estimated**	**Change**	**Testimony Reference**
Total Non-Shared	26	377	351	Section II
Total Shared Services (Book Expense)	44,137	52,029	7,892	Section III
Total O&M	**44,163**	**52,406**	**8,243**	

Table JCN – 1B
Summary of Capital Expenditures
2009-2012
2009$ (000)

	2009 Adjusted-Recorded	**2010 Estimated**	**2011 Estimated**	**2012 Estimated**
Total Capital	**34,401**	**68,594**	**110,346**	**91,713**

B. Overview of Operation

The underlying regulatory, utility, macro-economic and technology forces that shape and influence the IT division's activities are in as great a state of uncertainty as they have ever been historically. The California Public Utilities Commission ("CPUC" or "Commission"),[3] exhibiting leadership in customary fashion, recognized early on the very pivotal role that information technology would play in the governance of California's investor owned utilities (IOUs). The Commission's various directives and/or guidance in the recent past demonstrate this amply and affect all aspects of the utility value chain – from energy supply, to distribution and through to customer service. These directives include the requirement to implement "smart meters" (SoCalGas' Advanced Metering Infrastructure ("AMI"))[4] for all our customers by 2012.

These guidelines and directives have resulted in our undertaking several large IT initiatives within the past few years and which are now completed and will become part of routine operations, are nearing completion and or have spawned new requirements to enable continued operations. The

[3] And other regulatory agencies with domain over SCG operations – Air Quality Management District (AQMD) for example.
[4] SoCalGas AMI was approved in D.10-04-027.

O&M as well as capital expenditures requested in this testimony reflect this history. Security – information security as well as physical security – and the implementation of environmentally sustainable enterprise management are two other areas that influence IT planning and related tasks and expenditures.[5]

Key considerations and factors that affected the development of these expenditures, including the above are highlighted in the following paragraphs. The IT division's performance, highlighted towards the end of this section, provides initial basis to demonstrate our understanding of the needs of our stakeholders and our ability to effectively and efficiently service those requirements.

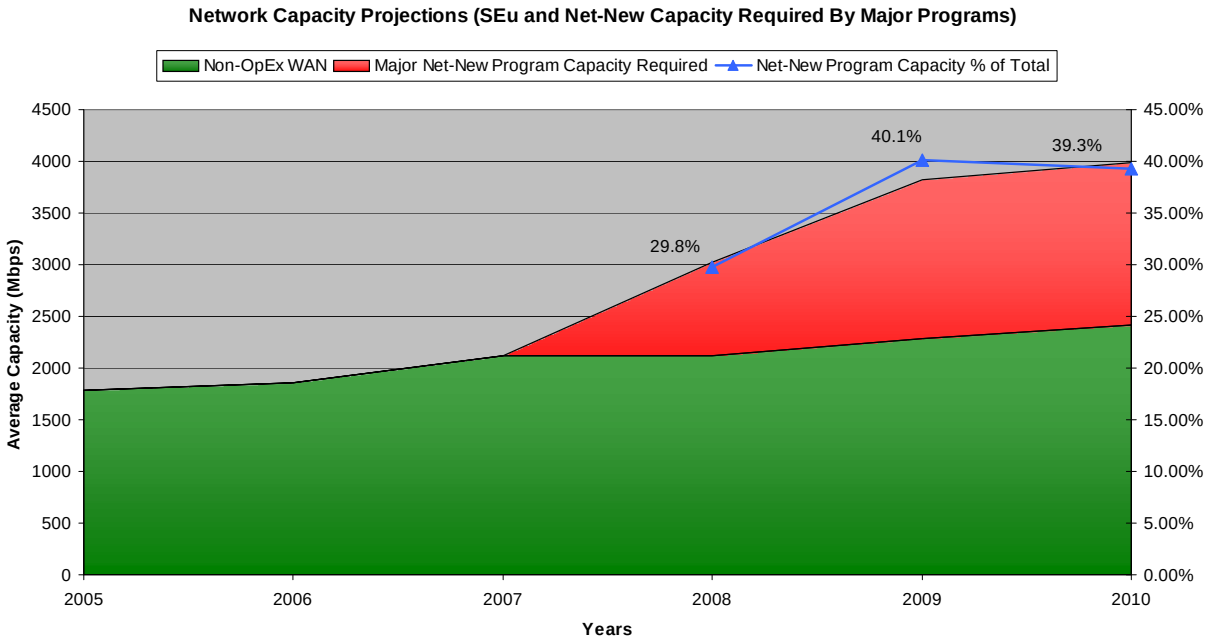
1. Business demand for Information Technology Services continues to grow at historically high pace

Information Technology continues to grow in importance as a core functionality required to support the Utilities' ability to meet their obligations to provide reliable service in a cost effective and safe manner while remaining in compliance with the multitude of regulatory requirements governing such provision of service. The work efforts and costs incurred by IT are directly related to the effective discharge of SCG's core business missions: the safe acquisition, production, trading, and delivering and metering of natural gas. The demand for IT services increases as technology advances and is used by more parts of the utility. For example, the enhanced business functionality made possible by such programs as SoCalGas AMI, OpEx 20/20 ("OpEx") and GridComm – to name a few[6] - brings along with it the need for significant additional computing as well as communications hardware and software.

One example of this growth trend is our own capacity projections for the Utilities' wide area network (WAN). Combining all factors, we predict growth of 25% in required WAN capacity for existing systems, and approximately 40% growth when taking into account new major programs through 2010.

[5]Described in later sections of this testimony – our expenditures for enhanced teleconferencing facilities, for advanced or expanded communications network capabilities and increased applications or system access controls are examples.
[6] A description of the OpEx 20/20 program can be found in the testimony of Richard D. Phillips (Exhibit SCG-13). The GridComm discussion can be found in the capital section of this testimony.

Fig. JCN – 1A



We and most industry experts believe this to be a trend that will persist for years to come. Recent and imminent developments in information, sensor and electric utility infrastructure technologies will make it possible for us to effectively automate or significantly change many existing utility operations practices. Recent examples includes changes to our meter reading, work scheduling, automated maintenance inspection, online customer interaction and customer call center response assistance systems. While it will be possible to achieve some of these improvements through reallocation, redeployment or simple refinement of existing IT systems, more often than not they will require additional IT resources – hardware, software and operational support services – to implement. Even as these automated systems result in a potential reduction of resources utilized by utility operations and in a positive cost benefit to the utility to ratepayers, they result in increases to the IT division's workload.

The need for increased IT resources is also driven by another somewhat unique characteristic of management information systems serving utilities. These information systems have to be designed to perform at high levels whether other utility services are operating at peak or off peak levels or even if they are temporarily unavailable. IT services have to be available during routine operations as well as during outage conditions. Hardware and software systems and the underlying technology architecture must be designed for fault tolerance, disaster recovery and business continuity.

2. SCG's utility operations and needs drive the designs plans and implementation of IT services.

The growing scope, size, and complexity of IT reflect the scope, size, and complexity of SCG's utility operations' requirements. SCG's utility operations are responsible for managing the acquisition, production, transmission, distribution, and consumption of natural gas by over 20.7 million customers over 20 thousand square miles of service territory. These services are provided through 6 million gas meters.

For IT, just supporting this vast complex of utility facilities and consumers 24 hours a day, 365 days a year is a challenging task. Recent developments in technology – exemplified by systems like our AMI, GridComm and OpEx programs – make the task even more challenging because they not only require significantly more equipment but also additional support services to operate and maintain. Advances in sensor and control technologies as well as in customer facing business application systems have resulted in orders of magnitude increases in the number of transactions to be processed by IT systems.

Utility Operations' compliance with regulatory mandates, whether they are changes to existing regulations or new regulations or mandates also drive the need for increased IT division resource and effort commitments. Modifications required to Customer bills and Sarbanes Oxley Act (SOX) compliance are examples.

3. Key policies and practices guide the IT division's Operations, ensuring prudent deployment of stakeholder resources and delivery of cost effective services

In the following sections, some of the key policies and procedures put in place to help IT continue to maintain these performance levels are described. The three key areas that influence the conduct and management of the IT division are:

O&M Expenditure Planning and Management;

a. Technology Management and Planning; and

b. Capital Project Planning and Management.

The following paragraphs describe each of these areas in more detail and the processes IT uses to manage them.

O&M Expenditure Planning and Management:

The IT division's process for developing and managing O&M expenditures serves as a means for (1) equitably allocating the costs of providing IT services to user departments and (2) identify potential areas for performance improvement. The allocation process follows the shared services

billing and allocation processes described in the testimony of Edward J. Reyes.[7] IT, as a utility division that provides support services to utility operating departments, has costs that are ultimately borne through an allocation of these costs to those companies utilizing those services. In place of merely distributing these costs based on size metrics, such as revenues, total costs or assets of the user department, the IT division attempts to distribute division costs based on a process that relates the allocation to usage or consumption factors that cause a service to be performed or that clearly identify the beneficiary of such services. Each of IT's departments are further divided into cost centers that represent a like group of capabilities, which facilitate such an allocation. The allocations are made based on how much the operating departments use or drive one or many of the IT service categories, such as maintenance or enhancement-related software development. Each department's cost allocation basis will be described in their respective sections later in this testimony.

Direct billing or allocation for services, and budgeting for services, provides both IT and the user departments with a better understanding of the composition of allocated IT expenditures, in addition to identifying potential sources for improvement in cost or service performance.

While delivered services and tasks provide the basis for direct billing or allocating user departments, a combination of the historical levels of usage and projected demand provides the basis for developing IT departmental budgets. Each of the departments, as described earlier, comprises one or more work groups. These work groups are characterized for budgetary planning and tracking purposes by one or more cost centers. For example, the Customer Care Software Development Services department comprises eleven functional groups described by eleven cost centers. Based on historical experience, projected needs, and consultation with client management, managers or supervisors of these functional groups develop budget estimates with the assistance of budget and financial analysts from IT's Business Planning and Budgets department. These cost center or functional group level budgets are cumulated at the department level and reviewed by the director of each department.

Once an initial consensus is reached, the departmental budgets are cumulated at the IT division level and reviewed by the IT senior management group. The final division level and individual department level budget is established following such reviews and in conjunction with budgetary guidelines established for SDG&E, SCG, and Sempra Energy companies as a whole. The final IT division budget is set after review by senior utility management and in concert with the budgetary demands and requirements of the other utility operating divisions such as the Gas Operations division.

[7] Edward J. Reyes (Exhibit SCG -24).

Technology Management and Planning:

The utility industry, like many other "network" industries, is increasingly dependent on information technology to effectively coordinate and deploy resources. Information technology, now more than ever, is a pervasive and necessary presence in the modern energy utility. While information technology was simply another means to enhance management effectiveness as recently as the early nineties, it is now a necessary and integral factor in operations. Policy initiatives of regulatory agencies at the national and state levels reflect this imperative - e.g., the intelligent grid, advanced metering infrastructure, distributed generation, net metering and demand response initiatives - all of which have very significant information technology capability drivers embedded in them.

In many cases the time and investments required to close the gap between current capability and the point where new technologies (across the utility value chain, not just in IT) become an economic and effective part of daily operations will span more than one General Rate Case (GRC) cycle. IT's technology planning processes must therefore develop strategies robust enough to make specific beneficial investments today, while also ensuring that these investments result in technology capabilities that can reasonably accommodate the myriad uncertainties outlined above.

Finally, as two of the largest utilities in the state, the Utilities have a large portfolio of functioning business applications and technology platforms that allow them to provide franchise services (e.g., customer contact as well as utility operations). In many cases these systems are required to be available twenty-four hours a day and 365 days a year. A technology plan based on a long-term technology and business vision is necessary to manage, update, replace, maintain, and operate this portfolio effectively. The technology management and strategy planning process follows a disciplined and structured process to allow IT to manage this complex and uncertain environment. The Client Services & Enterprise Support department, described later in this testimony, has the lead responsibility for developing such plans in partnership with other IT departments and business clients. Principal tenets of this process are that the technology strategy and planning process:

- Will be based on a comprehensive, long-term operating vision developed with business clients;
- Will focus on a roadmap for technology improvements and efficiencies in the following areas;
    - Asset utilization (e.g., system capacity factor);
    - Productivity (e.g., paperless processes);
- Will include all parts of the combined utilities – Electric Transmission and Distribution (T&D), Gas T&D, Supply, Customer Service, and Support Services;
- Will build on ongoing strategy work (e.g., T&D Vision, Customer Service Field Strategy);

- Will leverage emerging technology (e.g., communications, mobile computing, and smart devices); and
- Is iterative in nature (i.e., the "plan" is not a static blue print). While the plan will result in specific programs and projects for the immediate and near-term, IT will revisit the plan at preplanned intervals, to ensure that the current portfolio of projects and the longer-term direction and vision remain relevant.

The scope of IT's technology planning process includes:

- Enterprise Services –e.g., document management, business intelligence, Enterprise Resource Planning (ERP), conferencing;
- Enterprise Architecture – e.g., the creation of a long-term technology roadmap; selection of enterprise technology standards and governance processes;
- Green IT – Sustainability – e.g., data center energy management;
- Client Devices – e.g., desktop, laptop, personal digital assistants (PDAs), mobile phones, thin client, telephone, radio;
- Application Environment – e.g., presentation, delivery, transaction platforms, development environment;
- Middleware – e.g., enterprise service bus, Service Oriented Architecture (SOA), interfaces, adapters, web services management, application servers;
- Database Technologies – e.g., information management, database platforms;
- Storage Systems – e.g., network attached storage, storage area networks (SANs), centralized and distributed storage;
- Server Technologies – e.g., virtual and physical servers, Windows and Unix servers, mainframe platforms;
- Network & Communication Systems – e.g., local and wide area networks, data center networks, wireless and wired networks, mobile voice and data radios, Supervisory Control And Data Acquisition (SCADA) systems, radio frequency (RF) spectrum management;
- Voice Systems – e.g. enterprise voice-over-IP systems, automated calling systems, interactive voice response (IVR) systems, E-911, voice recording systems, voice & video conferencing systems, and integrations between voice, messaging, directory and conferencing systems;
- Business Continuity – e.g., system backups and disaster recovery;
- Enterprise system management & monitoring; and
- Information Security - security risk assessments, compliance, threat & vulnerability management, cyber incident response and forensics, as well as identity management services.

Capital Project Planning and Management:

The IT division uses formal processes to estimate, review, prioritize, and approve capital projects. These activities are part of a comprehensive IT Product Life Cycle process used to manage all capital projects. The IT division assembles a capital plan at the beginning of its planning cycle for each fiscal year (approximately late in the fourth quarter of the previous year or in the first quarter of the current year). It is a sum of the proposed plans of each of the department heads within IT including ongoing projects and anticipated needs. At this stage, the composite plan consists of a long list of viable capital projects, each with the potential to beneficially impact IT capability and services

at the combined utilities. The reviews and controls that this list is subject to are detailed in the following sections. Typically, as a result of these reviews, this list is pared down to a much smaller set of projects selected and prioritized by likely impact on IT capability and services – for example, based on regulatory requirements, critical service maintenance needs or cost benefit analyses. The final or working list of capital projects is typically arrived at after another (or multiple) review(s) to balance IT priorities and overall utility capital spending guidelines and constraints. While this working list provides a road map for IT capital spending in the immediate term, as the following processes suggest, it is periodically reviewed to ensure that the projects and expenditures continue to meet utility and IT priorities.

The IT Project Review and Approval process, the Project Estimation process and the IT Product Life Cycle management process are three key processes that help the combined utilities effectively prioritize, develop, implement and manage IT capital projects.

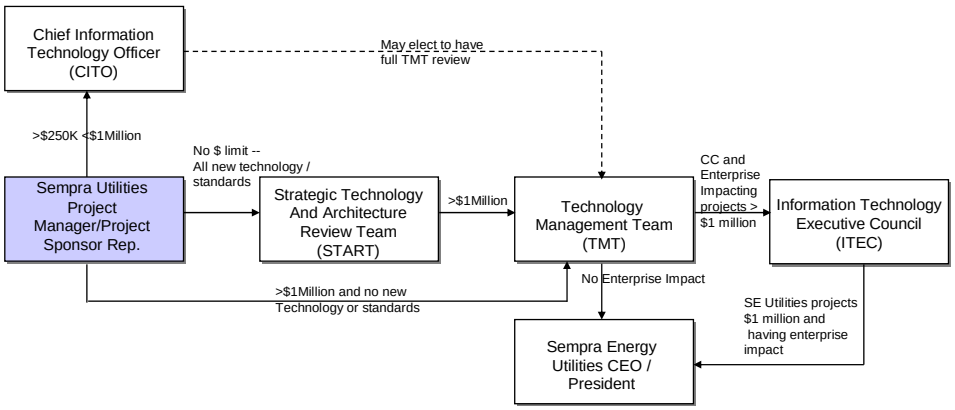
IT Project Review and Approval:

The accompanying flowchart outlines the tasks and the process for a project to be approved and included in an IT department manager's Capital Expenditure plan. Each IT project or proposal typically starts with a business unit sponsor or cost center manager who is responsible for developing a business case to explain why the project should be undertaken. The business case describes the technical, functional or economic benefits to be derived from any given project. Subsequent to the business case development, the project is reviewed for approval by various levels and teams of senior management. The composition, roles and responsibilities of the senior management review teams is as follows:

- Strategic Technology and Architecture Review Team (START) – consists of a cross functional team of IT leaders representing all the relevant technology and functional groups in IT. START review of projects is to assess technology products and solutions, assuring adherence to technical architecture and standards.
- Technology Management Team (TMT) – includes all the Directors of the departments within the IT Division and some Directors from user Business Units such as Customer Services and Gas Operations. The role of this review team is to consider and approve any changes to architecture and standards, ensure project compliance with the principles of product life cycle management (described later in this testimony), review IT strategies and projects for alignment with business strategies or initiatives and to set IT project priorities.

