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SOUTHERN CALIFORNIA GAS COMPANY

ADVANCED METERING INFRASTRUCTURE

CHAPTER III

SOCALGAS AMI DEPLOYMENT PLAN, COSTS, AND OPERATIONAL BENEFITS

Errata to

Prepared Direct Testimony

of

Mark L. Serrano

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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I. INTRODUCTION

The purpose of this testimony is to demonstrate that Southern California Gas Company's ("SoCalGas") request for funding to deploy advanced metering infrastructure ("AMI") in its service territory is reasonable and should be adopted by the California Public Utilities Commission ("CPUC" or "Commission"). This ~~estimate~~ testimony supports SoCalGas' vision and strategy for enabling customers to better manage their gas usage by leveraging AMI technology.

The operational costs included in the scope of the testimony pertain to system-wide deployment of a "Stand Alone" AMI system. Costs include the acquisition and installation of gas AMI meter modules, purchase and installation of gas meters equipped with AMI meter modules, maintenance of the AMI system and other associated costs expected to be incurred during and after gas AMI deployment.

The most notable operational benefits include cost reductions and cost avoidances in the meter reading, customer services field and billing areas. SoCalGas will also benefit by avoiding, or delaying, future capital expenses and other associated administrative and general expenses, including the associated overheads.

A breakdown of SoCalGas' estimate of the pre-deployment, deployment and post-deployment costs (excluding information technology and AMI network costs presented in the testimony of SoCalGas witness Mr. Christopher Olmsted and energy conservation costs presented in the testimony of SoCalGas witness Mr. J. C. Martin) and the related operational benefits are included within this testimony. Also included is a summary of the intangible benefits expected to result from deployment of gas AMI and the strategy for mitigating risk associated with realizing the cost benefits.

Table III-1, below, contains the summary of costs and operational benefits included in this testimony. Unless otherwise noted, all costs and benefits are stated in direct 2008 dollars.

Table III-1
Summary of Operational Costs and Benefits
"Stand Alone" SoCalGas AMI
In 2008 Direct Dollars ($Millions)

Costs	Total	Deployment 2009 - 2015	Post Deployment 2016 - 2034
O&M	$261.0	$90.7	$170.3
Capital	$704.1	$542.7	$161.4
Total Costs	$965.2	$633.4	$331.7
Benefits			
O&M	$1,164.7	$118.1	$1,046.6
Capital	$266.8	$41.4	$225.4
Theft	$2.4	$0.3	$2.1
Total Benefits	$1,433.9	$159.7	$1,274.1
Net Benefits	$468.7	($473.7)	$942.4

II. PRE-DEPLOYMENT FUNDING

SoCalGas is requesting expedited approval for $1.7 million of pre-deployment funding to staff and house the project management office ("PMO") to perform the functions described in this chapter (see Section VII.H., Project Management Office Costs).

This pre-deployment funding will enable SoCalGas to hire and house the staff necessary to evaluate and select its AMI technology and installation suppliers, initiate change management activities, engage in process re-engineering work, support the regulatory process associated with the SoCalGas AMI Application and develop customer communication materials. This amount includes expense associated with providing work space to the systems integration staff (described in the testimony of SoCalGas witness Mr. Olmsted). Approximately $0.1 million of the $1.7 million is requested to support the customer research work described in the testimony of SoCalGas witness Mr. Martin.

If the Commission adopts SoCalGas' request for expedited approval for pre-deployment funding, the total costs in this testimony would be reduced by $1.6 million and there would be a reduction in the funding request of SoCalGas witness Mr. Martin of $0.1 million.

III. BACKGROUND

The direct operational costs for the system-wide "Stand Alone" AMI system described in this testimony are approximately $965.2 million. The direct operational benefits to result from implementation of SoCalGas AMI are approximately $1.4 billion.

In addition to the operational benefits, AMI is an enabler for development of new energy conservation programs. AMI-enabled energy conservation benefits are presented in the testimony of SoCalGas witness Mr. Martin.

The most significant operational benefits are realized through a reduction in meter reading activities after approximately 6.0 million gas AMI meter modules have been installed. The benefits resulting from the changes to meter reading operations are approximately $777.5 million (including O&M and capital). The operational benefits are summarized in Table III-2.

