Application No.:	A.08-09-
Exhibit No.:	SCG – 4
Date:	September 29, 2008
Witness:	Christopher R. Olmsted

SOUTHERN CALIFORNIA GAS COMPANY

ADVANCED METERING INFRASTRUCTURE

CHAPTER IV

INFORMATION SYSTEMS, APPLICATION DEVELOPMENT AND INTEGRATION, AND AMI TECHNOLOGY

Prepared Direct Testimony

of

Christopher R. Olmsted

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

September 29, 2008

TABLE OF CONTENTS

I. INTRODUCTION

The purpose of this testimony is to present Southern California Gas Company's ("SoCalGas") plan for systems application development and integration, implementation of advanced metering infrastructure ("AMI") technology and related estimated expenses needed to enable AMI capabilities in the SoCalGas service territory. Specifically, I will describe the functionality required of a gas meter data management system ("MDMS") and integration of MDMS data with existing SoCalGas legacy systems. I will also provide an overview of the AMI technology to be installed which will enable endpoints to send information to the MDMS.

SoCalGas is requesting Commission approval for funding in the amount of $303.4 million for information technology related activities. Of this total, SoCalGas requests expedited approval for pre-deployment funding in the amount of $7.5 million to be available by January 2009 in order to begin activities required to initiate information technology ("IT") work as described in Section II below. A summary of the total estimated costs is found in Table IV-1 within this testimony. This request for funding is in support of SoCalGas' vision and strategy for enabling the customer to better manage their gas usage through AMI technology.

II. PRE-DEPLOYMENT FUNDING

SoCalGas is requesting expedited approval for $7.5 million of IT-related pre-deployment funding for AMI technology evaluation and selection, IT systems development and integration design, and project management office set-up. This pre-deployment funding will allow SoCalGas to begin critical systems design work in order to avoid a delay in the project deployment schedule. The pre-deployment funding will be used for the following activities:

A. Project Preparation

Duration: 3 months

Cost: $1.5MM

Activities:

Develop project work plan

Set up project structure and procedures

Secure internal resources

Procure professional services personnel

Kick off the project

B. Requirements

Duration: 3 months

Cost: $4.0MM

Activities:

Document requirements

Review current Production Acceptance Criteria

Review risks and dependencies

C. Establishment of Development Environment

Duration: 3 months (overlap Project Prep and Requirements)

Cost: $2.0MM

Activities:

Procure and implement servers/storage

Implement legacy applications

QA test of environment

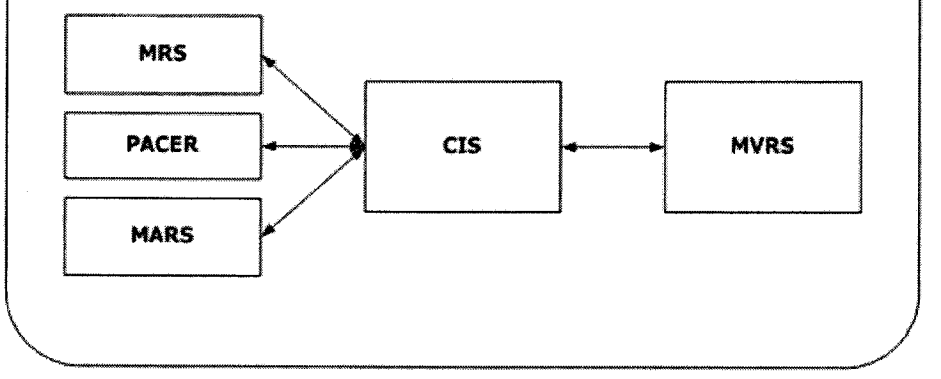
If the Commission adopts SoCalGas' complete request for expedited approval for pre-deployment funding, the total costs identified in this testimony would be reduced by $7.5 million.

III. APPLICATION DEVELOPMENT AND INTEGRATION

A. Background

SoCalGas' Customer Information System ("CIS") application is the focal point for current metering and billing processes (Figure IV-1). SoCalGas currently processes 5.7 million meter reads on a monthly meter read and billing cycle. The CIS downloads daily meter reading routes and meter account information to SoCalGas' current meter reading system, Multi-Vendor Reading System ("MVRS"). MVRS manages the reads collected by meter readers via approximately 1,000 handheld computers. End of the day meter reads are uploaded to CIS for nightly batch data processing. Meter reads that successfully pass batch validations are submitted for bill calculation and presentation. Customer bills are printed and mailed each business day (day after the meter read). Meter reads that do not pass batch validations are routed to business analysts for review. Decisions are made per business rules to satisfy exceptions at which time they are submitted for calculation and presentation to the customer. Exceptions requiring a visit to a customer's facility to inspect or verify meter information are routed to SoCalGas' field workforce system, Portable Automated Centralized Electronic Retrieval ("PACER"). Meter activity (e.g., sets, removes) is coordinated with Meter Records System ("MRS") and Meter and Regulators System ("MARS").