All proposed IT projects are reviewed to validate proposed business benefits and ensure that the technology underlying any proposed project does not adversely impact the IT infrastructure or enterprise solution. Reviews are also completed to ensure that any proposed technologies or systems adhere to information technology system and component performance standards.

Fig. JCN-1B. IT Project Review / Approval Process Flow



Other review panels or points such as those represented by the Offices of the Chief Information Technology Officer (CITO) and the President/Chief Executive Officer (CEO) are to ensure that projects are subjected to the appropriate level of managerial review based on their cost, scope and impact.

Project Estimation:

The project management and estimation process describes estimation and tracking methods for IT software development and maintenance teams. The underlying tenets of this process are that IT projects' chance of successful completion or implementation depends on (1) starting out with a realistic cost and schedule and (2) that these estimates have buy-in from both the IT developers and the clients or users of the system to be delivered.

The process begins with the IT project team defining a set of project requirements and getting agreement on those requirements from stakeholders. The users are briefed on the project estimation process to give them an understanding of how the final project estimate will be developed and why the

development of detailed and complete project requirements at the outset increases the chance of project success (i.e., a project that is delivered on time, on budget and performs as expected).

The process described here applies to all IT development and maintenance efforts. As may be expected, the time and effort spent in developing a project schedule and estimate vary with project scope, scale and complexity. A project is typically considered small when by historical standards or expert opinion it is estimated as requiring less than two person-weeks of effort and/or does not impact other systems in the course of its development or final implementation. Project size, generally discussed in person-weeks of effort, is then estimated based on several factors including expert opinion, historical data and project specific primary and secondary measurement units. Primary measures include such items as desktops to be touched, reports to be produced, number of installation locations, interfaces to be created and so on. The secondary measures are qualifiers that are used to fine-tune the estimate. These include such qualifiers as degree of complexity, technology maturity and skill set. The final project plan is developed by balancing the users' schedule requirements and available resources as well as size and quality requirements of the project.

IT Product Lifecycle Management:

In 2000, a team of experienced IT project managers was formed to develop for internal use a set of guidelines to be used in the management of the Utilities' IT products from concept to retirement. Prior to formation of this team, several project management processes (such as requirements management, estimation techniques, and scheduling management) were commonly used in the organization. The team incorporated these into a broader product view that includes such processes as detailed cost/benefit analysis prior to product development, and feature management after implementation, among others. This broader view was based on long-standing IT "best practices" such as the Capability Maturity Model,[8] and the Project Management Institute's Project Management Body of Knowledge. This set of product management guidelines was released as the IT product lifecycle.[9]

The IT product lifecycle was endorsed by the IT Directors and deployed into the organization starting in 2000. Its aspects were communicated to all IT employees. Project Managers and Leads were trained via workshops to enable them to incorporate the processes and procedures into their projects. Since implementation, projects have undergone best practice reviews after project completion to determine how well they were able to adhere to the process, how the process aided

[8] Capability Maturity Model is registered in the U.S. Patent and Trademark Office by Carnegie Mellon University.
[9] The IT Product Lifecycle is not an automated system, but a project management discipline used to enhance the organization's project decision-making process and maximize the efficiency of a product development team.

project success, and how the guidelines might be modified to increase the likelihood of success of future projects. Enhancements to guidelines are continuously implemented as new best practices are identified and lessons are learned from previous projects. Beginning in approximately 2005, the best practice reviews have been supplanted by more proactive process support provided to IT projects that, because of their critical nature or state of progress, may benefit from such active involvement.

Industry research indicates that process maturity pays off in better product quality and ability to meet schedule commitments.[10] While many project management best practices were already in use by project managers and leads throughout the IT organization, implementation of the IT product lifecycle:

- Permits end-to-end analysis of the impact of proposed projects,
- Increases the accuracy of project-related business decisions,
- Enables increased visibility into project progress,
- Allows for proactive corrective measures, and
- Facilitates continuous improvement and maturity in the project management process.

Managing a capital asset or project from conception through retirement of that asset is a particularly important requirement for IT-driven or related projects for two reasons:

- The rate of technology or process obsolescence for information technologies is generally greater than for many other business or industrial technologies; and/or
- Project or business requirements often change midstream in a project requiring more frequent enhancements and modifications, perhaps more so than for other commercial technologies.

Instituting a lifecycle management discipline into IT-centric capital projects, hence, increases the chance that a given IT undertaking will not only be completed on time and on budget and will deliver on the benefits or results envisioned at the outset, but will also by the nature of the process increase the involvement and the ownership of the user community in the project. The lifecycle process further enhances the chance that the project will succeed and that the scope of the project is correct. The quality of the project, the speed with which it is completed and the cost at which it is completed all benefit IT projects, as summarized below:

[10] Goldenson, Dennis R. and Herbsleb, James D. *After the Appraisal: A Systematic Survey of Process Improvement, its Benefits, and Factors that Influence Success.* (CMU/SEI-95-TR-009). Pittsburgh, PA.: Software Engineering Institute. Carnegie Mellon University. 1995.

Quality

- Approval points in the lifecycle allow review and communication of needs and expectations early and regularly.
- Deliverables are defined, not overlooked.
- Organizations affected by the project are involved at the appropriate time.

Speed

- Completed deliverables are used as examples/models to repeat previous success quickly.
- Required steps, approvals, and expectations are defined so as not to impede progress.
- Templates are cataloged and available for reuse and tailoring as needed by the project team.
- Tools and step-by-step instructions are provided as needed.

Cost

- Total cost, ownership, and benefits are established in the business case and managed throughout the process.
- Actual costs are measured by post-implementation reviews (PIR).
- Lessons learned that are discovered during the PIR are added to the IT Product Lifecycle for continuous improvement of subsequent projects.

The IT Product Lifecycle defines the total evolution of an IT product from conception to retirement, including the following phases:

- Concept
- Business Case Development
- Project Preparation
- Requirements
- Design
- Construct/Build
- Test
- Implementation
- Production
- Post-Implementation Review

The IT product lifecycle applies to all types of IT products irrespective of dollar amount, including software development and technology infrastructure. Even though use of the lifecycle

process is mandatory for all capital and larger O&M projects, the IT product lifecycle allows flexibility in individual project decisions. Project managers and approvers are given discretion in determining what is required on an individual project basis.

The format of specific project deliverables is not dictated, but templates are provided to assist the project manager and approvers in gathering sufficient information and making valid decisions. Templates are cataloged and available for reuse and can be tailored as needed by project teams.

Phase approvals are required, but phases may be modified to fit the needs of the project. A lower-risk, lower-cost project will require less stringent approvals than a higher-risk, higher-cost one. Approval points in the lifecycle allow review and communication of needs and expectations early and regularly.

Capital Projects are tracked in the SAP enterprise resource planning system using internal orders (work orders). Cost tracking for O&M projects is less formal. However, internal orders may also be used at the project manager's discretion. Total cost of ownership and benefits are established in the business case and managed throughout the process. Periodic variance reporting of actual costs versus projected costs is used to manage project budgets. Actual costs and project effectiveness are reviewed during post-implementation reviews.

To insure that the use of the IT product lifecycle is effective in assisting with cost-efficient and successful project selection decisions, lifecycle coaching is conducted on certain projects, through Post-Implementation Reviews. Lessons learned that are discovered during these reviews are added to the IT product lifecycle for continuous improvement of subsequent project decisions and processes.

4. Routine, daily operations activities remain a large, if not dominant focus of the IT division's work.

While new capabilities and applications contribute to IT activities and expenditures, the effort and investments required to manage the daily, ongoing requirements of stakeholders form the bulk of the IT division's workload. As I describe in later sections of my testimony, a significant part of the requested IT expenditures and activities relate to: replacing obsolete systems (including technological as well as functional obsolescence), adding capacity to meet the growth needs of existing systems and customers, bolstering information protection and security capabilities, maintaining the IT infrastructure,[11] supporting the operation and upkeep of the hundreds of utility operations software applications, and staffing and developing a highly skilled organization to support these activities.

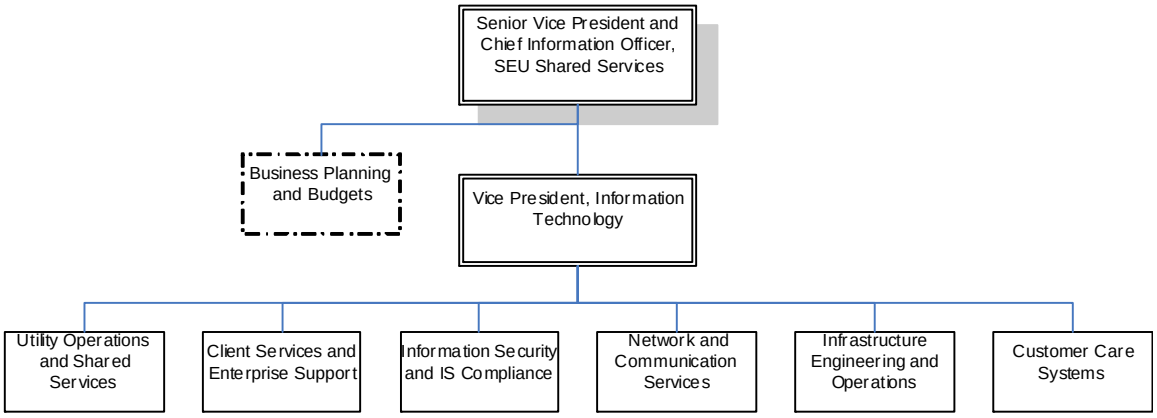
[11] Includes servers, storage systems, network and communications devices, desktop and laptop computers, the data centers in which many of these assets reside, and miles of fiber optic cable and microwave links, among others.

Routine operational expenses and effort planning take on a particular significance in this proceeding. During the course of this year and leading up to Test Year 2012 several large capital projects will have been completed, and these "new" systems will be transferred to production operations. The impact and magnitude of these additions are described in greater detail in later sections of this testimony.

5. The IT organization structure and processes emphasize focus on the most important functional aspects of managing the IT needs of a large modern utility enterprise.

The IT division provides and oversees IT-related services and activities for SDG&E, SoCalGas and Sempra Energy Corporate Center. These activities span the traditional IT areas of computer hardware and software as well as other infrastructure areas such as communication systems. IT services provided to Sempra Energy's unregulated affiliates are directly billed and allocated, and are limited to telecommunication infrastructure-related services. The requested costs are presented in terms of the various departments that comprise the IT division at SDG&E and SoCalGas.

Fig. JCN- 2: IT Organization



As the preceding figure shows, the IT division is structured into various departments. Each department is accountable for a specific set of services, activities and technology platforms. The specific focus and activities of each department is discussed in the sections below, along with the planned O&M expenditures by department. The IT departments and the activities they encompass (e.g., at the cost center level[12]) are periodically reviewed to assess the continued utility and efficacy of their activities. The cost allocation basis for each department's costs is also described following a detailed discussion of the changes to base year costs.

[12] Each department is organized or subdivided further into smaller subdivisions of activities, termed cost centers, e.g., the Infrastructure and Engineering Operations comprises 17 cost centers.

6. IT division's performance demonstrates its ability to provide safe, efficient, reliable and cost effective service.

The IT division has an established track record of delivering safe, efficient, reliable and cost effective services to our stakeholders – internal clients, business partners, regulatory agencies and our ratepayers. These achievements are reflected in some recent industry rankings and awards, as well as operational metrics and usage statistics. Recent industry and trade awards include:

- "#1 Most Intelligent Utility" – 2009 UtiliQ rankings;
- "One of 25 most innovative companies" – Information Week 2009;
- "Utilities Telecomm Council Apex Award for Telecommunications Innovation," 2008; and
- "#3 Best Places to work in IT" – Computer World, "100 Best Places to Work in IT," 2009.

In addition to these industry and peer accolades, the following figures provide specific operational data illustrating the IT division's ability to perform reliably and responsively, even as demand for and capacity of systems continues to grow significantly. As can be seen in the first figure, IT system reliability – represented by the number of high frequency as well as high duration service outages – consistently improved during the 2002-2009 period and the counts continue to hold in a narrow band at very high performance levels. The increase in outage frequency for 2009 is attributed to a historically high rate of new system deployment and production change, which both correlate with incident rate.

In the second figure showing 2006-2009 capacity trends, we see that the positive trend of IT system reliability held steady even as demand for IT facilities and services grew at a rapid pace. While the number of utility customers as a whole grew at a relatively modest pace, the number of visits to utility websites grew significantly through this period (a combined 27.9 million website visits in 2008, growing to 33.2 million visits in 2009, amounting to a 19% increase). Similarly, the number of customer service transactions completed via the utility's websites increased over 700%, and the number of payments remitted via the websites grew by 25%.

Fig. JCN-3 SEU Call Center Statistics

2009 Year-End Data	SCG	SDGE	Combined
Hours of Operation	24 x 7 x 365	24 x 7 x 365 (emergency services only on major holidays)	
Annual calls received	9.2 million	3.1 million	12.3 M
Annual CSR calls answered	7.2 million	2.4 million	9.6 M
Web self service transactions [1]	102,100	4,000	106,100
IVR self service transactions [1]	1.6 million	400,000	2 M
Customer correspondence - email	170,000	140,000	310,000
Customer correspondence - written	300,000	Not handled by CCC	300,000
Total CSR headcount (Full-time & Part-time)	550	200	750
Full-time to Part-time ratio	62/38 (union agreement)	50/50	
Management Headcount	78	41	119
Non-Management / Non-CSR Headcount	35 (includes Clerical group)	5	40
Other workforce attributes	Union	Non-Union	
Languages supported by Employees or a third party translating service for over 150 languages	Employees: Spanish, Mandarin, Cantonese, Korean, Vietnamese Third Party Usage in 2009: Over 5,000 calls in 34 languages	Employees: Spanish Third Party Usage in 2009: Over 3,000 calls in 49 languages	
Customer Comments/Complaints Handled	38,365	1,271	39,636
Executive Office Comments/Complaints Handled	1501	868	2,369

Fig. JCN -4 - Sempra IT Availability - Usage Performance Trends

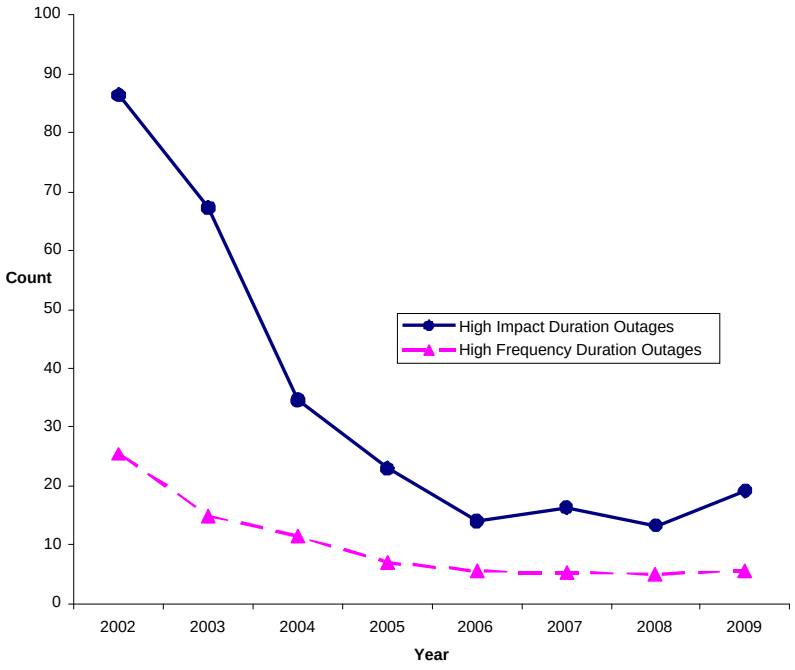
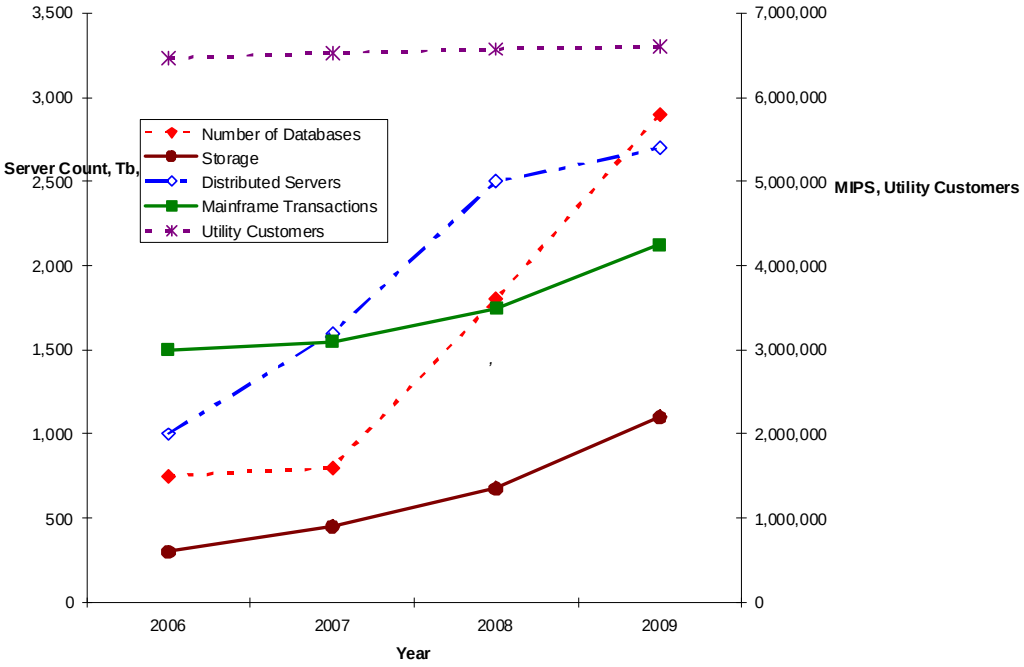