Table III-2
Summary of Operational Benefits
2009 – 2034
In 2008 Direct Dollars ($Millions)

Functional Area	Operational Benefits	Percent of Total
Meter Reading	$757.6	53%
Customer Services Field	$270.5	19%
Customer Billing Services	$65.8	5%
Other O&M	$70.8	5%
Sub-Total O&M	$1,164.7	81.2%
Working Cash	$50.6	4%
Metering	$141.2	10%
Other Capital*	$75.0	5%
Sub-Total Capital	$266.8	18.6%
Theft	$2.4	0.2%
Total Benefits	$1,433.9	100%

* Other Capital includes $19.9 million in Meter Reading benefits

IV. APPROACH USED TO DEVELOP THE COST BENEFIT ANALYSIS

SoCalGas' analysis is a financial comparison of the present value of estimated SoCalGas AMI costs and benefits over the useful life of the AMI system. The 20-year useful life of the AMI system was determined based upon the responses to a Request for Proposal issued to AMI technology vendors during 2008. Direct cost and benefit estimates discussed in this chapter were derived through an internal process that involved the participation of all affected operating departments.

SoCalGas labor and non-labor cost impacts were estimated by year. These estimated costs were then applied to the planned deployment schedule, including estimated annual meter growth. The time span included in the analysis was 26 years, beginning January 1, 2009 and concluding December 31, 2034. The analysis period includes the multi-year deployment period

(2009 through 2015) plus a 20 year post-deployment period which is based upon the 20 year useful life of the gas AMI meter modules (2015 through 2034)[1]. As stated in the testimony of SoCalGas witness Mr. Fong, in the SoCalGas financial analysis, the annual direct costs are loaded, escalated for inflation and stated in terms of nominal dollars by year. The same costs (and benefits) are ultimately stated in terms of the present value of the revenue requirement ("PVRR") reflecting the ratepayer impacts, in present value terms, over the life of the project.

V. DESCRIPTION OF COST AND BENEFIT ESTIMATES

Unless otherwise noted, the SoCalGas AMI project costs and benefits discussed in this chapter are estimates of the impact SoCalGas AMI deployment will have upon SoCalGas direct expense, presented in nominal dollars in the year they occur. The foundation upon which cost and benefit changes are based is the SoCalGas TY2008 General Rate Case ("GRC").

This chapter addresses the costs and benefits for operations, project management, gas AMI meter modules, gas meters and installation work. These costs and benefits are summarized into four categories: Deployment Period Costs (2009-2015); Post-Deployment Period Costs (2016- 2034); Operational Benefits; and Intangible Benefits.

In summary, SoCalGas' cost benefit analysis incorporates the costs and benefits expected to be realized over the entire analysis period extending from 2009 through 2034.

VI. FORECAST ASSUMPTIONS

This section describes the basis for SoCalGas forecasts of labor costs, non-labor costs, meter growth, gas AMI meter module failure rates, incompatible meters, meter changes and curb vault meters used in the SoCalGas AMI business case.

[1] The 20-year useful life of a gas AMI meter module begins the year it is deployed. The last year of AMI system deployment is 2015. Adding 20 years to the last year of gas AMI meter module deployments results in 2034 becoming the last year of the analysis period.

A. Labor

SoCalGas labor cost assumptions were consistent with those applied in the SoCalGas TY2008 GRC. Labor costs were based on the number of full-time equivalent employees multiplied by the annual labor rate for the impacted job classifications. Labor rates were based on the 2007 SoCalGas market reference points and the utility's collective bargaining agreement with its Unions escalated to 2008 dollars. Escalation was based on escalation indices published by Global Insights[2] in its Utility Cost Information Service, as described in the testimony of SoCalGas witness Mr. Foster.

B. Non-labor

Non-labor costs were also consistent with those applied in the SoCalGas TY2008 GRC. They were based upon 2007 expense, and then escalated to 2008 dollars. Escalation was based on escalation indices published by Global Insights[3] in its Utility Cost Information Service, as described in the testimony of SoCalGas witness Mr. Foster.

C. Meter Growth Forecasts

Meter growth forecasts were based upon the Global Insights[4] Winter 2008 Regional forecast (released February 2008).