Figure IV-1 - Current System/Data Flow



B. Approach

With AMI deployment for approximately 6 million meters by year-end 2015, SoCalGas will need to install and integrate an MDMS to collect, process and validate hourly gas reads from each of the AMI gas modules. Included as key requirements for the MDMS are the following:

1. Multiple AMI technologies and associated systems

The MDMS must have the ability to accommodate different communications systems. The MDMS should support multiple "head-end" and/or MDMS systems coming from various communications networks and act as the conduit between the AMI network and the back office systems.

2. Integration with SoCalGas legacy applications

The MDMS will be required to interact with SoCalGas legacy applications (Figure IV-2) via an already implemented Service Oriented Architecture ("SOA"). The primary applications include:

SAP - Supply chain application will provide asset management services. In addition to the 6 million meters, the new AMI Network will include many new and different types of equipment to install, track and monitor. Along with the equipment will come maintenance schedules, issue tracking and issue resolution. SAP will act as the control center for Service Order generation for proactive maintenance of AMI assets. The system must coordinate actions with SoCalGas' CIS and PACER systems from order creation to closure.

CIS – Revenue cycle system utilized by SoCalGas business users. Functionality includes customer information, facility information, order requests, billing services (e.g., read, calculate, print, corrections), payment services and collections services. This application is a centralized repository of information to allow users full view of

customer activity. It will be enhanced to integrate with the MDMS to present meter activity and read data which will provide customer contact personnel or self-service customer applications better information for customer inquiries as well as the ability to proactively monitor consumption patterns and address issues prior to bills being produced.

PACER/ART - Applications utilized to schedule, route and dispatch field activity. Changes required will provide visibility to AMI enablement of a meter at a facility to ensure that proper resources are considered when addressing work requests. The Automated Resourcing Tool ("ART") system will be modified to support the customer service field workload changes which result from the AMI system and the associated business process impacts.

MVRS - This is the current meter reading system for handheld units. SoCalGas' AMI meter deployment and installation period is expected to last 5 years. During the deployment period, meters will continue to be read using current SoCalGas methods and processes. Changes will be made to send manually collected reads to the MDMS in order to create a centralized repository of all reads collected.

Data Warehouse - It is anticipated that SoCalGas' existing data warehouse tools will be utilized to interrogate AMI data. Once the data is retrieved through AMI technology it will undergo a validation, editing and estimation ("VEE") process designed from SoCalGas' business rules and then made available to the data warehouse.

3. Data analysis and data processing

VEE functions are key elements of any MDMS. Basic validations on zero consumption and daily usage are critical to enable the normal processing of customer bills.

4. Data repository

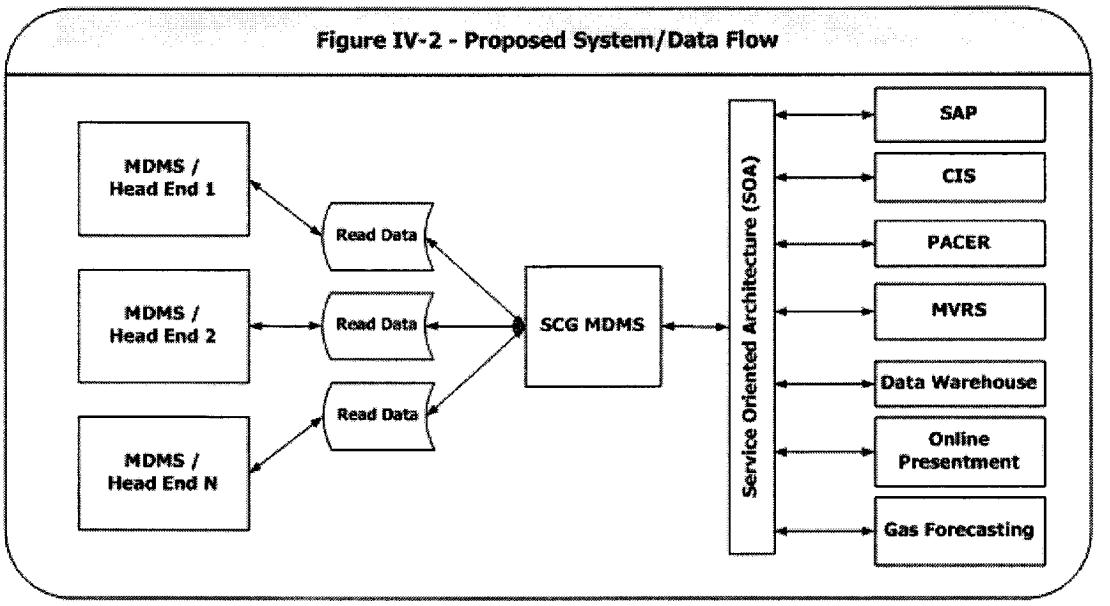
A single source of data for AMI related information is essential to achieve operational benefits. The repository will contain new, historical and changed information and act as the original source of meter reads for other utility legacy systems.