Fig. JCN 5 - Comparative Growth Rates - Utility Customers, Various IT parameters



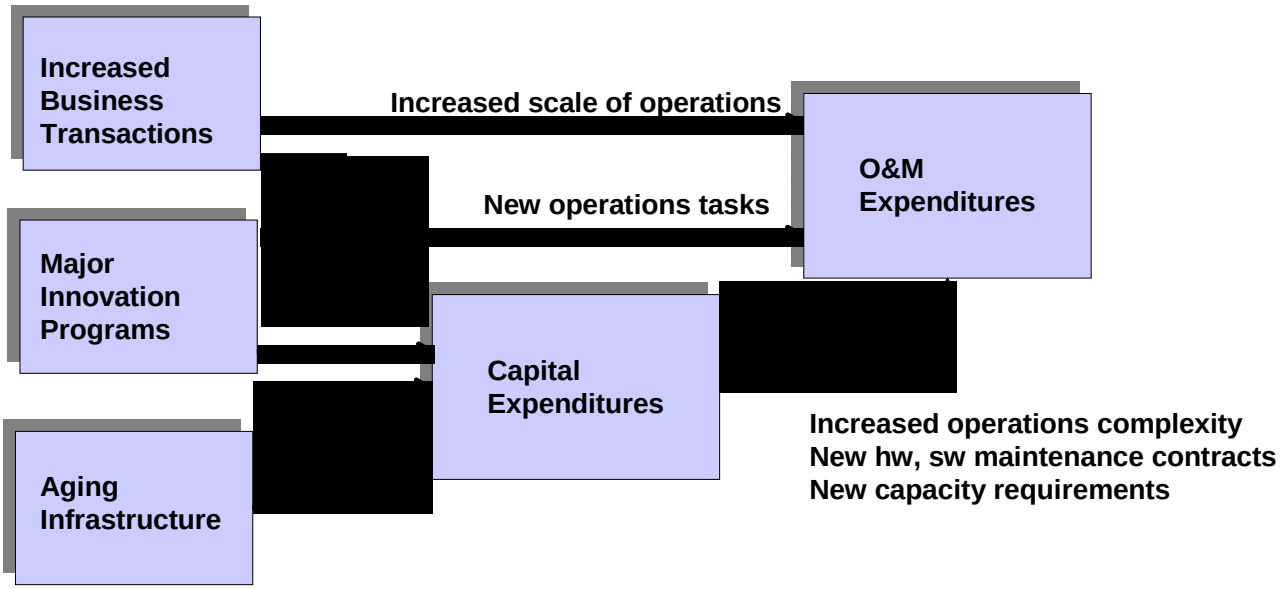
The expenditures and estimates being requested in this submittal are designed to allow the IT division to continue to provide such necessary capabilities to SoCalGas's customers and internal operating divisions while equipping IT to meet the considerable challenges that lie ahead.

C. Challenges Facing Operations

The IT division is a support organization providing critical technology-based services to enable utility operations to provide safe, effective and reliable electricity and gas services to SoCalGas customers. As indicated earlier, a modern utility cannot provide such service without significant underlying IT capability. The provision of these services, for an enterprise of SoCalGas and SDG&E's scale and complexity, requires both a very large installed base of technology infrastructure comprising hardware, software and communications systems, as well as a similarly large complement of IT professionals to support, maintain, enhance and manage this infrastructure in an effective and responsive manner.

Even under normal circumstances, significant expenditures (capital plus operations and maintenance expenditures) are required to simply sustain the IT service levels that our stakeholders require. These expenditures continue to be a significant part of this showing. However, a few additional, necessary factors drive a higher request here, as explained below.

A convergence of needs, events and trends drive request for increased IT O&M and Capital



First, several very large projects will be completed just ahead of TY2012 or during 2012 and will be placed in service in that timeframe. While these projects will result in tangible benefits to utility operations, almost uniformly, they will require additional IT resources to be dedicated to the support, maintenance, operation and management of the new systems. This inevitably results in a significant incremental increase in required IT O&M expenditure levels in TY 2012 over those prevailing today.

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Fig. JCN - 6: Implemented systems 2006 – 2009; planned major systems 2009 – 2012

2006	2007	2008	2009	2010	2011	2012
Multi tier distribution Storage Wintel Virtualization-VMWare full production SCG My Account Share point Enterprise Collaboration & Messaging UNIX Virtualization AIX LPAR	Smart Meter Approved Electric Net Metering Wintel Blade Servers go live OpEx Z9 Mainframe RB consolidatio MPK DR	OpEx Environments Begin LAN refresh Deploy begins SOA Go Live Supervisor Enablement Firm Rights Distributed Storage Virtualization & duplication OpEx CBM Go Live	OpEx Mobility One Voice Deploy begins Identity & Access Management Phase I Teleconference Video Conferencing Rebuild CRM Energy Efficiency Smart Meter System Management ESM Phase I Wave I ICE/Genesys IVR Go Live I3 Infrastructure Provisioning Grid Comm DOE Award Google Power Meter ESM Phase I Wave2	SCG AMI Approval Field Service Radio Replacements BCAP Oracle Grid Linux on Mainframe CRM Demand Response OpEx Field Force Virtual Tape Library LAN Refresh & One Voice Complete Source 2 Pay Phase 1 Identity & Access Management Phase 2 WAN rebuilt 60% Network Perimeter Rebuild DC Network Rebuild 70%	Internal Cloud Computing ESM Phase 2 Smart Meter Deployment Complete Enterprise Encryption Identity & Access Management Phase 3 GridComm Field Service Radio Replacement	OpEx OMS, GIS, WMS Construction SCG AMI Deployment GridComm AMI Backhaul ESM Phase 3

As the table above indicates, a significant number of systems came on line in the base year 2009; many more will come on line in 2010-2012. Not only has the number of systems being implemented in a relatively short time frame increased significantly compared to historical experience, these systems also add significantly to the complexity of the overall IT system architecture. These

systems, unlike those of the past, consume and produce significantly more input and data sources (e.g., over a million smart meters being polled and potentially responded to every fifteen minutes), thus increasing the complexity of managing the reliability and accuracy of these systems.

Second, the changes being implemented are transformational in nature for both IT and the utility business. These are not merely large incremental modifications or additions to existing systems and capabilities – they are qualitatively different. They will require correspondingly large changes to our organizational skill sets and operations procedures to enable us to capture and utilize the full increment of capability provided by these systems or even to keep them operational. In addition, a significant part of our IT infrastructure – computing, storage and communications infrastructure – has aged beyond normal practice or has been superseded by advances in technology, adding another layer of complexity in meeting the challenges of serving the IT needs of SoCalGas.

Third, the diversity, range of deployment and volume of IT assets needed to deliver required levels of service to utility stakeholders has grown at multiples of historical levels within the past few years. Even just a few years ago, field inventory or data reporting from the field may have consisted of bar code data or field technician entered data sent over dedicated land lines, private radio or microwave networks. Today, data – static equipment identification data as well as real time operating condition data is "streamed" via multiple media and channels; often wirelessly through public and/or private networks. The rapid adoption by consumers-customers of enhanced information technology capabilities as they become available creates additional, atypical factors in this showing, that add to an increase in required levels of expenditure over base year levels. For example, the significant growth in data gathered about and from our customers requires new and much higher levels of information security and protection requirements.

Finally, regulatory mandates governing utility operations continue to grow, and these mandates uniformly require new IT services, controls and features, such as increased customer notification systems.

We believe SoCalGas' request represented here in testimony balances the needs of these various challenges.

D. Summary of Request

The flowing tables provide an overview of TY 2012 requested amounts for the IT division, classified into Non-shared and Shared services O&M expenditures as well as the planned capital expenditures in TY 2012. Detailed explanations for the basis and justification of these forecasts are provided in subsequent sections. While the expenditures of the IT department in total are explained in

the sections that follow, the focus of the request in this volume of testimony is the fraction of expenditures shown as the SCG "Book Expense."[13] The full or "100% incurred expense" requirement is explained in detail since that forms the basis of how the IT services are provisioned for the combined utilities – the SCG "book expense" being the amount requested of the commission as being the proportionate amount required to provide necessary SCG services.

Table JCN - 2
O&M Non-Shared Services
Testimony Section II
(Thousands 2009 dollars)

INFORMATION TECHNOLOGY			
Categories of Management	**2009 Adjusted-Recorded**	**TY2012 Estimated**	**Change**
ED, TRNG, COMM SCG	26	377	351
Total	26	377	351

Table JCN - 3
O&M Shared Services
Testimony Section III
(Thousands 2009 dollars)

INFORMATION TECHNOLOGY			
Categories of Management	**2009 Adjusted-Recorded**	**TY2012 Estimated**	**Change**
A. VP Information Technology	93	95	2
B. Client Services & Enterprise Support Dir	136	165	29
C. Network Communication Services Director	1,722	1,751	29
E. USS Billed to CCTR	42,186	50,018	7,832
Total Shared Services (Book Expense)	44,137	52,029	7,892

[13] Book expense is the retained plus billed-in costs. Book expense is the final cost to each utility as defined in the testimony of Edward Reyes (Exhibit SCG-24].

Table JCN - 4
Capital Expenditures
(Thousands 2009 dollars)

	2009 Adjusted-Recorded	2010	2011	2012
Total Capital	34,401	68,594	110,346	91,713

II. NONSHARED SERVICES

A. Introduction

Non-Shared Services are activities provided by functional areas at one utility that benefit only the utility performing the activity, the costs of which do not need to be allocated and billed out to other entities. Non-Shared Services costs are costs incurred by a utility for its sole benefit, and may include labor costs and non-labor costs. Costs for services provided to the utility by Corporate Center are treated as Non-Shared Services costs by the utility, consistent with how outside vendor costs are treated.

Table JCN - 5
O&M Non-Shared Services
(Thousands of 2009 dollars)

INFORMATION TECHNOLOGY			
Categories of Management	2009 Adjusted-Recorded	TY2012 Estimated	Change
Education, Training & Communications	26	377	351

B. Discussion of O&M Activities

Education, Training and Communications - SCG

1. Nature Of Operations

The Education, Training & Communications (ETC) work group provides consulting to project teams to increase end-user engagement and productivity. This group ensures quality execution and adequate coverage on all change-related activities across multiple company programs. It also coordinates the complex people-related issues across multiple company programs and enhances SEU's ability to absorb significant change with minimal business interruption. Visibility is provided to program progress and key change-related risks & issues. This work group is part of the 2200-2319 cost center in Client Services and Enterprise Support department within IT.

2. Basis for Changes from BY 2009 levels:

Projected costs in this work group are estimated to be higher in TY 2012 as this was a newly created cost center in the 4th quarter of 2009. The TY2012 estimates reflect a full year of labor costs for 4 FTEs and associated employee expenses.

3. Allocation Method

Forecast amounts for years 2010-2012 were developed based on zero-based method. Since this is a newly created cost center, this forecasting method more accurately reflects expected costs as there are no trends to be used for comparisons.

"Zero based" is a method of budgeting in which all expenses must be justified for each new period. Zero-based budgeting starts from a "zero base" and every function within an organization is analyzed for its needs and costs. Budgets are then built around what is needed for the upcoming period, regardless of whether the budget is higher or lower than the previous one.

Additional detail for the activities and estimates for this work group is provided in my work papers.

III. SHARED SERVICES

As described earlier, the IT division is organized into six functionally focused departments. In the sections that follow, the specific focus and activities of each of these departments is detailed. Included in the shared services costs are activities "billed-in" from SDG&E. These costs are illustrated in the section titled "Shared Services billed in from SDG&E." As described above, shared services are defined as activities performed by functional areas at one utility for the benefit of (i) the other utility, (ii) Corporate Center, and/or (iii) an unregulated affiliate. A utility providing Shared Services will allocate and bill its costs for providing those services to the entity or entities receiving the service. A utility receiving Shared Services from the other utility will include in its own book expense any costs allocated and billed to for the services received. In the IT Division's case, these billed-in costs represent the costs incurred by SDG&E cost centers that provide services to SCG. The following section provides a description of these services.

The specific departmental requests for O&M costs and the reasons for the changes to BY 2009 levels, if any, are provided.

A. Introduction

The expense estimates described here are SCG Book Expenses. The overall SCG proportionate cost (Book Expense) is estimated to increase by approximately $7.9 million over the base year 2009 levels. The majority of this increase comes from the billed-in costs incurred by SDG&E cost centers that provide services to SCG. The activities that drive these billed-in costs from SDG&E comes from primarily four departments in IT, specifically: (1) the Information Security and Information Security Compliance, (2) Client Services & Enterprise Support, (3) Network and Communications Services and (4) Utility Operations and Shared Systems departments.

In addition to organic growth and time-related expenditure expense increases forecast for TY 2012, increased costs due to the integration of several capital projects recently moved into routine operations (e.g., OpEx and Network and Communications Systems upgrades) as well as increases to system security contracts, contributed significantly to this increase. More detailed explanations for specific increases are provided in the appropriate departmental descriptions that follow.

Table JCN - 6
O&M Shared Services
(Thousands of 2009 dollars)

INFORMATION TECHNOLOGY			
Categories of Management	**2009 Adjusted-Recorded**	**TY2012 Estimated**	**Change**
A. VP Information Technology	93	95	2
B. Client Services & Enterprise Support Dir	136	165	29
C. Network Communication Services Director	1,722	1,751	29
E. USS Billed to CCTR	42,186	50,018	7,832
Total Shared Services (Book Expense)	**44,137**	**52,029**	**7,892**
INFORMATION TECHNOLOGY			
	2009 Adjusted-Recorded	**TY2012 Estimated**	**Change**
Incurred Costs (100% Level)			
A. VP Information Technology	183	217	34
B. Client Services & Enterprise Support Dir	170	206	36
C. Network Communication Services Director	2,299	2,338	39
Incurred Costs Sub-Total	**2,652**	**2,761**	**109**
Allocations Out To SDG&E			
A. VP Information Technology	77	107	30
B. Client Services & Enterprise Support Dir	34	41	7
C. Network Communication Services Director	558	568	10
Allocations Out To SDG&E Sub-Total	**669**	**716**	**47**
Allocations Out To CORP			
A. VP Information Technology	12	14	2
B. Client Services & Enterprise Support Dir	0	0	0
C. Network Communication Services Director	16	16	0
Allocations Out To CORP Sub-Total	**28**	**30**	**2**
Allocations Out To Unreg			
A. VP Information Technology	1	1	0
B. Client Services & Enterprise Support Dir	0	0	0
C. Network Communication Services Director	3	3	0
Allocations Out To Unreg Sub-Total	**4**	**4**	**0**
Retained by SCG			
A. VP Information Technology	93	95	2
B. Client Services & Enterprise Support Dir	136	165	29
C. Network Communication Services Director	1,722	1,751	29
SCG Retained Sub-Total	**1,951**	**2,011**	**60**
Billed-In From SDG&E	**42,186**	**50,018**	**7,832**
SCG Book Expense	**44,137**	**52,029**	**7,892**

B. Summary of Shared Services Activities (by department within the IT division)

Vice President Information Technology

a. Nature Of Operations

The department is staffed principally by the Vice President (VP) of Information Technology and administrative support personnel. The VP is responsible for providing leadership and governance, establishing policy, planning and managing the IT resources of the combined utilities. Working with senior utility management, he ensures that IT priorities complement utility business needs and priorities.

Changes from BY 2009 to TY 2012

Table SCG – JCN – 8(1)

Information Technology Services - O&M Shared Services
(Thousands of 2009 dollars)

	2009 Adjusted-Recorded	TY2012 Estimated	Change
VP Information Technology	93	95	2

b. Reasons for change from BY2009

The change over 2009 recorded reflects a small adjustment for labor in 2012.

c. Allocation Method

The VP cost center is allocated based on a weighted average of all IT departments. Cost allocation percentages are provided in my workpapers.

Client Services & Enterprise Support

INFORMATION TECHNOLOGY			
Categories of Management	**2009 Adjusted-Recorded**	**TY2012 Estimated**	**Change**
B. Client Services & Enterprise Support (Book Expense)	136	165	29

1. Nature of Operations

This group represents IT's services to these internal clients in an account management function to assist clients in achieving greater business optimization through the improved and effective use of IT's services. Specific functions include facilitating the resolution of problems where standard processes are not adequate, understanding the business operations and recommending further use of IT or outside technology services to improve the business and/or to save money. The group also educates clients on the value of IT policies and standards and bringing client needs to IT that would otherwise go unrecognized.

2. Basis for Changes from BY 2009 levels:

The proposed increase is driven by the planned addition of IS communications education for new applications largely driven by OpEx 20/20 programs.