D. Meter Changes

During the deployment period, SoCalGas will need to purchase and install approximately 2.0 million meters to replace those currently installed, excluding meters added to the SoCalGas

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[2] Global Insight is one of the largest private economic forecasting firms in the United States, and the scope and levels of detail of its utility cost forecasting service make it uniquely qualified--the only one of its kind adequate for our utility inflation forecasting needs. SoCalGas has successfully used this service for many years for internal needs as well as in numerous regulatory cases--including the TY2008 GRC and the current SoCalGas BCAP proceedings. Others agree; all the major California energy IOUs (including SDG&E, Edison, and PG&E) have used Global Insight's cost escalation forecast in multiple proceedings, and DRA and most other interveners have agreed with the use of Global Insight as the appropriate source of utility cost escalators.

[3] Ibid

[4] Ibid

system for growth. The quantity of meter changes represents about one-third of the gas AMI meter modules. A more detailed description as to why these meter changes are necessary is included in Section VII., Deployment Period (2009-2015) Cost Estimates. Table III-3 provides a breakdown of the 2.0 million meter changes.

Table III-3
Gas Meter Changes During Deployment Period

	Number of Meter Changes	Percent Of Total	Labor Cost Description	
			Capital	O & M
No Available Gas AMI Meter Module	155,600	8%	50%	50%
Incompatible Electronic Corrector Meters	6,050	0.3%	50%	50%
Meters Damaged During Meter Module Installation	39,000	2%		100%
Curb Vault Meters	201,500	10%	50%	50%
Accelerated Meter Changes to Prevent Early Meter Module Obsolescence	650,000	33%		100%
Regularly Scheduled Meter Changes	947,200	47%		N/A
Total	1,999,350	100%		

E. Gas AMI Meter Module Failures

SoCalGas applied a variable gas AMI meter module failure rate in its cost analysis. Based upon vendor product information obtained during SoCalGas' investigation of available technology, the gas AMI modules are predicted to fail at a rate of about 0.5% percent annually during the first 16 years of service, and at greater rates in the remaining years of service life, as shown in Table III-4.

Table III-4
Gas AMI Meter Module Failure Rates

Years In Service	Calendar Years	Gas AMI Meter Module Failure Rate
0-16	2015 - 2030	0.50%
17-18	2031 - 2032	0.75%
19-20	2033 - 2034	1.00%
Average	2015 - 2034	0.58%

F. AMI Technology

SoCalGas issued Requests for Proposal to AMI technology vendors and installation contractors in Q2 2008. Proposals were received and evaluated during Q3 2008. SoCalGas used the information it received in response to its Requests for Proposal in developing technology and implementation costs identified in this testimony. Technology vendor proposals indicated the useful life of battery-operated gas AMI meter modules is approximately 20 years.

In estimating costs, SoCalGas also used the experience it gained between 2006 and 2008 when deploying AMR (drive-by) technology on approximately 150,000 of its gas meters.

G. SoCalGas Service Territory

The costs and benefits described in this chapter pertain to the entire SoCalGas service territory excluding the portion that overlaps with the service territory of San Diego Gas & Electric ("SDG&E") in south Orange County (approximately 103,000 meters in 2008). SoCalGas intends to deploy the AMI system on the meters that serve SoCalGas core customers. Non-core customer metering will not be directly impacted, although SoCalGas intends to use the AMI network backhaul as a means to reduce the telecommunications costs associated with non-core customer metering.

In the SoCalGas TY2008 GRC, SoCalGas received funding for deployment of drive-by AMR. SoCalGas plans to suspend deployment of drive-by AMR in 2009 and instead use the

approved 2010 and 2011 funding for deployment of AMI in the portion of the SoCalGas service territory that overlaps with SDG&E. If the SoCalGas AMI Application is approved, SoCalGas will deploy the same technology it will install in all other parts of its service territory in this area. If the SoCalGas Application is not approved by the Commission, SoCalGas will deploy the same technology that SDG&E is deploying for its gas customers in this area.

VII. DEPLOYMENT PERIOD (2009 – 2015) COST ESTIMATES

This section summarizes the direct operational costs SoCalGas expects to incur during the deployment period. As indicated in the summary below, the total direct operational costs SoCalGas expects to incur during the deployment period (excluding those costs presented in the testimony of SoCalGas witnesses Mr. Olmsted and Mr. Martin) are estimated to be $633.4 million in constant 2008 dollars. A summary of the estimated deployment period costs are included in Table III-5.