5. Service management

Another service the MDMS must perform is the manual meter read forecast and dispatch during the installation process. The system should evaluate the daily AMI reads with respect to billing cycles to forecast any necessary manual meter reading in the event of system issues, and produce daily reports for exception and resource management.

6. On-line presentment

A significant element of AMI is the ability to provide timely data to customers and show them how their usage relates to their bill. The MDMS is expected to provide capabilities to quickly and easily display data on SoCalGas' Customer Portal through a service or hosted web application. Providing SoCalGas customers with visibility to hourly consumption data collected on a daily basis (minimum daily basis) will help deliver the conservation benefits documented in Mr. Martin's testimony, Chapter VI.



IV. AMI TECHNOLOGY

The request for proposal ("RFP") process established that multiple technologies are available from the marketplace that can satisfy SoCalGas functional requirements. The communications technology for gas AMI system is radio frequency ("RF"), often referred to as wireless. RF can be further broken down into two separate categories: licensed (the utility owns or leases the RF spectrum) and unlicensed (the utility does not own and shares the public RF spectrum with other commercial applications).

It is important to note that the technologies referred to here apply to communication to/from an endpoint device (the meter, programmable communication thermostat, etc.) and a higher-level data collection device. SoCalGas refers to these components of the system as the local area network ("LAN"). As these technologies relate to AMI, there are pros and cons that depend on the specific application. These applications can relate to meter density per square mile and rural versus urban/suburban environments. An important point to note is that gas meters do not have available power and for safety and maintenance reasons SoCalGas will not run wires to the gas meter. As a result, SoCalGas would require that the gas AMI module communicate wirelessly with battery source power in the gas modules. At this point in time, SoCalGas is evaluating multiple technologies. However, as stated earlier, the costs included in

this chapter ensure that SoCalGas' functional requirements are met, thereby ensuring that the estimated benefits will be realized.

Communication between collection devices and the head-end system is referred to by SoCalGas as the wide area network ("WAN"). The head-end system typically resides in a utility's data center and is used to read the meters, perform other utility applications and monitor/manage the AMI communication system. Typical technologies used today for WAN communications are public wireless (CDMA, GSM) and landline telephone (PSTN).

SoCalGas continues its commitment to open architecture throughout the various information exchanges. With regard to the LAN portion of the AMI communication system, open architecture between endpoint devices and collectors is not readily available in the marketplace today and is technology dependent.

With regard to the WAN and head-end sections of the AMI communication system, SoCalGas believes that the technologies being considered offer open architectures. In particular, the WAN has the option of using commercial wireless technologies (CDMA, GSM), ethernet, landline telephone (PSTN), and future offerings such as WiFi and WiMAX.

SoCalGas required vendors to deliver an information technology system that can interface with any AMI technology vendor's head-end system. By decoupling these systems, they can be developed, tested and deployed independently. Taking the potential for emerging technologies a step further, SoCalGas included requirements within the RFP that will allow SoCalGas to utilize emerging technologies that are not commercially available during the deployment phase. SoCalGas will achieve this by requiring that the network equipment be capable of remotely upgrading device firmware. The AMI communications network will be a two-way communication system (WAN). SoCalGas also required that WAN devices have "plug and play" modules for backhaul to simplify installation.

The technologies that SoCalGas is considering are capable of providing the endpoint device data that will enable SoCalGas to monitor and manage much of the gas system. Specific data that is required on a daily basis are hourly intervals for residential customers. SoCalGas

believes that the bandwidth requirements (data speed) for the LAN portion of the AMI communications network is sufficient.