3. Allocation Method

Forecast amounts for years 2010-2012 were developed based on incremental changes to the 2009 base year, as it more accurately reflects the expected costs compared to using trending methods.

Network Communication Services

INFORMATION TECHNOLOGY			
	2009 Adjusted-Recorded	**TY2012 Estimated**	**Change**
C. Network Communication Services (Book Expense)	1,722	1,751	29

1. Nature of Operations

The Network Communications Services group provides maintenance and support for various Utility network and communications systems. Maintenance and support includes repair, troubleshooting, installation and replacement activities. The network and communications systems that are supported includes the Utilities' network infrastructure consisting of microwave and fiber optics transport systems; the gas SCADA (Supervisory Control and Data Acquisition) system consisting of wireless and wired systems; land mobile radio network systems for voice and mobile data communications; and telephone systems.

2. Basis for Changes from BY 2009 levels:

The proposed increase is driven by the planned addition of unmanned site tower inspection and repairs that are needed to maintain system reliability.

3. Allocation Method

The Base year forecast method for years 2010-2012 that develops forecasted amounts based on the identification and calculation of incremental changes from the drivers of growth, changing technology, business and customer requirements, was used as the basis for forecasting amounts. This method more accurately reflects the expected costs compared to using the linear trending, averaging, or zero-based methods.

Shared Services Billed in from SDGE

Shared Services Billed in from SDGE			
	2009 Adjusted-Recorded	**TY2012 Estimated**	**Change**
USS Billed to CCTR	42,186	50,017	7,831

1. Nature of Operations

These amounts represent the shared service portion of the costs incurred by IT within the SDG&E cost center that are applicable and allocated to SCG. The following describes the products and services provided to SCG. The allocations are made based on how much the operating departments use or drive one or many of the IT service categories, such as maintenance or enhancement-related software development.

The IT services provided to and consumed by SCG include the following:

1. Infrastructure Engineering and Operations (IE&O)

The Infrastructure Engineering and Operations (IE&O) department is responsible for designing, building, and operating the Utilities' computing infrastructure. IE&O responsibilities comprise 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). General responsibilities include providing support for design, deployment and support of hardware and software systems relating to distributed (UNIX and Windows) and enterprise (IBM Z/OS) class servers, disaster recovery, production management, data storage systems, service and help desk management, web-based applications middleware, and services infrastructure.

The activities of this department also include oversight and management of the vendor services contract(s) governing the provision of desktop services to SCG and SDG&E. The outsourced provider contract for desktop and help desk services is the largest single services contract that the IT division has with any third-party provider. This is a multi-year contract and includes supporting approximately 15,000 desktop as well as laptop computers and 4,700 printers and the associated help desk services that are required to support the use of and deployment of these devices.

2. Client Services and Enterprise Support

The Client Services and Enterprise Support department comprises functions to support Enterprise integration services, Business Intelligence services, Data Base Administration services for software development, IT Solutions Architecture, IT Training and Communications. The following table shows an overview of the products and services provided by this department.

Fig. JCN–8: Client Services & Enterprise Support – Overview of Products and Services

Database Administration	Enterprise Integration Services	Enterprise Architecture	Business Intelligence
Infrastructure and Production Services Physical Database Implementation Production Support Backup / Recovery DBMS Software Updates Database Capacity Management Systems Health Checks and Performance Monitoring Disaster Recovery Management DBMS Security and Audit Management Change Management / Service Restoration **Application Development and Project Support** Database Architecture Consultation Database Design and Modeling RFP Evaluation / Scoring Advise on DBMS Requirements / Functionality Provide Security Best Practices (Authorization / Encryption) SQL Review and Consultation Troubleshoot Performance Issues	**SAP Basis Support** SAP application support for all SAP components – ERP, BW, CRM, PI, etc which includes system installation, monitoring, performance tuning, capacity planning and problem resolution **EDIX support** Support for secure batch file transfers and data translation performed between internal systems and internal to external systems Support of EDI data exchange with external trading partners	**Strategy Development** Partner with IT & Business Groups to develop Strategies that align with business goals **Emerging Technology Assessment** Provide focal point and evangelism for emerging technologies Identify opportunities to leverage emerging technologies to solve business problems **Architecture Planning** Develop and maintain enterprise IT architecture and framework **Business Technology Alignment** Evangelize overall IT Technology Focus Leverage Strategic Technology and Architecture Review Team (START) to provide governance over the technical architecture **Project Consulting /Enterprise Solution Architect** Ensure projects align to enterprise architecture	**Provide enterprise support for SAP Business Warehouse (BW) and Data Warehouse users**. Includes (but not limited to): SAP Business Warehouses (Finance, Accounting, Safety, Customer Relationship Management, Diverse Business Enterprise) Data Warehouses (Engineering Data Warehouse, SDG&E Customer Information, SCG Customer Information) that use the SAP Business Objects Suite Data Mapping & Analysis Data Repository Management **Data Extraction & Transformation (ETL)** Develop/maintain jobs and programs that extract, transform/cleanse and load data into reports and dashboards to gain knowledge and insight used for decision-making **Project Support** BW/DW requirements for Smart Meter, OpEx Enterprise BI initiatives Data Mapping & Analysis BI consulting, best practices & guidance RFP evaluations

IT Portfolio/Demand Management	Education, Training & Communications
This team is responsible for the processes and tools that IT uses to manage its portfolio of projects, including: **Clarity Administration and User Support** – Clarity is the project and portfolio management application in use by IT and the OpEx and Smart Meter programs for project and resource tracking. **IT Software Development Lifecycle** – maintain and publish the Sempra-specific installation of industry project management best practices. Provide training and mentoring. **IT Portfolio Management Support** – provide project information as needed to decision makers.	Internal Project Education, Training & Communications (ETC) Provide consulting to project teams to increase end-user engagement and productivity Ensure quality execution and adequate coverage on all change-related activities across multiple company programs Coordinate the complex people-related issues across multiple company programs and enhance SEU's ability to absorb significant change with minimal business interruption Provide visibility to program progress and key change-related risks & issues Track user adoption and progress around broad transformation – enhancing SEU's probability of realizing planned benefits

3. Network and Communications Services (NCS)

Communications systems and networks form the backbone of all information technology capabilities at any corporation, and more so in the information intensive utility industry. The depth and breadth of network and telecommunications activities at two of the largest utilities in California are representative of this complexity and scope. For example, approximately 80% of SCG's and SDG&E's information flows are on private microwave or fiber networks, which include about 125 miles of fiber optic cable, about 100 miles of copper wire, and approximately 150 microwave communication sites.

The NCS department's responsibilities include network and communications systems policy, standards development, engineering, design and build of new infrastructure, performance monitoring, capacity planning, daily operations, contract administration and management. NCS's scope of activities spans all network (local area networks (LAN) as well as wide area networks (WAN)) and telecommunications (land line as well as wireless) activities at SCG, SDG&E, Corporate Center, and Sempra Energy affiliates. The following table provides an overview of the products and services provided by the Client Network and Communications Services department.

Fig. JCN–9: Network and Communications Services – Overview of Products and Services

Engineering – LAN, WAN, Voice, Carrier	Operations Control	Field Services	Operations Support	Projects
Tasks include: • Strategic Planning • Develop, Design and Build • Capacity planning • Problem Resolution and Management Projects Include: • Voice Systems Refresh • Updated Telecom, Network Strategy • LAN/WAN Refresh • Land Mobile Radio Strategy • BPL and WiMax Pilots • CPP and DLP AMR deployment	Tasks include: • 7x24 - Monitoring and managing Telecom Network, • Problem Diagnosis and Resolution • Disaster Recovery • Business Resumption • Service Level Agreement Monitoring and Tracking	Tasks include: • Preventive Maintenance • Problem Diagnosis and Resolution • Disaster Recovery • Service Request Processing and Implementation • Project Implementations • Business Resumption	Tasks include: • Contracts • Call Accounting • Billing, Invoicing • Internal Chargeback, Cost Allocations Projects Include: • Wireless (cellular) strategy • Telecom Cost Savings Initiative	Project Management for: • Voicemail, PBX refresh and Replacement • Network Telecom PM methodology • All major NTE&O Projects

4. Utility Operations and Shared Services

The Utility Operations function supports the development, implementation and maintenance of applications related to the procurement and delivery of energy to the utility's customers. Systems include those related to asset management, work management and measurement, fuel and power systems, outage management, gas and electric facilities, transportation, and procurement and settlement systems. The Shared Systems function operates, maintains, enhances, and oversees shared business applications that support several functional disciplines across the combined utilities including:

- Finance and Accounting
- Supply Management (Purchasing, Inventory, Warehousing, and Accounts Payable)
- Real Estate and Facilities
- Environmental Compliance and Safety Services
- Regulatory Affairs
- External Affairs and Corporate Communications
- IT
- SOX Compliance
- IT Process and Quality Improvement

5. Customer Care Systems (CCS)

The CCS department is responsible for the development and maintenance of the IT system to support customer field operations, meter reading, customer energy management, smart meter data management routing, scheduling, dispatching, revenue cycle, and customer assistance and customer contact services. Clients of this department span other IT departments, internal utility operations departments, external agencies, business partners (suppliers) and ratepayers.

Major systems developed, maintained or operated by this department include applications to support the Customer Portal (online customer access systems), Customer Information Systems, Service Order & Dispatch-related systems, Meter Reading, Measurement Systems, and Customer Contact & Management Systems.

6. Information Security and Information Security Compliance

The Information Security and Information Security Compliance department is a newly established department. It consolidates efforts already existing within the IT division and adds to these functions to establish a much stronger capability to plan for, anticipate, prevent and or mitigate information security related breaches of the Utilities various IT systems. The new department comprises the Information Security (IS), Security Engineering (SE), Security Operations (SO) and IS Contracts (ISC) functions. The following table provides an overview of the products and services provided by The Information Security and Information Security Compliance department.

Fig. JCN–12: Information Security & Information Security Compliance - Overview of Services

Security Program and Governance	Security Engineering	Security Operations
Responsible for enterprise governance related to Information Technology compliance, security architecture and strategy as well as organizational responsibility of information security process and risk and compliance frameworks. The department is also responsible for the security project office, which manages enterprise security projects and the organizational project portfolio.	Develops enterprise security control implementation design patterns and assists IT project teams and asset owners in implementing security controls. We also assist the Information Assurance teams in validating and testing technical controls as part of ongoing compliance efforts.	Manages production infrastructure that facilitates the monitoring, alerting, and prevention of cyber security incidents. This infrastructure provides security event/incident monitoring, cyber forensics, intrusion prevention, public key infrastructure, log management, vulnerability assessment, identity access management, content filtering, and end point encryption.

IS is responsible for enterprise governance related to IT security requirements compliance, security architecture and strategy as well as organizational responsibility of information security process and risk and compliance frameworks. The department is also responsible for the security project office, which manages enterprise security projects and the organizational project portfolio. SE develops enterprise security control implementation design patterns and assists IT project teams and asset owners in implementing security controls. IT also assists the Information Assurance teams in validating and testing technical controls as part of ongoing compliance efforts. SO manages production infrastructure that facilitates the monitoring, alerting, and prevention of cyber security incidents. This infrastructure provides security event/incident monitoring, cyber forensics, intrusion prevention, public key infrastructure, log management, vulnerability assessment, identity access management, content filtering, and end point encryption. This Cost Center also plans and pays Security Hardware and Software maintenance contracts for the Distributed Server Environment.

7. Business Planning and Budgets

The Business Planning and Budgets (BP&B) department provides planning and analysis support to all IT departments. BP&B leads development of departmental management and commitment reports, budgets, and direct billing processes. The department also serves as the planning and financial liaison between the IT division and corporate or business unit planning and financial management functions.

Major considerations of this department are to ensure that the IT division's plans, reports, and budgets are produced in a timely manner, are supportable, auditable, and follow established guidelines and processes.

IV. CAPITAL

A. Introduction

The basis for capital expenditures undertaken by the IT division to support provisioning of IT services to SCG stakeholders at large – be it business applications, endpoint devices or voice and data communications – is described in detail in the following sections of this exhibit. IT capital expenditures relating to application software development to meet specific utility operating division's requirements are presented in the testimonies of Brad Baugh (Exhibit SCG-08), and Ed Fong (Exhibit SCG-07). The Capital projects and expenditures described here are a result of the planning process described earlier and reflect the portfolio of capital projects necessary to continue to provide the required level of IT services to support utility business customer needs.

The complement of projects proposed here reflect both the analytical rigor inherent in IT's capital planning processes as well as the thoughtful assessment of senior IT and utility operations managers.

The table below shows the full complement of IT projects being proposed by SCG in this filing. The projects sponsored by IT Clients are identified in the table, but the detailed description and requirements of these projects are provided in the SCG testimony volumes of the relevant utility division witness shown in the table. The details and requirements of the IT infrastructure projects are provided in this testimony and the related workpapers.

Table JCN - 9

Capital Expenditures
(Thousands of 2009 dollars)

Witness	Project Name	2010 Total	2011 Total	2012 Total	3 yr Total
Baldwin, Mike	BCAP	833	-	-	833
Baldwin, Mike	Bill Re-Design	228	-	-	228
Fong, Ed	Call Recording Replacement SCG (NICE)	788	-	-	788
Fong, Ed	CSFOE	266	-	-	266
Fong, Ed	Customer Service MDT	486	282	147	915
Fong, Ed	Forecasting & Scheduling	1,107	1,666	-	2,773
Fong, Ed	PACER MDT Refresh	-	-	3,908	3,908
Fong, Ed	SCG Meter Reading Handheld/System Replacement	-	243	6,674	6,917
Marcher, Alan	Click Enhancements	-	1,899	833	2,732
Marcher, Alan	Enhance Environmental Tracking System	-	-	566	566
Marcher, Alan	GEARS Phase 3	-	-	826	826
Marcher, Alan	SCG Gas Ops MDT	583	911	1,100	2,594
Nichols, Jeffrey Cecil	E-Sourcing, Contract Lifecycle Management	-	1,526	-	1,526
Nichols, Jeffrey Cecil	IT Depot & NCS Conversion to SAP Supply Chain	820	1,163	-	1,983
Nichols, Jeffrey Cecil	Logistics Mobile Refresh & Expansion	-	2,535	-	2,535
Nichols, Jeffrey Cecil	M4 Fleet Application Replacement	-	1,893	-	1,893
Nichols, Jeffrey Cecil	Master Data Management	-	1,142	-	1,142
Nichols, Jeffrey Cecil	Meta Data Repository	-	721	-	721
Nichols, Jeffrey Cecil	Payment Processing Disaster Recovery	133	-	-	133
Nichols, Jeffrey Cecil	SAP (ERP) Upgrade EHP5	1,385	285	-	1,670
Nichols, Jeffrey Cecil	SAP GRC Tools Firefighter	-	577	-	577
Nichols, Jeffrey Cecil	SAP Support Pack	-	1,287	1,238	2,525
Nichols, Jeffrey Cecil	Source to Pay	3,295	-	-	3,295
Nichols, Jeffrey Cecil	Telecommunications Expense Management	716	967	-	1,683
Nichols, Jeffrey Cecil	Test Automation SAP Processes	-	1,555	-	1,555
Nichols, Jeffrey Cecil	GRC Model Development	156	-	-	156
Nichols, Jeffrey Cecil	BPS Replacement	-	1,371	-	1,371
Nichols, Jeffrey Cecil	Oracle Enterprise Environment HW	698	-	-	698
Nichols, Jeffrey Cecil	Safety Performance Management Reporting	333	-	-	333
Nichols, Jeffrey Cecil	SAP BI Software Enterprise Agreement	-	3,696	-	3,696
Nichols, Jeffrey Cecil	SAP BI Upgrade	330	-	-	330
Nichols, Jeffrey Cecil	SAP BIA	-	654	-	654
Nichols, Jeffrey Cecil	SCG Data Warehouse Infrastructure Upgrade	-	731	180	911
Nichols, Jeffrey Cecil	C&A Security Operations Management	1,610	-	-	1,610
Nichols, Jeffrey Cecil	Endpoint Security	910	670	-	1,580
Nichols, Jeffrey Cecil	Enterprise Encryption	5,643	4,809	5,814	16,266
Nichols, Jeffrey Cecil	Govern Risk & Compliance	-	4,308	-	4,308
Nichols, Jeffrey Cecil	IAM Projects	759	755	1,162	2,676
Nichols, Jeffrey Cecil	Security Operations Management	-	2,220	2,203	4,423
Nichols, Jeffrey Cecil	Security Small Cap (Blanket)	300	300	300	900
Nichols, Jeffrey Cecil	Software Code Security	-	2,162	1,243	3,405
Nichols, Jeffrey Cecil	Battery Plant Replacement	883	-	1,276	2,159
Nichols, Jeffrey Cecil	Conferencing Refresh	-	1,008	349	1,357