Table III-5
Deployment Period Operational Costs
2009 - 2015
In 2008 Direct Dollars ($Millions)

Cost Element	Capital	O&M
Gas AMI Modules	$303.7	$0
Gas Meters	$115.5	$44.8
Gas AMI Module Installation	$93.3	$0
Meter Set Assemby Rebuilds	$0	$0.8
Meter Acceptance Testing	$0.8	$0
Customer Contact Center	$0	$0.1
Customer Billing Services	$1.3	$2.4
Project Management Office	$13.9	$13.9
Meter Route Maintenance	$0	$5.4
Customer Communications	$0	$3.8
Other	$14.2	$19.5
Total Costs	$542.7	$90.7

A. Gas AMI Meter Module (Hardware) Costs

The costs of gas AMI meter modules and peripheral equipment[5] used in this analysis are based upon information obtained by SoCalGas in response to a Request for Proposal issued in Q2 2008. SoCalGas calculated its costs based upon supplier pricing for each specific type of gas AMI meter module to be acquired and the volume of each type of meter to be retrofit or purchased new. The cost of approximately 6.0 million gas AMI meter modules, including those for new business (growth) meters, is estimated to be $303.7 million.

B. Gas Meter Costs

During the deployment period, SoCalGas will need to purchase and install approximately 2.352 million gas meters. Of this total, approximately 1.999 million are to replace existing gas meters and 352,700 are new meters for anticipated growth.

SoCalGas will incur incremental costs of $160.3 million to replace approximately 1.052 million of the aforementioned 2.352 million meters. The costs associated with purchasing and installing 947,200 new gas meters (for planned meter changes) and 352,700 new gas meters (for forecast customer growth) were not included in the cost benefit analysis because these costs are typically funded in the SoCalGas GRC cycle.

Included in the $160.3 million incremental meter replacement costs are the costs associated with rebuilding approximately 6,050 stand alone electronic correctors ("EC") that provide uncorrected meter reads, corrected meter reads and alarms indicating maintenance is required. The costs to rebuild the electronic correctors are estimated to be $17.9 million.

SoCalGas proposes that gas meters removed from service to accommodate implementation of SoCalGas AMI will be handled similar to how meter changes are otherwise

[5] Peripheral equipment includes adapters, pulsars, meter-related installation equipment and the handheld installation and diagnostic equipment necessary to perform the work. The costs for network components discussed in the testimony of SoCalGas witness Mr. Olmsted are not included.

handled. Consistent with current ratemaking treatment adopted by the Commission, SoCalGas plans to recover the installed cost of the existing meters over their remaining book life.

The benefits associated with not removing meters from service (in future years) because they were changed during the deployment period are discussed in Section IX.B., Offset to Work Performed During Deployment Period.

C. Gas AMI Meter Module Installation Costs

SoCalGas will deploy approximately 6.0 million gas AMI meter modules during the deployment period (2011-2015). Approximately 2.4 million gas AMI meter modules will be pre-installed on new meters at the meter manufacturer facility. The pre-installation costs are estimated to be $9.2 million. Approximately 3.7 million meters will be field retrofit with gas AMI meter modules. The costs associated with the field retrofits, including the quality assurance function, are estimated to be $84.1 million.

D. Costs to Rebuild the Meter Set Assembly at Customer Premises

In addition to the costs associated with gas AMI meter module installation work, SoCalGas expects to incur costs associated with rebuilding the meter set assembly ("MSA")[6] at some meter locations to accommodate the installation of gas AMI meter modules. SoCalGas estimates that approximately 0.7% of all meter retrofits will require SoCalGas rebuild the MSA to provide clearance for the gas AMI meter module to be installed. The conditions that cause this work to occur include the physical proximity of meter guards, cabinet doors, gates, fences, glass partitions, etc. relative to the existing meter index. The costs associated with the on-site MSA rebuilds are estimated to be approximately $0.821 million.

[6] The meter set assembly includes the SoCalGas pipe, nipples, meter and regulator located between the SoCalGas service-line and customer house-line. This discussion refers the physical changes to the pipes and nipples that sometimes need to be made to enable proper installation of the gas AMI meter module.