V. SUMMARY OF ESTIMATED COSTS AND BENEFITS

SoCalGas has completed its RFP process and developed costs based on the information supplied by responders. Table IV-1 below includes expenses associated with the rollout of their AMI technology, implementation of an MDMS and integration with SoCalGas' legacy systems.

Table IV-1

AMI Network Communications Technology,

Information Systems & Application Development and Integration Costs

In 2008 Direct Dollars ($Millions)

Costs	Total	Deployment Period 2009-2015	Post-deployment Period 2016-2034
O&M			
IT & Application Development & Integration			
Labor	$21.9	$4.6	$17.3
Hardware	$4.9	$1.7	$3.2
Software	$23.9	$3.6	$20.3
Professional Services	$0.1	$0.1	$0.0
AMI Technology			
Installation & Lease	$37.4	$5.1	$32.3
Wide Area Network Communications	$21.2	$2.9	$18.3
Data Collection/Head-end	$10.6	$2.2	$8.4
Services & Fees	$27.2	$0.0	$27.2
Maintenance	$1.6	$0.3	$1.4
Total O&M	$148.8	$20.5	$128.3
Capital			
IT & Application Development & Integration			
Labor	$8.5	$8.5	$0.0
Hardware	$52.8	$23.6	$29.2
Software	$13.4	$8.5	$5.0
Professional Services	$24.3	$24.3	$0.0
AMI Technology			
Communications Devices	$22.8	$22.8	$0.0
Installation & Lease	$13.8	$13.8	$0.0
Services & Fees	$19.0	$19.0	$0.0
Total Capital	$154.6	$120.4	$34.1
Total Costs	$303.4	$140.9	$162.4

VI. PROJECT RISKS

SoCalGas recognizes that the technical challenges that AMI presents to the back office and hardware infrastructure are significant. Some of the major IT risks introduced by wide scale AMI adoption include: the scalability of the MDMS, the throughput and complexity of the integration between systems, and potential security vulnerabilities at the integration points. Some of these risks will be mitigated through the formal vendor selection process, the selection of a standards-based integration tools, performance and security vulnerability tests, as well as an AMI network security zone. SoCalGas will also consult with San Diego Gas & Electric Company ("SDG&E") to determine and evaluate the lessons that have been learned. The remaining risk will be managed by SoCalGas, its chosen Systems Integrator, as well as the vendor responsible for project management.

There are some risks associated with the schedule for implementation. The 18-24 month systems implementation schedule and current tight IT skilled labor market could make it difficult to hire and retain qualified, experienced IT and business systems support staff. To the extent possible, SoCalGas will utilize existing staff on the AMI project and will backfill positions with contractors.

To balance the risks outlined above, SoCalGas has included the following risk mitigation factors in the financial analysis. First, each IT deliverable was assessed and an average of 25% contingency was added for capital labor costs and a 10% contingency was added to hardware/software capital. Second, IT hourly labor rates reflect the requirements for specialized skills. Third, SoCalGas has a philosophy to buy software rather than build it. Fourth, SoCalGas analysis leveraged much of the expertise gained as part of the AMI implementation at SDG&E.

VII. WITNESS QUALIFICATIONS

My name is Christopher R. Olmsted and I am employed by San Diego Gas & Electric Company (SDG&E). My business address is 555 W. Fifth Street, Los Angeles, CA 90013.

My present position is Software Development Manager for SoCalGas' CIS application. I have been affiliated with various roles within CIS from 1992 to the present. Although I have worked with most of the functions associated with a typical CIS application, my primary focus has been on meter reading and billing processes. From 1994 – 1996, I was a project lead responsible for the implementation of the meter reading and prebilling functions for SoCalGas' new CIS (implemented March 1996). Upon implementation of the system, I took over leadership of the billing functions. In 2002, I became manager of the CIS team and assumed responsibility for all of the functions related to the system.

Prior to joining Sempra Energy, I was employed as a consultant with Andersen Consulting (1989 – 95). My main focus during this time was the development and implementation of an open standards shop floor application for the manufacturing environment. My duties included responding to many RFPs and working with potential clients to implement a package solution into legacy environments. The last two plus years at Andersen was as a senior consultant/manager on CIS implementations at SoCalGas and SDG&E.

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

I have not previously testified before the California Public Utilities Commission.

This concludes my testimony.