Nichols, Jeffrey Cecil	DC Perimeter 2010	11,094	-	-	11,094
Nichols, Jeffrey Cecil	DC Rebuild	-	9,329	5,247	14,576
Nichols, Jeffrey Cecil	GridComm Phase 2	-	14,238	14,238	28,476
Nichols, Jeffrey Cecil	LAN Refresh	1,241	-	1,972	3,213
Nichols, Jeffrey Cecil	Messaging Project	-	2,430	-	2,430
Nichols, Jeffrey Cecil	Microwave Refresh	-	2,430	4,860	7,290
Nichols, Jeffrey Cecil	NCS Small Cap	700	700	700	2,100
Nichols, Jeffrey Cecil	Network Middleware Refresh	-	-	540	540
Nichols, Jeffrey Cecil	NMS Refresh	-	1,051	1,051	2,102
Nichols, Jeffrey Cecil	One Voice	1,547	-	-	1,547
Nichols, Jeffrey Cecil	Physical Layer Refresh	-	-	125	125
Nichols, Jeffrey Cecil	SCG Streaming Media	-	651	651	1,302
Nichols, Jeffrey Cecil	Sharepoint	-	1,082	1,611	2,693
Nichols, Jeffrey Cecil	Voice to Service	-	1,566	1,611	3,177
Nichols, Jeffrey Cecil	WAN Rebuild	6,450	4,054	2,409	12,913
Nichols, Jeffrey Cecil	Wired NAC	-	-	1,625	1,625
Nichols, Jeffrey Cecil	WLAN Refresh	-	-	682	682
Nichols, Jeffrey Cecil	2011 DR Mainframe Hardware Upgrade	-	600	-	600
Nichols, Jeffrey Cecil	Active Directory Refresh	138	-	-	138
Nichols, Jeffrey Cecil	Applications Testing & Remediation(P1)	532	1,062	-	1,594
Nichols, Jeffrey Cecil	Citrix 6	-	2,495	-	2,495
Nichols, Jeffrey Cecil	Distributed Backup Growth	1,736	449	1,736	3,921
Nichols, Jeffrey Cecil	Distributed Storage Growth	1,753	1,185	1,401	4,339
Nichols, Jeffrey Cecil	Distributed Storage Resource Management Tool	-	829	-	829
Nichols, Jeffrey Cecil	DS8100 Storage Arrays Refresh 2012	-	-	3,640	3,640
Nichols, Jeffrey Cecil	EMF Upgrade	-	1,439	-	1,439
Nichols, Jeffrey Cecil	Enterprise Command Center Display	419	-	-	419
Nichols, Jeffrey Cecil	ESM Projects	6,990	2,720	1,751	11,461
Nichols, Jeffrey Cecil	i3	-	1,082	1,315	2,397
Nichols, Jeffrey Cecil	IEO Small Cap	450	450	450	1,350
Nichols, Jeffrey Cecil	Legacy Printers Replacement	-	584	-	584
Nichols, Jeffrey Cecil	LINUX/UNIX Server Refresh	2,057	2,049	2,171	6,277
Nichols, Jeffrey Cecil	Mainframe Hardware Upgrade	3,209	-	-	3,209
Nichols, Jeffrey Cecil	Mainframe Storage Growth 2011	-	171	-	171
Nichols, Jeffrey Cecil	Server Room 2012	2,717	2,717	2,988	8,422
Nichols, Jeffrey Cecil	Print Servers Upgrade	263	527	-	790
Nichols, Jeffrey Cecil	RB Tape Library Replacement	-	702	-	702
Nichols, Jeffrey Cecil	Records Management Project	-	915	1,734	2,649
Nichols, Jeffrey Cecil	SMS Upgrade	87	2,313	-	2,400
Nichols, Jeffrey Cecil	Total PC Hardware Replacement	-	3,719	3,719	7,438
Nichols, Jeffrey Cecil	Wintel Refresh	1,781	2,163	2,838	6,782
Nichols, Jeffrey Cecil	CIS SNA Conversion	-	-	503	503
Nichols, Jeffrey Cecil	JDK/WLS/WLP Upgrade	2,934	674	-	3,608
Nichols, Jeffrey Cecil	MCS Improvement Project	-	266	266	532
Nichols, Jeffrey Cecil	PACER	-	383	549	932
Nichols, Jeffrey Cecil	Windows 7 Remediation for CCS	-	724	724	1,448
Wright, Gillian	Next Generation Envoy	-	787	787	1,574
Wright, Gillian	California Producer	234	474	-	708
	Total Capital	**68,594**	**110,346**	**91,713**	**270,653**

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Project Categories

Overall, the projects being proposed for implementation by SCG in this testimony improve IT ability to meet ratepayer and business user needs by supplementing existing capability in one or more of the following ways:

Security and Recoverability

These projects deal with creating or enhancing IT system capability to prevent unauthorized access, maintain data integrity, facilitate recovery or restart of operations, maintain business continuity or enhance operational security and facility safety.

Technology and or Business Functionality Obsolescence

Projects that deal replace or enhance IT systems that have become obsolete due to new technologies or discontinuation of vendor support, or if the IT system otherwise can no longer support SCG user requirements in terms of functionality, reliability or features.

New and enhanced capabilities

New and enhanced capabilities projects expand the scope of the existing service offering through enhanced user interface capabilities and/or additional features (including capacity upgrades maintaining the same or similar functionality to support growth).

Regulatory Compliance

Projects that create the necessary capabilities or functionality required to enable compliance with specific regulatory mandates or requirements.

The following table provides an overview of the projects undertaken by IT infrastructure and communications services in terms of these categories.

Table JCN - 10
Capital Expenditures - Categories

Witness	Project Name	Regulatory Compliance	Tech Or Bus Obsolescence	Enhanced Capability	Security and Recoverability	Lead Factor
Nichols, Jeffrey Cecil	GridComm Phase 2	R	O	E	S	O
Nichols, Jeffrey Cecil	Enterprise Encryption	R	O	E	S	S
Nichols, Jeffrey Cecil	DC Rebuild		O	E	S	S
Nichols, Jeffrey Cecil	WAN Rebuild		O	E		O
Nichols, Jeffrey Cecil	ESM Projects			E		E
Nichols, Jeffrey Cecil	DC Perimeter 2010		O	E	S	S
Nichols, Jeffrey Cecil	Server Room 2012		O	E	S	E
Nichols, Jeffrey Cecil	Total PC Hardware Replacement		O	E	S	O
Nichols, Jeffrey Cecil	Microwave Refresh		O	E		O
Nichols, Jeffrey Cecil	Wintel Refresh		O	E	S	O
Nichols, Jeffrey Cecil	LINUX/UNIX Server Refresh		O	E	S	O
Nichols, Jeffrey Cecil	Security Operations Management	R	O	E	S	S
Nichols, Jeffrey Cecil	Distributed Storage Growth		O	E		O
Nichols, Jeffrey Cecil	Govern Risk & Compliance	R		E	S	R
Nichols, Jeffrey Cecil	Distributed Backup Growth		O	E		O
Nichols, Jeffrey Cecil	SAP BI Software Enterprise Agrement			E		E
Nichols, Jeffrey Cecil	DS8100 Storage Arrays Refresh 2012		O	E		O
Nichols, Jeffrey Cecil	JDK/WLS/WLP Upgrade		O	E		O
Nichols, Jeffrey Cecil	Software Code Security	R	O	E	S	S
Nichols, Jeffrey Cecil	Source to Pay			E		E
Nichols, Jeffrey Cecil	LAN Refresh		O	E	S	O
Nichols, Jeffrey Cecil	Mainframe Hardware Upgrade		O	E		O
Nichols,	Voice to Service			E		E

Jeffrey Cecil						
Nichols, Jeffrey Cecil	Sharepoint		O	E	S	E
Nichols, Jeffrey Cecil	IAM Projects	R		E	S	S
Nichols, Jeffrey Cecil	Records Management Project	R	O	E	S	E
Nichols, Jeffrey Cecil	Logistics Mobile Refresh & Expansion		O	E		O
Nichols, Jeffrey Cecil	SAP Support Pack		O			O
Nichols, Jeffrey Cecil	Citrix 6	R		E	S	E
Nichols, Jeffrey Cecil	Messaging Project		O	E		E
Nichols, Jeffrey Cecil	SMS Upgrade		O	E		O
Nichols, Jeffrey Cecil	i3	R	O	E		E
Nichols, Jeffrey Cecil	Battery Plant Replacement		O		S	O
Nichols, Jeffrey Cecil	NMS Refresh		O		S	O
Nichols, Jeffrey Cecil	NCS Small Cap		O	E	S	O
Nichols, Jeffrey Cecil	IT Depot & NCS Conversion to SAP Supply Chain			E		E
Nichols, Jeffrey Cecil	M4 Fleet Application Replacement		O			O
Nichols, Jeffrey Cecil	Telecommunications Expense Management			E		E
Nichols, Jeffrey Cecil	SAP (ERP) Upgrade EHP5		O	E		E
Nichols, Jeffrey Cecil	Wired NAC			E	S	S
Nichols, Jeffrey Cecil	C&A Security Operations Management	R		E	S	S
Nichols, Jeffrey Cecil	Applications Testing & Remediation(P1)		O			O
Nichols, Jeffrey Cecil	Endpoint Security			E	S	S
Nichols, Jeffrey Cecil	Test Automation SAP Processes			E		E
Nichols, Jeffrey Cecil	One Voice			E		E
Nichols, Jeffrey Cecil	E-Sourcing, Contract Lifecycle Management			E		E
Nichols, Jeffrey Cecil	Windows 7 Remediation for CCS		O			O

Nichols, Jeffrey Cecil	EMF Upgrade		O	E		O
Nichols, Jeffrey Cecil	BPS Replacement		O	E		O
Nichols, Jeffrey Cecil	Conferencing Refresh		O	E		E
Nichols, Jeffrey Cecil	IEO Small Cap		O	E	S	O
Nichols, Jeffrey Cecil	SCG Streaming Media			E		E
Nichols, Jeffrey Cecil	Master Data Management	R		E		E
Nichols, Jeffrey Cecil	PACER		O		S	O
Nichols, Jeffrey Cecil	SCG Data Warehouse Infrastructure Upgrade		O	E		O
Nichols, Jeffrey Cecil	Security Small Cap (Blanket)		O	E	S	O
Nichols, Jeffrey Cecil	Distributed Storage Resource Management Tool			E		E
Nichols, Jeffrey Cecil	Print Servers Upgrade		O			O
Nichols, Jeffrey Cecil	Meta Data Repository	R		E		E
Nichols, Jeffrey Cecil	RB Tape Library Replacement		O	E		O
Nichols, Jeffrey Cecil	Oracle Enterprise Environment HW		O	E		E
Nichols, Jeffrey Cecil	WLAN Refresh		O	E	S	S
Nichols, Jeffrey Cecil	SAP BIA			E		E
Nichols, Jeffrey Cecil	2011 DR Mainframe Hardware Upgrade		O		S	O
Nichols, Jeffrey Cecil	Legacy Printers Replacement		O			O
Nichols, Jeffrey Cecil	SAP GRC Tools Firefighter	R		E	S	S
Nichols, Jeffrey Cecil	Network Middleware Refresh				S	O
Nichols, Jeffrey Cecil	MCS Improvement Project			E		E
Nichols, Jeffrey Cecil	CIS SNA Conversion		O	E	S	O
Nichols, Jeffrey Cecil	Enterprise Command Center Display		O	E		E
Nichols, Jeffrey Cecil	Safety Performance Management Reporting		O	E		E
Nichols, Jeffrey Cecil	SAP BI Upgrade		O	E		E

Nichols, Jeffrey Cecil	Mainframe Storage Growth 2011		O	E		E
Nichols, Jeffrey Cecil	GRC Model Development			E		E
Nichols, Jeffrey Cecil	Active Directory Refresh	R		E	S	R
Nichols, Jeffrey Cecil	Payment Processing Disaster Recovery			E		E
Nichols, Jeffrey Cecil	Physical Layer Refresh		O	E	S	O

As shown above, a significant portion of the projects undertaken are driven by a need to replace obsolete technology or business functionality.

B. Capital Request Detail

Table-JCN-9 above provides a listing of all the IT projects being proposed by SCG. As indicated in the descriptions of IT's capital and technology planning processes, the list is reviewed at regular intervals for appropriate additions or deletions or to modify the scope of individual projects based on more contemporaneous knowledge. As indicated earlier, only the projects relating to IT are described in detail in subsequent sections of this testimony. These infrastructure projects form a subset of all the IT projects listed in Table JCN-11. Additional project and project cost detail is included in my workpapers.

IT Infrastructure and Network and Communications Services Projects

The projects relating to the computing and communications infrastructure of SCG are projects that build and/or form the backbone of the many business and management information systems applications that help the utilities manage their business in an effective, safe and responsive manner. The computing and communications infrastructure is the common thread running through all these vital business systems. It is the software and hardware platforms that they are built upon, share, are remotely controlled or used by and whose performance ultimately defines and or constrains the workings of these business applications. These platforms include desktop computers, servers, network controllers, routers, communications cables, wireless devices, backup systems or operating systems. This infrastructure must, therefore, be managed in such a manner so as not to limit or degrade the excellent performance or service levels that utility customers have come to expect as routine.

As with any infrastructure endeavor, e.g., public roadways, infrastructure building and upkeep have many components that are both repetitive and predictable. The computing and communications infrastructure have components that predictably wear out, become more prone to failure, reach

capacity, and/or become obsolete when new products or components are introduced, or new features are required by consumers. A further complication with IT infrastructure is the rapid pace at which new devices and systems supersede existing ones. The projects discussed here share many if not all of these characteristics.

These projects help facilitate the implementation or development of business applications; they replace worn out or obsolete systems or systems that have reached their technological capacity and will likely have to be replaced or upgraded to newer or more powerful systems in the near future.

Finally, as indicated at the outset, a category of IT projects that is a significant proportion of these is the set of projects categorized as Security and Recoverability related. This emphasis reflects the growing importance of information security and business continuity in the design, operation and management of enterprise information systems and infrastructure.

The table below provides an overview of the subset of projects that are IT infrastructure and communications services-related projects.

Table JCN - 11
Capital Expenditures
(Thousands of 2009 dollars)

Witness	Project Name	2010 Total	2011 Total	2012 Total	3 yr Total
Nichols, Jeffrey Cecil	GridComm Phase 2	-	14,238	14,238	28,476
Nichols, Jeffrey Cecil	Enterprise Encryption	5,643	4,809	5,814	16,266
Nichols, Jeffrey Cecil	DC Rebuild	-	9,329	5,247	14,576
Nichols, Jeffrey Cecil	WAN Rebuild	6,450	4,054	2,409	12,913
Nichols, Jeffrey Cecil	ESM Projects	6,990	2,720	1,751	11,461
Nichols, Jeffrey Cecil	DC Perimeter 2010	11,094	-	-	11,094
Nichols, Jeffrey Cecil	Server Room 2012	2,717	2,717	2,988	8,422
Nichols, Jeffrey Cecil	Total PC Hardware Replacement	-	3,719	3,719	7,438
Nichols, Jeffrey Cecil	Microwave Refresh	-	2,430	4,860	7,290
Nichols, Jeffrey Cecil	Wintel Refresh	1,781	2,163	2,838	6,782
Nichols, Jeffrey Cecil	LINUX/UNIX Server Refresh	2,057	2,049	2,171	6,277
Nichols, Jeffrey Cecil	Security Operations Management	-	2,220	2,203	4,423
Nichols, Jeffrey Cecil	Distributed Storage Growth	1,753	1,185	1,401	4,339
Nichols, Jeffrey	Govern Risk &	-	4,308	-	4,308

Cecil	Compliance				
Nichols, Jeffrey Cecil	Distributed Backup Growth	1,736	449	1,736	3,921
Nichols, Jeffrey Cecil	SAP BI Software Enterprise Agreement	-	3,696	-	3,696
Nichols, Jeffrey Cecil	DS8100 Storage Arrays Refresh 2012	-	-	3,640	3,640
Nichols, Jeffrey Cecil	JDK/WLS/WLP Upgrade	2,934	674	-	3,608
Nichols, Jeffrey Cecil	Software Code Security	-	2,162	1,243	3,405
Nichols, Jeffrey Cecil	Source to Pay	3,295	-	-	3,295
Nichols, Jeffrey Cecil	LAN Refresh	1,241	-	1,972	3,213
Nichols, Jeffrey Cecil	Mainframe Hardware Upgrade	3,209	-	-	3,209
Nichols, Jeffrey Cecil	Voice to Service	-	1,566	1,611	3,177
Nichols, Jeffrey Cecil	Sharepoint	-	1,082	1,611	2,693
Nichols, Jeffrey Cecil	IAM Projects	759	755	1,162	2,676
Nichols, Jeffrey Cecil	Records Management Project	-	915	1,734	2,649
Nichols, Jeffrey Cecil	Logistics Mobile Refresh & Expansion	-	2,535	-	2,535
Nichols, Jeffrey Cecil	SAP Support Pack	-	1,287	1,238	2,525
Nichols, Jeffrey Cecil	Citrix 6	-	2,495	-	2,495
Nichols, Jeffrey Cecil	Messaging Project	-	2,430	-	2,430
Nichols, Jeffrey Cecil	SMS Upgrade	87	2,313	-	2,400
Nichols, Jeffrey Cecil	i3	-	1,082	1,315	2,397
Nichols, Jeffrey Cecil	Battery Plant Replacement	883	-	1,276	2,159
Nichols, Jeffrey Cecil	NMS Refresh	-	1,051	1,051	2,102
Nichols, Jeffrey Cecil	NCS Small Cap	700	700	700	2,100
Nichols, Jeffrey Cecil	IT Depot & NCS Conversion to SAP Supply Chain	820	1,163	-	1,983
Nichols, Jeffrey Cecil	M4 Fleet Application Replacement	-	1,893	-	1,893
Nichols, Jeffrey Cecil	Telecommunications Expense Management	716	967	-	1,683
Nichols, Jeffrey Cecil	SAP (ERP) Upgrade EHP5	1,385	285	-	1,670
Nichols, Jeffrey Cecil	Wired NAC	-	-	1,625	1,625
Nichols, Jeffrey Cecil	C&A Security Operations Management	1,610	-	-	1,610