E. Meter Acceptance Testing ("QA") Costs

When SoCalGas receives shipments of new meters from meter manufacturers, the products undergo a quality assurance inspection at the SoCalGas meter testing facility. Shipments of meters that do not meet performance standards are returned to the supplier.

Because SoCalGas is planning to purchase and install approximately 2.4 million meters with gas AMI meter modules pre-installed by meter manufacturers during the deployment period, SoCalGas will incur incremental costs associated with meter handling, storage and acceptance testing of the meters and gas AMI meter modules. The costs associated with additional meter handling, storage and inspection activities are estimated to be approximately $0.849 million.

F. Customer Contact Center Costs

During deployment of its AMI, SoCalGas expects an increase in customer contact center activity. Customer calls are anticipated to be proportional to the number of meter installations and should come to an end shortly after all gas AMI meter modules are installed.

SoCalGas assumes the vast majority of customer calls will be referred to an AMI installation support team, although some customers will inevitably call the SoCalGas 1-800 numbers for scheduling issues, general information, and other AMI installation issues, regardless of the telephone number communicated to them on the initial customer letters and on door hangers left at customer premises. The AMI installation support team costs are included in the gas AMI meter module installation costs. SoCalGas assumes that approximately 3 percent[7] of all installations will result in a customer call to SoCalGas customer contact center personnel.

To help respond to customer inquiries in a timely manner, the customer contact center's interactive voice response ("IVR") system will be available to customers. SoCalGas estimates that 50 percent of customer AMI calls will be handled via the IVR. The costs to modify the existing IVR to provide this functionality are based upon the estimated labor hours required to

[7] This estimate is consistent with the assumptions made by SDG&E in its AMI cost benefit analysis.

modify the system multiplied by the applicable hourly labor rate. Customer service representative ("CSR") handled call costs were estimated by multiplying the "forecast call frequency" by an "average handle time" by the "average hourly rate of pay".

CSRs will need to be trained in how to respond to AMI deployment-related calls and calls that pertain to daily and hourly gas consumption information that will become available with AMI. SoCalGas estimates that each of approximately 600 CSRs will attend a training session during the initial phases of AMI deployment.

The total direct SoCalGas customer contact center costs during the deployment period (2011 – 2015) are estimated to be $0.125 million.

G. Customer Billing Services Costs

Based on SoCalGas experience deploying over 150,000 drive-by AMR gas meter modules, there will be an increase in bill-related exceptions during deployment of the AMI system, causing increased labor costs. There will also be one-time costs incurred to enable non-core AMR metering equipment to utilize the AMI wireless network backhaul in lieu of current land lines and cellular telecommunications. The costs associated with this incremental work are estimated to be approximately $3.7 million.

1. Bill-Related Exceptions

When new gas meters are installed to replace existing gas meters, billing system edits identify irregularities and create exceptions that are subsequently investigated by billing personnel. Historically, the SoCalGas billing department has needed to manually process billing exceptions associated with approximately 30% of meter changes.

Based upon SoCalGas experience deploying over 150,000 drive-by gas AMR meter modules, there will also be exceptions created through the gas AMI meter module installation process. During deployment, costs will be incurred to analyze and trouble-shoot installation

issues and manually correct customer bills. SoCalGas expects the incremental workload will cease following AMI deployment.

During deployment, SoCalGas anticipates it will have difficulty obtaining access to some of its meters. Accordingly, SoCalGas anticipates a temporary increase in the number of bills based upon estimated meter reads. In some cases, these estimates will result in bill-related exceptions that will require manual processing by billing personnel. Estimating bills at premises where customers fail to provide SoCalGas with safe access to its meters will enable SoCalGas and its customers to realize AMI project benefits in a timely manner. SoCalGas will work to minimize the frequency of estimated bills.

The total direct costs to resolve the incremental bill-related exceptions during the deployment period are expected to be approximately $2.4 million.

2. Use of AMI Communications Network for Non-Core Customers

Approximately 1,650 non-core customer meters transmit information to the billing department at SoCalGas headquarters using land-line phone service or cellular telecommunications equipment. The wireless AMI communications network will be used by SoCalGas to transmit the information from approximately 80% of these meters. The one-time costs to acquire and install the equipment that will enable SoCalGas to achieve the benefits in this area are estimated to be approximately $1.3 million.

H. Project Management Office Costs

SoCalGas will need to establish a project management office ("PMO") for the AMI project. The responsibilities of the PMO will be very different than those performed by the current meter reading staff. During the deployment period, both the PMO and the meter reading staff functions will be performed concurrently. Following AMI deployment, however, both functions will no longer be needed.

The PMO will be responsible for overall program integration, execution of scope, schedule, budget, performance monitoring and reporting, contract administration, program and financial controls, benefits realization and corporate and regulatory compliance. The PMO will also provide the overall program governance structure and framework to ensure timely and effective decision making, risk management and issue resolution. The PMO will be accountable for effective communication among external and internal stakeholders to help them achieve an understanding of the SoCalGas AMI program. This is expected to facilitate achievement of program objectives throughout the deployment period. PMO responsibilities will include the following:

Project Management - Management of overall program scope, schedule, budget and resources. This effort includes management of related risks through the ongoing identification and resolution of execution issues during the deployment period.

Financial Controls - Exercise the fiscal controls required to keep deployment costs to those authorized within the Commission's final decision, and compliance with SoCalGas' corporate financial policies, including adherence to Sarbanes-Oxley requirements. The PMO will also be responsible for ensuring the forecast operational benefits are achieved in a timely manner.

Contract Administration - Provide authorization for the payment of services and products consistent with the negotiated terms and conditions with suppliers. Included will be oversight of supplier work quality to ensure performance meets or exceeds expectations.

Regulatory Support and Compliance - Manage activities required to meet reporting requirements and conformance to the Commission's final decision; responsible for compliance with SoCalGas' corporate governance protocols.

Communications – Coordination of the activities of a very large number of people - both SoCalGas employees and suppliers – requires a common understanding and commitment to project goals. Communications will be an essential element of the management strategy to keep the organization aligned with project objectives and focused on essential deployment tasks.

The PMO staff will be comprised of multiple disciplines including finance, regulatory, systems integration, network operations, project management, change management and human resources/labor relations. The PMO staff will be centrally located at a facility yet to be determined.

During the AMI project deployment period, SoCalGas will employ a full time PMO staff augmented with consulting services provided by the systems integration supplier. The role of the consulting services provider will be to schedule and monitor deployment activities, optimize the materials management process and facilitate communication of project status to internal stakeholders.

The PMO will manage the project contingency, which involves continuous monitoring of actual expenditures, forecasts and variance analyses to determine program progress and the degree to which contingency may be required to satisfy necessary changes to scope, schedule, budget or resources. The PMO will help manage interrelationships between the different deployment teams and instill consistency and cost-effectiveness into the program's administrative activities.

The success of the SoCalGas AMI program is highly dependent on the coordinated execution of interrelated functional activities, including change management and process reengineering. It is standard practice for large and complex projects such as the SoCalGas AMI project to be governed through a PMO. The PMO will be made up of a team of experienced SoCalGas project managers who will provide the proper level of management planning, oversight and control for the project. The PMO will remain intact through the deployment phase and until the AMI system becomes fully operational.

The estimated cost for the SoCalGas PMO operation, including the necessary facilities, is $27.7 million.

I. Meter Route Maintenance Costs

During the deployment period, SoCalGas will need to convert manual meter routes to automated status, and temporarily modify existing meter routes to meet operational needs, including workload balancing until AMI deployment work in an operating district is complete. After AMI deployment in an area is complete, new routes will be created to support the corrosion inspection process to be employed in subsequent years.

SoCalGas estimates this incremental work will cost approximately $5.4 million.

J. Customer Communications Costs

Communications with customers will be critical to the success of the SoCalGas AMI project. SoCalGas will send information to customers prior to AMI deployment and also upon completion of the work.

The costs for customer communications during the AMI deployment period are shown in Table III-6. The total incremental cost is estimated to be approximately $3.8 million.

Table III-6
Customer Communications Costs
In 2008 Direct Dollars ($Millions)

Activity	Costs
AMI Installation Letters	$2.5
Post Installation Door Hangers	$0.7
Outbound Calls To Customers	$0.6
Bill Inserts	$0.05
Total Costs	$3.8

K. Other Deployment Period Costs

To achieve the benefits associated with the transition from a manual operation to one that leverages technology, SoCalGas expects to incur one-time costs associated with the changes impacting its employees.