Nichols, Jeffrey Cecil	Applications Testing & Remediation(P1)	532	1,062	-	1,594
Nichols, Jeffrey Cecil	Endpoint Security	910	670	-	1,580
Nichols, Jeffrey Cecil	Test Automation SAP Processes	-	1,555	-	1,555
Nichols, Jeffrey Cecil	One Voice	1,547	-	-	1,547
Nichols, Jeffrey Cecil	E-Sourcing, Contract Lifecycle Management	-	1,526	-	1,526
Nichols, Jeffrey Cecil	Windows 7 Remediation for CCS	-	724	724	1,448
Nichols, Jeffrey Cecil	EMF Upgrade	-	1,439	-	1,439
Nichols, Jeffrey Cecil	BPS Replacement	-	1,371	-	1,371
Nichols, Jeffrey Cecil	Conferencing Refresh	-	1,008	349	1,357
Nichols, Jeffrey Cecil	IEO Small Cap	450	450	450	1,350
Nichols, Jeffrey Cecil	SCG Streaming Media	-	651	651	1,302
Nichols, Jeffrey Cecil	Master Data Management	-	1,142	-	1,142
Nichols, Jeffrey Cecil	PACER	-	383	549	932
Nichols, Jeffrey Cecil	SCG Data Warehouse Infrastructure Upgrade	-	731	180	911
Nichols, Jeffrey Cecil	Security Small Cap (Blanket)	300	300	300	900
Nichols, Jeffrey Cecil	Distributed Storage Resource Management Tool	-	829	-	829
Nichols, Jeffrey Cecil	Print Servers Upgrade	263	527	-	790
Nichols, Jeffrey Cecil	Meta Data Repository	-	721	-	721
Nichols, Jeffrey Cecil	RB Tape Library Replacement	-	702	-	702
Nichols, Jeffrey Cecil	Oracle Enterprise Environment HW	698	-	-	698
Nichols, Jeffrey Cecil	WLAN Refresh	-	-	682	682
Nichols, Jeffrey Cecil	SAP BIA	-	654	-	654
Nichols, Jeffrey Cecil	2011 DR Mainframe Hardware Upgrade	-	600	-	600
Nichols, Jeffrey Cecil	Legacy Printers Replacement	-	584	-	584
Nichols, Jeffrey Cecil	SAP GRC Tools Firefighter	-	577	-	577
Nichols, Jeffrey Cecil	Network Middleware Refresh	-	-	540	540
Nichols, Jeffrey Cecil	MCS Improvement Project	-	266	266	532
Nichols, Jeffrey	CIS SNA Conversion	-	-	503	503

Cecil					
Nichols, Jeffrey Cecil	Enterprise Command Center Display	419	-	-	419
Nichols, Jeffrey Cecil	Safety Performance Management Reporting	333	-	-	333
Nichols, Jeffrey Cecil	SAP BI Upgrade	330	-	-	330
Nichols, Jeffrey Cecil	Mainframe Storage Growth 2011	-	171	-	171
Nichols, Jeffrey Cecil	GRC Model Development	156	-	-	156
Nichols, Jeffrey Cecil	Active Directory Refresh	138	-	-	138
Nichols, Jeffrey Cecil	Payment Processing Disaster Recovery	133	-	-	133
Nichols, Jeffrey Cecil	Physical Layer Refresh	-	-	125	125
	Total Capital	**64,069**	**104,084**	**76,872**	**245,025**

1. Project Summaries

Brief summaries of the projects named in the table above and which comprise approximately 80% of the projected three-year spend are provided here. Additional detail for these and the remaining projects is provided in my workpapers.

Citrix 6

The Citrix farm was built in 2005. Incremental upgrades have been implemented as needed. The farm supports users of mission critical and other applications. The user base exceeds 1000 users with 500+ concurrent connections per day. About half of these connections originate from users making secure, external connections into the Sempra Energy network.[14] Some of the large user groups that rely on Citrix include users of the Locate Mark, ESRI GIS and Fleet systems. This production environment meets Sempra's strict information security requirements. It is the preferred external access method over methods using Virtual Private Networks (VPN).

This is a tightly integrated platform that comprises hardware, operating system and system software. It serves the need for connecting internal and external users to Sempra's IT environment efficiently and securely. It is especially critical to resources that support large and complex initiatives like OpEx and SoCalGas AMI. The Citrix virtualization technologies have made great strides in generating efficiencies and enabling flexibility and scalability since our original implementation. The vendor, Citrix Systems, has released Citrix XenApp v6, which is a major upgrade with enhancements expected to save incremental O&M costs through the use of existing hardware, the potential

[14] For example, suppliers or vendors located outside the franchise territory

elimination of some Citrix system administration and support software, and a potential reduction in the number of servers required to support production capacity.

The vendor will no longer support the currently installed version 4 following the implementation of this new release. This project will replace the various existing Citrix system components to achieve the desired upgrade. These include replacing the existing Citrix physical server deployments with Sempra IT-approved standard blade systems running Windows 2008 x64 R2, replacing the Citrix virtual server deployments with Citrix standard VM server builds running Windows 2008 x64 R2, upgrading the existing SEU Citrix Farm from Presentation Server v4 to XenApp v6, upgrading the Citrix support infrastructure to take advantage of updated support and management technology and increasing the failover build out in the Monterey Park data center for DR Tier-1 and Tier-2 rated business applications, such as CMS. The project effort will also include analysis to identify opportunities to consolidate commonly used applications, such as Office Suite, onto fewer servers by using application virtualization and newer packaging techniques to reduce the number of physical servers deployed and the associated system licensed software instances.

Data Center Perimeter 2010

Existing network perimeter hardware is approaching end-of-life and end-of-support. Replacement is necessary to continue meeting agreed-upon service objectives. This project will replace aging and end-of-life perimeter network and security components to provide a more reliable and functional perimeter network and associated security services. Items to be replaced include routers, switches, firewalls, remote access infrastructure, load balancers, intrusion prevention hardware, and content filtering hardware. The new systems will reduce perimeter design complexity and allow implementation of architectural changes to deliver services in a more effective manner, as required to support current and planned major initiatives (SoCalGas AMI, OpEx 20/20 and GridComm). These changes will also simplify maintenance and operations as well as address security deficiencies identified by Internal Audit.

DC Rebuild

This is a continuation of the Complete Data Center Rebuild project initiated in 2009. Project is to improve the reliability and stability of the core network allowing for support of future initiatives and programs, reducing downtime and outages. Project tasks include refresh of core and WAN routers; migration of WAN routing from core routers and DLSW from core routers

Distributed Backup Growth

Historical rates of growth for incremental storage have exceeded 50% a year, while the incremental production capacity growth has only increased 7% a year. The realized backup growth is met annually with a project to supplement the backup environment to meet the growing needs for data protection as the storage environment continues to grow. Subsequent capital projects fund backup capacity growth commensurate to the amount of storage that is added to the environment. This is required to provide capacity to meet the requirements for business continuity and compliance. Without sustained backup capacity growth, the ability to provide these mandatory services would present significant gaps. This gap in capacity to meet this year's storage growth as it pertains to backing up the storage will be addressed with this project. This project will address normal production growth in the Sempra distributed backup environment that has not been captured in the normal growth projects. This will include capital project growth that has not been forecast as normal incremental growth.

Distributed Storage Growth

With the historical rate of growth at 7% annually for the current system environments, incremental storage is required to keep the systems functional. If additional storage capacity is not available for storage growth, then incremental data cannot be added to the systems. The systems will then fail to be functional.

The storage growth project will address the following:

1) Centralized production storage growth costs

2) Faster reaction time for growth issues

3) Faster environment provisioning

This project will address normal production growth in the Utilities-distributed storage environment and provide essential storage infrastructure for capital projects storage growth. This project will address growth needs for current production systems and O&M projects with requirements not to exceed 1Tb of storage residing on our centralized storage environment. This project will include purchase of additional hardware such as storage capacity for Storage Area Network arrays (SAN - a high-speed special-purpose network that interconnects different kinds of data storage devices with associated servers on behalf of a larger network of users) and Network Attached Storage (NAS - hard disk storage that is set up with its own network address rather than being attached to the

department computer that is serving applications to a network's workstation users) arrays, SAN storage switches, replication appliances, storage controllers and storage virtualization software.

The project will add storage infrastructure including storage arrays, disk shelves, and disks, SAN fabric switches to meet capacity requirements in the SAN and NAS environments. For example:

- Storage Area Networks arrays –SAN Storage capacity is estimated to be 275 Tb in Rancho Bernardo and 230 Tb in Monterey Park as of January 2011, which is projected to be 90% allocated at that time, with an averaged expected growth rate of 7% for production growth and 60% for capital projects. Additional SAN storage requirements of 35 – 50 Tb will be procured to meet the demand.
- Network Attached Storage arrays – NAS Storage capacity is estimated to be 90 Tb in RB, 70 Tb in Rancho Bernardo and 24 Tb in Century Park, which is projected to be 90% allocated, with an averaged expected growth rate of 10% for production growth. Additional NAS storage to 10 – 12 TB will be procured to meet the demand.
- Switches – In order to meet the demands for new SAN storage arrays and incremental server growth it is estimated that connectivity requirements to the SAN fabric will require two fabric switches, each in Monterey Park and Rancho Bernardo, with 48 ports. The expected growth of storage devices and servers will also require 9 workgroup switches with 16 ports each at Monterey Park and Rancho Bernardo.

DS8100 Storage Arrays Refresh 2012

The IBM DS8100 storage arrays in RB and MPK were purchased in 2004 with the Unix Refresh project and will be eight years old in 2012, past the recommended life for storage arrays and disks. The arrays are fully allocated and cannot be expanded and have a current capacity of 202 Tb among the three arrays. These top tier SAN storage arrays host production and non-production applications, including such application environments as SAP financials, and thus are key systems in the running of the business.

This project will replace the DS8100 SAN storage arrays with newer technology, by either the complete replacement of the storage arrays with replacement arrays or by populating other, newer existing SAN storage arrays with the required 202 TB of disk storage. The benefits for either option would be the same and are:

1) Ensured availability and reliability with the acquisition of newer technology;
2) Reduction in O&M support costs and cost avoidance of support costs for 4 years;
3) Increased performance through the utilization of newer, more advanced technology;
4) Larger capacity disks will reduce the physical footprint requirement for equivalent capacity;
5) Greater scalability for the future;

6) Reduced power and heat consumption; and

7) Integration with current virtualization software implementation.

Enterprise Encryption

Some existing server operating systems, application servers, and database platforms, in their current configurations, are not able to reasonably and cost effectively accommodate protection of sensitive information both while the data is in transit and after being recorded on storage media (e.g., at rest). This condition prevents multiple front-line production systems in the environment from being able to satisfy current Information Security requirements. The result is a potential exposure of sensitive information on disks removed from SAN and NAS storage arrays. This project proposes to implement a modular, hardware-based encryption mechanism that operates transparently to existing SAN and NAS equipment, servers, operating systems, application servers, and database platforms. The resulting system will assist in reducing risks associated with federal and state compliance issues, and reduce complexities associated with handling sensitive HR and financial data. This is a two-phase project and will deliver an enterprise-scale solution for encryption of data at rest.

Enterprise Service Management (ESM)

SEU depends on IT to deliver business critical services and to help maintain service quality, by quickly troubleshooting, alerting and resolving events that may impact these services at any given time. In fact, any disruptions or degradations in IT service can cause serious, even catastrophic damage to the business and our clients/customers. IT is under considerable pressure to achieve the high levels of service that users require and demand. The overall goal of the SEU Enterprise Service Management Project is to transform IT from a support function to a business enabler.

This set of ESM projects will seek to provide tools, processes and resources that will improve IT's ability to troubleshoot, monitor and resolve incidents and high-impact outages, automate some routine ticketing tasks, and reduce incidents and high impact outages that occur within the various IT tiers and that impact critical business services.

This project consists of three project modules – *ESM Enhancement, Event Management and Service Monitoring.*

The *ESM Enhancement* project will upgrade existing ESM Solutions in order to implement new functionality and features for the existing ESM Solution Suite that will facilitate the reduction of IT Total Cost of Ownership via the automation of routine ticket creation and ticket routing. Upgrades will also augment CMDB data using federated data from other information repositories and facilitate

new "Self-Service" offerings in Sempra's Service Desk and Service Catalog[15] systems. Currently, ticket creation, ticket routing, IT service requests, and CMDB data imports and updates, require mostly manual labor to complete. This project will implement new out-of-the-box (OOTB) connectors, which will facilitate new functionality and features mentioned above and reduce the time and manual labor required to complete tasks. This project assumes that new features and enhanced functionality provided by the system upgrades will avoid custom development costs to otherwise obtain these.

This project may potentially contribute to improvements such as gradually replacing a number of manual ticket creations, ticket responses and escalations with the automated functions these tools provide.

The *ESM Service Monitoring* project will improve IT's ability to rapidly identify and address events that impact our business application services and provide end-to-end visibility into the actual performance and end-user experience with these services. This project will be implementing a "Service Monitoring" solution comprising Business Service, Application Performance and Client Experience monitoring, integrated with our existing infrastructure Manager of Managers (CA SPECTRUM),[16] in order to provide that holistic view. Year-to-Date, the largest percentage (31%) of all high-impact outages have been at the Application Tier. As more applications and services are released by certain large initiatives, specifically OpEx and smart meters, it is highly likely that this trend will continue or gradually worsen without this project.

This project will implement tools that when used alongside processes that will be implemented by *ESM Event Management*, will enable IT to detect and pin-point issues with monitored applications, regardless what technology tier is causing the incident.

Industry sources indicate that Service Monitoring tools will cut service downtime caused by failed applications/services by 75%, due to facilitating proactive identification of issues and the ability to automate fixes to known issues if they occur. This project will aim to provide real-time monitoring of key business critical applications so that events that impact these can be detected and resolved quickly.

[15] Service Catalog – A listing of services that the IT division provides to the Utilities.
[16] CA Spectrum (Manager of Managers) – Network Fault Isolation System currently used for network device and distributed server monitoring.

The ESM Event Management project will implement SEU IT's Event Management process and an integrated Event Management tool architecture. This project will leverage and add significant capacity to the current SEU Service Desk (SSD), CMDB, SPECTRUM and Ehealth systems, along with tools being implemented by ESM Service Monitoring and other system management tools, to facilitate the new Event Management procedures.

The overall number and duration of high-impact service outages have increased over the past year and this trend may continue and get increasingly worse if IT does not change the way it manages and monitors events. ITIL Event Management will help reduce outages by introducing proper event detection, correlation and processing procedures.

SEU will be leveraging the ESM Phase 1 Unlimited licensing contract to build out additional capacity in SPECTRUM, Ehealth, SSD and the CMDB to accommodate an integrated event management solution to help manage Sempra's most critical business services. If this does not occur before the licensing term expires in 2013, Sempra will need to purchase licenses and system maintenance contracts in excess of $4.3M to accommodate this type of solution.

This project will also use existing system monitoring tools to identify: (1) tools that need to be integrated into the new integrated Event Management solution and (2) underutilized tools that can be replaced by new integrated monitoring tool functionality.

Governance Risk and Compliance

The company depends on the Information Security & Information Security Compliance (ISISC) department to manage IS-related risk and compliance levels in accordance with SEU company policies and standards and federal and state law and guidelines, such as requirements mandated by SOX legislation, SB1386, and HIPAA, to name a few.

The ISISC department currently manages multiple independent and mostly manual, IS-related Governance, Risk and Compliance Management (GRCM) processes that are time- and resource-intensive and/or too complex for client recipients. IS-related risk, threat, vulnerability and compliance information is stored in numerous non-consolidated repositories, making it very difficult for ISISC analysis in support of business decision makers.

This project and the capabilities it will provide are necessary for the ISISC department to perform key services in a sustainable and cost-effective manner. Additionally, the project will offer some compliance management services to select business clients. Project benefits will be achieved by

enhancing, automating or replacing current manual processes with automated management tools that enable more efficient measurement, remediation, and reporting of IT and IS-related controls and risks against objectives, and in accordance with rules, regulations, standards and policies. Financial drivers include the capability to avoid future incremental costs and increased resource levels as a result of process automation. The project team will complete proofs of concept of selected vendors by 4Q2010. The proofs of concept will test and score technical and functional product features, evaluate vendor maturity and obtain product, maintenance and professional services cost estimates from each vendor tested. The team will work with the Supply Management team to negotiate best and final costs of the selected vendor.

The project will assess and redesign IT Risk and Compliance management processes supported by the Information Security Information Assurance group and the following selected business client compliance processes:

- ISISC Compliance - Self attestation, Information Asset Inventory, IT Controls and Policy Mapping (Security Requirements), Policy distribution and attestation;
- IT Control Self Assessment, IT Enterprise Governance, Risk and Compliance Asset Repository, Enterprise Risk Reporting, IT Compliance;
- Dashboards, IT Risk Assessment (risk acceptance procedure), Remediation Exception Management, Collections; and
- IT Compliance - Record Retention Process.

These processes will be redesigned, implemented and automated in a vendor GRCM software solution that will be installed on SEU-certified server hardware. Assessment, redesign, technical and client training will be supported through vendor professional services.