SoCalGas cares about all of its employees and has a track record of doing everything it can to make transitions such as this as easy as possible for people, such as providing re-training and other assistance. SoCalGas expects that with implementation of AMI technology some work will go away (e.g., manual meter reading and related work in customer services field and billing). However, SoCalGas also expects new work to emerge as a result of AMI (e.g., corrosion inspections, AMI module repair/replacement, etc.).

Both SoCalGas and its Unions share a desire to minimize any adverse impacts to employees. Therefore, SoCalGas plans to work collaboratively with its Unions to discuss and plan for the employee impacts.

1. Meter Reader Retention

Attrition in both the part-time and full-time meter reader job classifications is significantly higher than the average annual attrition rate at SoCalGas. Over the last seven years the average attrition rate for part-time meter readers has been 83% and the attrition rate for full-time meter readers has been 42%, as shown in Table III-7.

Table III-7
Meter Reader Attrition Rates

Year	Average Meter Reading Workforce Attrition Rate	Part-Time Meter Reader Attrition Rate	Full-Time Meter Reader Attrition Rate
2001	85%	92%	30%
2002	113%	122%	50%
2003	85%	89%	55%
2004	50%	54%	21%
2005	70%	75%	35%
2006	81%	85%	47%
2007	66%	68%	55%
7-Year Average	78%	83%	42%

Meter reader attrition may be impacted by the transitory nature of the manual meter reading work during the deployment period. Because SoCalGas expects greater meter reader

attrition during the deployment period, SoCalGas has included $0.225 million in its cost benefit analysis for anticipated employee retention and retraining expense.

2. Meter Reading Management

SoCalGas will seek to provide job opportunities to employees impacted by the project. Some management employees may take advantage of retraining opportunities while others may elect to retire during the SoCalGas AMI deployment period.

The estimated incremental costs associated with the aforementioned workforce transition are estimated to be approximately $0.062 million.

3. Customer Services Field Training

SoCalGas personnel who retrofit meters with gas AMI meter modules and change meters that have pre-installed gas AMI meter modules will be trained in how to perform the work and operate the required handheld installation and diagnostic tools. The costs for this training are estimated to be approximately $0.055 million.

4. Electronic Corrector Communications Equipment

There are approximately 1,500 stand alone electronic pressure correctors that can not be rebuilt and will require wireless communication equipment be installed. The costs for the installation work and communications costs that will be incurred during the deployment period are estimated to be $3.9 million.

The costs of the communications devices that enable collecting the uncorrected and corrected meter reads for the 6,050 rebuilt electronic correctors, as discussed in Section VII.B., Gas Meter Costs, are estimated to be $5.6 million.

5. Electronic Pressure Monitoring

The SoCalGas AMI wireless communication network backhaul will be used to transmit information from pressure monitoring equipment to SoCalGas headquarters. To enable this to occur, existing equipment will need to be retrofit to have communication modems. The cost to retrofit the equipment is estimated to be approximately $2.2 million.

6. Phase-In Costs

There are several different types of costs that SoCalGas will incur both during the deployment period and during the post-deployment period. Since the post-deployment costs are most significant, they are described in Section VIII., Post-Deployment Period (2016-2034) Cost Estimates. The phase-in costs that will be incurred during the 2011-2015 deployment period are listed in Table III-8 below.

Table III-8
Deployment Period Phase-In Costs
2009 - 2015
In 2008 Direct Dollars ($Millions)

Cost Element	Capital	O&M
Gas AMI Modules (failures)	$3.0	$1.8
Customer Service Orders	$0	$13.3
Atmospheric Corrosion Control	$0.2	$3.3
Total Phase-In Costs	$3.2	$18.4

VIII. POST-DEPLOYMENT PERIOD (2016-2034) COST ESTIMATES

This section summarizes the costs SoCalGas expects to incur after the gas AMI deployment period[8]. The post-deployment period costs do not include a provision for contingencies. The total costs SoCalGas expects to incur during the post-deployment period are estimated to be $331.7 million in constant 2008 dollars.

[8] On-going costs that are phased-in during the deployment period are described in this section because the most significant portion of the costs will be incurred during post-deployment and doing so reduces duplicative text.