GridComm

This project builds the next generation wireless network for SoCalGas, servicing the needs of the mobile workforce and selected fixed assets. The project will implement an advanced wireless communications system that will allow SoCalGas to communicate with the mobile workforce, enabling rapid work order response and logistical efficiencies.

GridComm is required for functions never envisioned for SoCalGas' existing communications systems. It will replace outmoded, inefficient, single-use radio frequency (RF) systems with one secure, consolidated system yielding greater performance, security and interoperability.

GridComm will improve security and lower operating costs for SoCalGas for years to come.

The project will implement a set number of base transceiver stations to provide the required coverage. Additionally, the project will implement the radio endpoints for the mobile workforce and any required fixed assets. Additional backhaul capability may be required. Lastly, the project will integrate the Phase 2 network with the Control Services layer implemented in GridComm Phase 1.

Identity and Access Management (IAM)

The IAM Phase 2 project consists of implementing additional automated, self-service workflows for the creation and maintenance of identities within the corporate network. These workflows will also automate the integration/connection to additional internal systems such as SAP. The project is divided into four waves:

Wave 1 – Gas SCADA Integration, Badge Pictures Integration:
Gas SCADA integration will enable password synchronization between targeted internal Active Directory (AD) domains. Badge pictures will be integrated into the IAM identity vault for use by HR in preparing employee profile reports to officers and management.

Wave 2 – Role Based Access Control (RBAC):
Includes initial implementation for automating system access and access removal based on the individual's role or duties within the company, department or application. This will also provide better management visibility into the access those individuals have to different systems within Sempra.

Wave 3 – SAP Integration with IAM Infrastructure:
SAP integration will enable account synchronization between the AD and SAP user store so SAP client applications can be enabled for reduced sign-on.

Wave 4 – IAM New Functionality Workflows & Client Self Service:
This new functionality includes adding workflows for account creations, enhancing self-service functionality, and leveraging audit tools such as Access Manger to ensure consistency and visibility into create/modify/delete processes.

This project enables the company to achieve additional operational efficiencies associated with the ongoing management of identities throughout their lifecycle (e.g. create, change, track, etc.), due to an increase in automated processes and the corresponding reduction in the amount of manual effort required to perform these activities.

Java Development Kit (JDK) / WebLogic Server (WLS) / WebLogic Portal (WLP)

This technology upgrade is necessary to deliver our committed service level agreements (SLA), and to support new enhancements for our mission critical applications. Core application components being upgraded as part of this project are JDK (Java Development Kit), WLS (Web Logic Server) and WLP (Web Logic Portal). The combination of JDK and WLS/WLP provides Java programming language-based tools and application development framework for developing and running computer programs that provide systems functionality and underlying computer logic.

The current versions of JDK, WLS and WLP, which many of our computer systems run on, are obsolete. JDK (Java Development Kit) version 1.4.x reached its End of Service Life on Oct 30th 2008. BEA's[17] WLP (Weblogic Portal)/WLS (Weblogic Server) version 8 is approaching its end of life in Oct. 2009. The performance of mission critical applications including SCBS, CCS, ENVOY, MyAccount and EBPP are at risk running on this obsolete vendor software and platform. The existing version of WLP does not adequately support secured remote portlets. The existing Oracle JDBC connection to MyAccount EBPP[18] lacks encrypted logon credentials; therefore, upgrading WLP/WLS/JDK is necessary to continue to maintain reliable, stable, and flexible applications and to support the dynamic business changes.

This project will upgrade Customer Care System Applications at both Utilities which include ENVOY, CCS, SCBS, CAT, MyAccount Portal, eService, HECT, GRC2 and EBPP; and Utility Operation Applications including MyProject, NBC, MCC, and CallOut to use the latest version of the JAVA JDK (1.6), WebLogic (10.3), Oracle (10R2), and third-party vendor tools running on this environment.

[17] BEA – vendor of Web Logic systems
[18] EBPP – Electronic Bill Payment and Presentation

- JDBC (Java Database Connectivity) - Provides connectivity between Java-based computer programs and database servers (Oracle, Sybase) utilized for data storage purposes.
- ENVOY – SoCalGas's internet based gas transportation management system.
- Customer Contracts System (CCS) – SoCalGas's system for managing gas transportation customer's contracts.
- Specialized Customer Billing System (SCBS) – SoCalGas's system for handling non-core customer's billing.
- Core Aggregator Transportation (CAT) - SoCalGas's system for managing core aggregator gas transportation.
- MyAccount Portal – SoCalGas's internet-based web portal that offers a variety of self-service options including electronic bill payment.
- Electronic Bill Payment and Presentment (EBPP) – SoCalGas's internet-based customer self-service application for presenting electronic bills and accepting on-line payments.
- GRC2 (General Rate Case) – Utility application to support general rate case preparation.
- My Project – Utility internet-based self-service application that enables customers to register and update their profiles.
- NBC (New Business Construction) – Utility application that allows builders to request new electric and gas service and to monitor those requests.
- CCA (Critical Cyber Access) – Utility application used for tracking access to the Utilities' critical cyber assets.
- Callout – Utility application utilized for calling-in work crews in response to after-hours electric and gas repair service calls.

LAN Refresh

This project is to manage and replace LAN switches with performance capabilities required to support strategic business and IT initiatives. Additionally, it will maintain a consistent and standardized LAN environment, which will reduce operation and maintenance costs and upgrade existing LAN infrastructure previously deployed under LAN Refresh Project. It will also ensure that all SEU sites have the required port capacity, adequate LAN cabling and comply with LAN standards. Lastly, it will develop strategy and schedule for next LAN Refresh through vendor acquisition process.

LINUX/UNIX Server Refresh

The LINUX/UNIX Server Refresh Phase 6 project continues with the strategic direction to convert the legacy, non-standard, aging, distributed and difficult to maintain environments over to AIX and Redhat Linux platforms. Our legacy UNIX environment consists of dedicated SUN servers, which have a history of hardware reliability problems, contentious vendor support and inflated support costs.

The scope of the project is to target the remainder of these Sun servers for refresh. The project will use hardware including either new Redhat Linux blades or p570/AIX LPARS available as the result of refreshes.

Logistics Mobile Refresh & Expansion

The current mobile barcode and RFID solutions are 5 - 7 years old and are being dropped from support by the hardware manufacturer and by the software vendor. The legacy scanning equipment does not take advantage of new scanning technology which is lighter and more reliable; it also utilizes less expensive labeling technology. The system also needs to be expanded to all warehouse locations at the Utilities. The Utilities need to standardize their scanner hardware technology.

All the current handheld scanning devices and portals will be replaced or upgraded to supported equipment. The Catamaran mobile application will also be upgraded to a supported release. The Mobile solution will be expanded to 20 new warehouse locations at SCG.

Mainframe Hardware Upgrade

The Mainframe Hardware Upgrade project will replace the current IBM z9 mainframe with the proposed IBM z10. Without upgrading the mainframe in 2011, the current CBU will not be able to support the full production load by 2012.

Based on October 2009's CP3000 reporting of current production utilization and an estimated projection of 8% compounded normal growth, our current CBU (z9 BC A01) would not be able to support production workload beyond the 1st quarter of 2012. Additionally, IBM has withdrawn marketing of the z9 servers. An upgrade of CBU to z10 server would be needed in 2011 to support the projected production workload in early 2012.

Messaging Project

The Messaging Project will design and deploy infrastructure to support Exchange 14, providing features, capacity, functionality improvements and integrations to existing systems. It will perform transition evaluation from Dedicated to Shared Storage environments, improve existing failover design (currently only DR-scenario supported), and upgrade platform version to current release. It will also decommission the non-Exchange-Native pathways for message delivery to wireless devices.

Microwave Refresh

The project will upgrade circuits and provide incremental capacity to meet the requirements of major new programs such as OpEx, the legacy application growth, and other business critical applications.

Using network capacity and utilization tools such as Netscout and E-health, the network team analyzed current network utilization, capacity requirements driven by legacy applications and net-new applications to determine the needed capacity to support the business. In addition, the asset management system and accounting systems vendors have notified us that support for these systems will end for the aging microwave radios and transport-related equipment in the field.

Records Management

This project will address the systematic practice of maintaining company records from the time they are created until their eventual disposal. This may include classifying, storing, securing, and destruction (or in some cases, archival preservation) of records. The project will also include the organization, storage and archiving of non-records. While the records management initiative at the company has been active for a number of years now, only the last three years have included electronic records. The current process is a manual examination of the unstructured artifacts on the server and network file shares, the email public folders, employee's local hard drive and network personal share. This manual process entails examining over 100 million documents and provides no automated method for discovery, organization and deletion of records. Additionally, the ownership for file shares is not automated and is a tedious process, prone to uncertainty. Through 2010, the process has been handled internally with company staff and auditors. In 2011, an external audit will take place and the results will be published to company officers. This project will look to provide mechanisms to assist in realizing compliance in both the records management area and in the restriction of company sensitive data.

This project will address the following needs:

1) A systematic method for identifying aged documents;
2) The ability to identify the owner responsible for records and non-records;
3) The ability to archive records and non-records to various storage tiers seamlessly and with a disposition schedule;
4) A reporting mechanism to aid a user's annual records management scrutiny of records and non-records; and
5) The ability to discover prescribed company records and sensitive data in any unstructured data repository.

The Records Management Phase 1 project will provide the following benefits:

1) Free up an estimated 20% of Network Attached Storage disk storage by providing visibility to what is old and provide a mechanism to archive those older documents to cheaper storage or deleting them all together;
2) Better reporting to facilitate the records management process, avoiding audit issues; and
3) Identification of object owners will assist in maintaining file share ownership.

SAP BI Software Enterprise Agreement

SEU currently does not have an enterprise agreement for SAP Business Intelligence (BI) software. As a result, as clients and project teams identify a need for tools such as the Business Objects suite, Crystal and Xcelsius, spot purchases are required. All the existing licenses for Business Objects, Crystal and Xcelsius were purchased in this manner. A prevailing 80% deep discount negotiated earlier with SAP, which made single point purchases reasonable, expires in 2012. An enterprise agreement is the economically more prudent choice than spot buy purchases, especially in light of the impending loss of the 80% discount.

Based upon SEU's growing need and demand for BI capabilities in areas such as OpEx, CRM, and SCG AMI, an SAP BI enterprise agreement would provide the necessary functionality and capabilities to users, as needed, without requiring each project to make their acquisitions separately. An enterprise SAP BI agreement would provide these and other teams access to use any (or all) of the tools in the SAP BI toolset including Business Objects, Crystal and Xcelsius.

SAP Support Pack

Support Packages contain the corrections to SAP code and Data Dictionary objects. It is imperative that our systems are consistent with the same Support Package levels, just as it is important to keep current with the latest releases from SAP. In order to achieve this, we must institute a plan and schedule to keep current during and after the SAP implementation goes into production. Slipping far behind in Support Packages will create risk, and SAP Support themselves will be unable to provide us with effective support.

The technical upgrade to the latest SAP support pack level is required for continued SAP production support. The SAP Support Pack upgrade is required to receive valuable patches and improvements to the SAP Enterprise system. SAP Support requires the system to be on a supported release and support pack level.

The project will upgrade the SAP Support pack level to the current release level. It also will regression test all impacted functional areas of SAP prior to product implementation.

Security Operations Management

This project will focus on delivering solutions that provide beneficial services to clients and customers. With the advent of "SMART" technologies, the company's infrastructure has extended to customer premise devices. Due to the pervasiveness of this environment, the company has elected to implement services and solutions to assist in the management of security event and incident data.

Currently, the company receives security event data from over 20,000 internal endpoints. The existing services and solutions are unable to support growth. To provide the support necessary to be able to adequately respond to security incidents, the company must extend and/or re-evaluate IT investment into security incident management solutions, leverage threat and vulnerability management solution and/or services and make improvements in its ability to provide incident response services.

The Security Operations Management will provide the necessary enhancements and/or upgrades over a three (3) year period.

Year one (2010) will evaluate and implement an enhanced Security Incident and Event Management (SIEM) solution. This new technology will allow IS to continue delivering cost-effective enterprise security monitoring and extend the footprint to address key business areas in our corporate, control system, and smart meter environments.

Year two (2011) will evaluate and implement Network Threat Identification/Inspection and enhanced Vulnerability Management capabilities. This project will be leveraged enterprise-wide to allow for threat detection, vulnerability identification, and risk mitigation.

Year three (2012) will evaluate and implement an enhanced Incident Response and Forensics capability to keep up with the ever-changing threat landscape. The combination of new technology and process will allow for the protection of critical infrastructure, enterprise systems, and intellectual property.

MPK and RB Server Rooms

The current capacity for server rack space will not support server requirements for existing approved projects or those in the planning stages, and additional rack space requirements above these are a certainty. Without the ability to add servers, the projects will not be successful.

Several examples of capital projects supported include: OMS/DMS, Network refresh, GridComm, OpEx, AMI, OneVoice, GFMS, Wintel and Unix refreshes, EMS upgrades, Customer Care Centers. Older existing racks are no longer suitable for new servers as their physical dimensions are insufficient and rack power systems need to be upgraded to cope with increased server loads.

This project provides floor and rack space to house servers for known and upcoming capital projects. Additionally, a plan is being developed to monitor and report on some physical components of the server rooms and other related spaces, for power, temperature, etc. and report any anomalies to IT management. The monitoring included in this first monitoring phase is for selected critical

components of the Server Room and Data Centers infrastructure, including electrical systems, generator's operations, UPS systems, air temperature, and more. Future projects will provide for augmentation of these systems to monitor new equipment installations as part of the facilities Data Center upgrades and to add monitoring to components not covered in the first phase. These same issues will be addressed for the Rancho Bernardo and the Monterey Park data center sites.

SharePoint Refresh

This project will allow contractors and Sempra Company employees to collaborate and share documents securely over the internet. This project will leverage new hardware and existing infrastructure to provide connectivity between vendors and the company over a secure internet. The project responds to business unit requests to securely share documents with contractors, consultants, and third-party vendors.

SMS Upgrade

This project consists of replacing hardware and software of the 12 existing SMS servers for desktop management and 5 servers for server management with 13 new servers. It is an infrastructure upgrade project moving from the existing System Management Server (SMS) to System Center Configuration Manager (SCCM) due to product end of life and support by Microsoft.

In addition, this project can potentially allow consolidation of Management consoles of the Citrix, Server and Desktop infrastructures. It will reduce power consumption on our desktop environment through the Desktop Power Management and reporting features. The new platform will allow the company to support and leverage newer technologies such as Windows 7 and Application Virtualization.

Although Sempra IT has achieved its immediate goals of transitioning many desktop management tasks through automated tools and processes (SMS 2003, Active Directory and Group Policy Owners), there are still gaps that prevent the company from increasing its ability to quickly respond to rapidly changing demands of the business, and its ability to obtain further efficiencies through standardization and automation of client technology management tasks. Some of the areas that need to be addressed are providing capability to:

- quickly provision desktops by enhancing the effectiveness of IT's automated deployment and provisioning technology;
- further reduce desktop costs and minimize operational risks by consolidating desktops, and virtualizing software;

- prevent end-user downtime by proactively monitoring and maintaining client technology devices;
- reduce manual labor by leveraging integration with other management tools to automate support tasks; and
- reduce client technology Total Cost of Operation by increased standardization of the desktop environment.

Software Code Security

Prevailing programming practices lead to conditions that put Sempra information assets at risk of loss and corruption as a result of outmoded software design philosophies. This risk is currently being mitigated via manual review of source code. However, with the growing increase in software development activities across the company, the current manual approach cannot be sustained. This project will implement an executable code security program to automate the examination of custom-developed software at the source code level, identify risk conditions, and provide guidance to coding teams to remediate and mitigate risk conditions. The project will also provide verification that executable code has met standards for coding and security practices. The program will result in more stable and secure code, reducing risks of impacts associated with California Civil Code 1798.80-84, SOX, HIPAA rules, and FERC regulatory requirements for affiliate compliance.

This is a three-phase project and will implement an enterprise-scale source code and static executable code analysis tool.

Source to Pay

The existing AP Process lacks automation and efficiency to optimize discounts for early payment. It also lacks efficiencies in purchase order (PO) and invoice disputes. This project will automate the AP - Invoice process by scanning invoices currently received through email, fax, or hard-copies. Once scanned, the invoices will be routed through a set of workflows to expedite the approval process. The project will also enable connectivity with our Suppliers through a Suppliers Network to exchange information on POs and invoices. The supplier network will allow us to trace AP information more rapidly and resolve issues with vendors more efficiently. In addition, the project will replace our existing procurement application with a solution that offers greater efficiencies. This project will deliver an AP Imaging Intelligent OCR & Workflow solution to reduce the manual activity of entering invoices in SAP via Intelligent OCR scanning technology.

The AP Imaging/Intelligent OCR will improve our invoice process by effectively shortening our invoice processing time from 4-7 days to approximately 3. The Supplier Third Party Portal project will offer this functionality and will automate POs (approximately 30,000 yearly) that would be

otherwise created manually. Thus, it improves the supplier relationship base by shortening the procurement process. All in all, the source to pay process will improve efficiency of the entire source to cash process – the process from ordering materials up to the time the suppliers are paid.

Source to pay is an IT capital project with support and active participation from our business clients. We are doing this project now to implement processes that are efficient and effective, thus removing manual processes via automation, improving discount taking, providing new dynamic discounting, and improving processes overall.

Windows 7 Platform Replacement Program

SEU IT's strategic decision to adopt the Windows 7 OS is the key driver for the Total PC Hardware Replacement project. The business driver behind adopting the Windows 7 OS platform is that the current operating system, Windows XP, has a product end of support from Microsoft of April 2014, operating system forward compatibility, and data security. The cost of not replacing the platform now will be around $67 million (assuming 1% of Sempra employee downtime for 12 hours at $45/hour) due to OS system instability and security vulnerabilities if Sempra decides to remain on the unsupported Microsoft XP platform.

In order for the Windows 7 OS roll out to be successful, Sempra must put in place a hardware refresh program to accommodate the computing power of the Windows 7 operating system. Presently, the minimum requirements for Windows 7 are: Lenovo T61 or newer for laptops and Dell Optiplex 745 or newer for desktops. This proposed project is an aggressive "forklift" effort to bring Sempra's entire PC hardware environment current to meet the minimum requirements for the Windows 7 OS. This project will conduct a total system replacement of PC Hardware to bring the entire company up-to-date in its PC computing power. The 39-month project will cover 12,000 laptop and desktop devices and will conclude in 2014. Mobile Data terminals ("MDT")s are not in scope for this project.

The project also includes upgrading Sempra's print environment. In order for Sempra employees to be able to print once they are upgraded to the new 64-bit desktop OS - Windows 7, all print servers, virtual and physical, must be upgraded to a 64-bit OS. This project will be replacing all Windows 2003 print server operating systems to Windows 2008 R2. To upgrade to Windows 2008 R2 in our virtual server environment the virtual host server must be upgraded to VMware 4.0, commonly known as vSphere. To upgrade to vSphere and Windows Server 2008 R 2, the existing server hardware must be upgraded to HP DL380 G6s. Due to the hard dependency on Windows 7, the server team has decided to expedite the print server and Modular Smart Array (Storage Arrays)

upgrade at remote sites, originally planned as part of the Wintel Refresh 6 project in 2011. In addition, approximately 350 legacy printers and 96 plotters (large specialized printers) will need to be replaced due to incompatibility with the new print server environment.

Voice to Service

No development environment exists currently where E-mail, Instant Messaging, Voice/Video/Web Conferencing and Enterprise Voice services can be implemented with proposed configurations and integration points, making progress towards a full leveraging of currently deployed assets slow and potentially painful. This project will provide an environment for this activity, as well as for the deployment of validated features/integrations into the production environment.

The Voice to Service project will install development instances of existing Production Business Communications Service applications into an environment that can be used for developing and refining new uses and integrations before rolling into the production environment. The project will acquire, install, and configure the Integration Development Environment for development and proof-of-concept testing for integration of various existing and new applications into a comprehensive Unified Communications model. This will include but will not be limited to evaluation of: (1) using Exchange as the Voicemail repository, (2) using the Avaya as a Video/Voice conferencing Gateway, and (3) integrating mainframe/distributed application processes with existing business communication applications.

WAN Rebuild

This project is a continuation of programmatic network refresh plan. The project replaces remaining end-of-support WAN hardware (routers), upgrades 5 microwave transport paths, and enables enterprise-wide traffic engineering, virtualized networks and Quality of Service (QOS) functionality deployment. The current devices and system are not capable of supporting needs for future incremental capacity or functionality requirements of major programs, including OpEx 20/20 applications.

Using network capacity / utilization tools such as Netscout and E-health, the network team analyzed current network utilization, capacity requirements driven by legacy applications and net-new applications to determine the needed capacity to support the business. In addition, the asset management system, accounting systems, and vendors communicated the end-of-support for the aging routers in the field.

The project will:

- Purchase and install 106 WAN routers;
- Configure all 343 WAN routers as a multi-protocol label switching (MPLS) system, enabling virtualized networks, traffic engineering and QOS;
- Implement 5 capacity upgrades and 18 network transition units (NTU), in direct support of OpEx 20/20 (GIS); and
- Audit all circuits for under/over-utilization, compare against incremental requirements, and optimize capacity as required.

Wintel Refresh

The Wintel Refresh project is a continuation of the company's programmatic computing equipment refresh plan. The project removes servers that have reached the end of their 5-year life cycle and eliminates Microsoft Windows Server 2000 from Sempra's environment. The project will remove approximately 163 servers running MS Windows 2000 from the RB & MPK datacenters. SEU's Wintel server environment currently hosts about 163 servers using an out-of-date operating system (MS Server 2000), which will no longer be supported by the vendor after 7/13/2010. The Utilities must use supported operating systems in order to implement patches routinely distributed by the OS provider to address security vulnerabilities. In addition, utilizing outdated operating systems restricts the use of technical, security, management and administrative features common to newer operating systems.

My work papers provide additional detail on these and the other IT infrastructure projects listed in Table JCN – 11.

V. CONCLUSION

As many of the Commission's recent decisions and actions have indicated, reliable, secure and scalable IT facilities and services are necessary for a modern utility to effectively discharge its franchise obligations. The expenditures we are requesting here are designed to do that. They reflect the need to support planned growth, support adoption of Commission-mandated or approved new technology services and capabilities, replace obsolete technologies and capabilities and to do so without compromising safety or security of utility operations or information assets. Our O&M request maintains our ability to effectively service utility needs at historically accepted and excellent service levels while incorporating the large influx of new technology services unique to this filing. Our capital request, while it is largely driven by a combination of regulatory mandates and obsolete technology replacement projects, also incorporates planned investments in key platform technologies that will sustain our ability to stay current with developments in technology or utility business requirements.

For these reasons, we request that the Commission adopt the proposal for operations and maintenance and capital expenditures presented in this testimony for the IT division to allow SCG to meet its customer service obligations through the rate case cycle beginning in TY 2012.

This concludes my prepared direct testimony.

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VI. WITNESS QUALIFICATIONS

Jeff Nichols is Director of Network and Communication Services (NCS) for the Sempra Energy Utilities. The Utilities serve over 20 million customers in a 24,000 square mile southern California service area. Mr. Nichols' organization provides data networks, telephone service, email, instant messaging, radio communications, voice communications, collaboration systems, grid/SCADA communications, communications field service and remote access for the utilities' 12,000 employees. As of Q1 2010, his organization is beginning a two-year project to build a new Smart Grid-ready wireless communication system throughout southern CA.

Mr. Nichols has 30 years' experience in digital systems technology and management. He was previously the Executive Director of IT Infrastructure at Kaiser Permanente, where he was responsible for IT security, enterprise systems management, disaster recovery, networks, and telephony. Previously, he was an independent consultant, a divisional VP and CTO at Science Applications International Corporation and VP/General Manager at International Research Institute, a private software development firm.

Mr. Nichols is a member of the IEEE, a Board member of the Utilities Telecom Council (UTC) and is Vice Chairman of the UTC's Smart Networks Council. He holds a bachelor's degree in electrical engineering from the University of Kentucky and a master's degree in business administration from Kent State University. Mr. Nichols has not testified previously before this Commission.

Provided in this Appendix are definitions of general acronyms of terms or programs discussed in testimony, and a brief explanation of the role the referenced item, system, feature or program plays in SDG&E's and SoCalGas' IT operations.

APPENDIX

BCAP	"BCAP" is the acronym for an SEU capital program, and stands for "biannual capacity allocation plan". The goal in BCAP is to optimize gas transmission and distribution processes by looking ahead at capacity requirements for all stakeholders in a region.
BPL	"BPL" is the acronym for "broadband over power line", a technique for delivering digital information over electrical lines. It has been considered as a large-scale solution for utilities, but is more likely to be used as a niche solution where no other data delivery technique is practical.
BW	"BW" is the acronym for "business warehouse" a generic IT industry term for a database that holds key financial and operational data. A BW is typically part of a larger "business intelligence" system.
CMDB	"CMDB" is the acronym for "configuration management data base". A CMDB is used to understand how IT system component interconnect and depend on each other. A CMDB can be crucial for high-integrity operations processes, and placing a CMDB into service is widely considered to be an IT "best practice".
CPP	"CPP" is the acronym for "critical peak pricing". It refers to the ability to change the price of delivered energy based on short-term demand – the higher the system demand or need, the higher a price. CPP is a technique for reducing the total energy system cost by

	changing short-term ratepayer behavior and reducing peak requirements.
CRM Energy Efficiency	"CRM Energy Efficiency" refers to "customer relationship management" a generic industry term for software that automates the interactions between a corporation and its customers. "Energy Efficiency" initiatives inevitably involve lots of customer outreach and interactions, and CRM tools are a way to perform that outreach more efficiently.
Dashboards	"Dashboards" is a generic term for high-level information summaries produced for management. A dashboard typically summarizes long periods and massive amounts of information in a (hopefully) concise and useful way.
DC Network	"DC Network" refers to the SEU's "data center network". This is a specialized, high-performance data network supporting all IT systems in both of the SEU production data centers.
Distributed Storage Virtualization & Duplication	"Distributed Storage Virtualization & Duplication" refers to a modern class of digital storage systems that are self-optimizing. These systems can be "virtual" because they are defined as a software layer above and independent of specific hardware products – the system is in software-only. The "duplication" part of the name refers to an optimization technique called "de-duplication", where the system detects duplicate information in a large storage volume and removes it, keeping only one master copy of any information.
DLP	"DLP" is the acronym for "demand load program", also referred to as "demand response program" or "DRP". DLP is related to critical peak pricing – it is a process the utility industry proposes to use to save ratepayers the expense of building energy systems for the absolute peak of demand. In DLP processes, ratepayers will be informed of peak demand times and costs, and many will respond rationally by reducing their consumption at the time when the energy system is most stressed.

DLSW	"DLSW" is the acronym for "data link switching", an IT standard routing protocol. DLSW is a tunneling protocol, designed to connect unroutable, non-Internet Protocol (IP) systems to modern IP systems.
EDIX	"EDIX" is the acronym for "electronic data exchange", a generic IT industry term for online transactions between two companies. EDIX systems use standard message and file protocols to initiate and complete secure transactions among otherwise separate systems. These transactions are typically purchase orders and payments.
eHealth	"eHealth" is the product name for a system management software product sold by CA Technologies. The utilities use eHealth to create reports on detailed performance of production IT systems.
Enterprise Encryption	"Enterprise Encryption" refers to the Utilities' standards for data encryption technologies and processes. We use encryption to protect important customer and operational information from unauthorized disclosure.
Enterprise Service Bus	"Enterprise Service Bus", or ESB, is a part of the utilities' production IT systems. It is a communication gateway that allows software applications to send messages to each other. The ESB is a type of software "middleware" and is an example of a "service oriented architecture".
ERP	"ERP" is the acronym for "enterprise resource planning", a class of software systems used to support finance, purchasing and human resources.
ESM	"ESM" is the acronym for "enterprise service management". This is a class of software applications and systems used to optimize large-scale IT operations. ESM is also the name of an SEU capital project.
Google Power Meter	"Google Power Meter" refers to a free energy monitoring tool (from Google) that allows

	consumers to view home energy consumption from anywhere online. SDGE offers Google Power Meter in cooperation with Google to all customers with SDGE Smart meters.
Gridcomm DOE Award	"Gridcomm DOE Award" refers to the 2010 American Recovery and Reinvestment Act (ARRA) award of $28.1M given to SDGE in response to a proposal and project called "Gridcomm". The award was part of the Smart Grid Investment Grant Program, and is administered by the Department of Energy. The Gridcomm capital program was approved by the Sempra Board in 2010 and includes $34M of IT capital. The goal is to build a private wireless communication system across SDGE's service territory in response to new requirements of automated meter reading, Smart Grid applications, mobile workforce and emergency services needs.
I3 Infrastructure	"I3" is the acronym for "infrastructure generation three", and refers to the third generation of SEU-specific standards for computing infrastructure – e.g. standards for servers, storage and network devices.
ICE/Genesys	"ICE/Genesys" refers to an SEU-specific use of a communications software product from Genesys corporation. Genesys is the supplier of critical communications software used in SEU call centers. "ICE" in this context stands for "interactive customer experience", a goal of one of SEU's call center initiatives.
Identity & Access Management	"Identity & Access Management" refers to an SEU initiative to improve the way people and systems gain access to SEU online systems and data. Both people and digital systems need to connect with production data systems, and the Identity & Access Management initiative seeks to improve both security and efficiency of those connections.
Internal Cloud Computing	"Internal Cloud Computing" refers to a new 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).
Multi-tier distribution Storage	"Multi-tier distribution Storage" refers to a modern architecture for digital data storage. In this architecture, multiple "tiers" of data storage systems are defined based on operating requirements for capacity, speed, security and cost. This allows SEU to use the right quality of data storage for a given business requirement.
OMS	"OMS" is the acronym for "operations management system", a utilities industry term for a sometimes-complex system used to automate core utility operations functions – e.g. monitoring energy grid performance, viewing system fault information, and controlling switches across the distributed energy grid.
One Voice	"One Voice" refers to the 2007-2010 SEU capital program that replaced inefficient analog phones systems with modern digital systems across all Utility locations.
OpEx CBM	"OpEx CBM" refers to the SEU Operational Excellence 20/20 ("OpEx 20/20") Condition Based Maintenance ("CBM") capital program aimed at increasing the efficiency and effectiveness of utility assets by measuring their operational state constantly and proactively repairing or replacing the asset when measurements indicate an imminent failure, as opposed to the traditional practice of replacing key assets on a schedule independent of their operating state. CBM techniques will improve SEU's service availability and will reduce operating cost. OpEx 20/20 is described in the testimony of Richard D. Phillips (Exhibit SCG-13).
OpEx Mobility	"OpEx Mobility" refers to the SEU Operational Excellence 20/20 ("OpEx 20/20") Mobility program aimed at increasing the efficiency and effectiveness of field staff by delivering richer information to them at the right point in the mobile work process. OpEx 20/20 is described

	in the testimony of Richard D. Phillips (Exhibit SCG-13).
Oracle Grid	"Oracle Grid" is the trade name for Oracle Corporation's version of grid computing. Grid computing is an architecture that uses large numbers of standard, simple computing elements to work in parallel and solve large, computationally difficult problems.
Remote Portlets	"Remote Portlets" is a generic name for a software architecture that employs small, distributed information portals (portlets) to deliver information to end users.
Service Oriented Architecture	A "Service Oriented Architecture", or SOA, is one in which software components communicate with each other via structured, standardized messages. The software components advertise their features to each other via standard messages or signals. The utilities' production IT systems use SOA techniques extensively.
Share point Enterprise Collaboration and Messaging	"Sharepoint" is a product of Microsoft. The utilities use Sharepoint for document management, web publishing and team document sharing. "Sharepoint Enterprise Collaboration and Messaging" refers to a class of software products all managed by a single utilities IT department, including Sharepoint.
SMS	"SMS" is the acronym for "System Management Server" a Microsoft product the Utilities use to manage and integrate many IT systems.
SOA	"SOA" is the acronym for "service oriented architecture", defined in item 3 above.
Source-to-Pay	"Source-to-Pay" is the industry generic term for optimized processes for the entire life cycle and supply chain of purchasing and payment. Many companies offer source-to-pay software and outsourced processes. SEU has a capital program with the goal of implementing more efficient supply chain processes via source-to-pay techniques.

Spectrum	"Spectrum" is the product name for a system management software product sold by CA Technologies. The utilities use Spectrum to monitor production IT systems.
SQL	"SQL" is the acronym for "structured query language", a standard way to communicate with relational data base management systems. SQL is among the oldest IT system standards, dating back to the 1970s.
Supervisor Enablement	"Supervisor Enablement" refers to an SEU capital program aimed at increasing the efficiency and effectiveness of supervisors in the field and customer support workforce. Supervisors are given access to data in the field via new mobile computers and wireless communications, allowing them to leave the office and work directly with their staff in the field.
Thin Client	"Thin client" refers to a software architecture in which the client (end user computer) software is minimal, or thin. Use of a web browser as the primary user interface is an example of a thin client.
Unix Virtualization AIX LPAR	"Unix Virtualization" refers to the ability of the Unix operating system to define and operate software-only (virtual) copies of a complete computer. Multiple software copies can be run on one physical machine. "AIX LPAR" is the acronym for an IBM version of Unix virtualization, and stands for "Advanced Interactive Executive logical partition".
Virtual Tape Library	"Virtual Tape Library" refers to a new storage technique where traditional tape-based storage systems are created using software-only emulation – the tape drive is virtual, it exists only in software. Virtual tape libraries are useful when it is more efficient to keep the older computing platform and its storage interfaces – e.g. a mainframe computer – and replace an expensive, hard to maintain physical tape system.
WiMAX	"WiMAX" is the term for a standard broadband wireless communication system. The acronym stands for "worldwide

	interoperability for microwave access". It is an IEEE (Institute of Electrical and Electronics Engineers) standard, often referred to as IEEE 802.16. WiMAX is a standard the utilities expect to use in next-generation wide area communication systems.
Wintel Blade	A "Wintel Blade" is an industry term for a server that uses the Microsoft Windows operating system and Intel processors and is built as a vertically-oriented board (a "blade") that fits in a standard 19 inch equipment rack. Dozens of blades can typically be housed in one rack.
Wintel Virtualization – VMware full production	"Wintel Virtualization" refers to the ability of the Microsoft Windows operating system to define and operate software-only (virtual) copies of a complete computer. Multiple software copies can be run on one physical machine. "VMware" is the name of a company that offers computer virtualization products. "VMware full production" simply refers to that product suite being placed into production service by the utilities.
WMS	"WMS" is the acronym for "work management system", a utility industry term for software applications that automate complex scheduling and logistics.