Upon completion of gas AMI deployment, post-deployment activities will become part of SoCalGas' ongoing operations. As such, SoCalGas expects the ratemaking considerations related to the post-deployment costs and benefits to be reflected in future GRC proceedings. They are identified here for purposes of evaluating the cost-effectiveness of the SoCalGas AMI project over the life of the system.

The post-deployment period costs are those incremental expenses that SoCalGas expects to incur after full deployment, over and above the costs that would be expected if SoCalGas AMI were not deployed. SoCalGas anticipates the majority of these ongoing costs will be in the form of O&M expenses. These estimated post-deployment incremental costs include the forecast costs to maintain the SoCalGas AMI system and the costs to support new customer programs and services.

The estimated capital costs associated with customer growth are included in this section. Also included in this section is the field replacement of gas AMI meter modules that fail or are transferred from one meter to another. Other costs include the incremental expense that will be incurred to inspect above-ground pipelines for corrosion, perform bill analysis in the billing department and respond to customer inquiries at the customer contact center.

A summary of post-deployment period costs is shown in Table III-9 below.

Table III-9
Post Deployment Period Costs
2016-2034
In 2008 Direct Dollars ($Millions)

Cost Element	Capital	O&M
Gas AMI Modules	$39.1	$38.8
Customer Service Orders	$0	$79.2
New Business	$82.0	$0
Electronic Corrector Communications	$0	$2.7
Atmospheric Corrosion Control	$0.4	$47.7
Customer Billing Services	$0	$1.8
Other	$40.0	$0.2
Total Costs	$161.4	$170.3

A. Gas AMI Meter Module Costs

After deployment of AMI technology, there will be work necessary to maintain the system. When gas AMI meter modules fail, field personnel will replace them with new modules. The gas AMI meter module failure rate is incremental to the underlying failure rate of gas meters and is estimated to result in an increase in expense of $46.1 million.

When meters are changed out due to failure or obsolescence, existing gas AMI meter modules will be removed from the old meters and reinstalled onto new meters. The costs associated with retrofitting the new meters with the gas AMI meter modules that had been installed on the gas meters being removed from service is estimated to be approximately $24.7 million.

During the deployment period, SoCalGas will purchase handheld installation and diagnostic equipment for use by customer services field personnel. SoCalGas assumes that the electronic equipment will need to be replaced every eight (8) years. The costs associated with replacement of this equipment during the post-deployment period are estimated to be approximately $7.0 million.

B. Costs Associated with Service Order Process Changes

Once AMI is deployed, SoCalGas will have a better means of determining when there is abnormal consumption on closed accounts. Instead of monitoring gas use based upon a single, manually-obtained meter read each month, or a one-minute test when service orders are completed, SoCalGas will use electronic, hourly AMI meter readings to monitor gas consumption. As a result, SoCalGas anticipates that there will be incremental field work performed to investigate the causes for increased gas use.

On occasion, SoCalGas will "hard close"' services where gas consumption cannot be explained and there is no person present with whom to establish service. The costs associated with this work, and the subsequent costs associated with restoring service to "hard closed" accounts, are estimated to be approximately $79.2 million.

C. Costs Associated with New Business

During the post-deployment period, meters installed for customer growth will need to be equipped with gas AMI meter modules. SoCalGas will require additional capital to purchase the gas AMI meter modules. SoCalGas will also incur costs associated with meter manufacturer fees for pre-installation of gas AMI meter modules onto new gas meters.

The labor for field installation of new meters equipped with gas AMI meter modules is expected to be the same as those SoCalGas would have otherwise incurred had the meters not been equipped with gas AMI meter modules. As a result, the costs associated with meter installation due to growth are not incremental and therefore not included in this analysis.

The estimated gas AMI meter module costs to be incurred during the post-deployment period (due to growth) are estimated to be approximately $76.2 million. The meter manufacturer costs to pre-install the gas AMI meter modules onto new meters are estimated to be approximately $5.8 million. Both these costs will be capital expenditures.

D. Electronic Corrector On-going Communications Costs

The costs associated with ongoing wireless communication expense for the 1,500 stand-alone electronic correctors described in Section VII.K.4., Stand-Alone Electronic Corrector Communication Equipment, are estimated to be approximately $2.7 million.

E. Atmospheric Corrosion Control Costs

SoCalGas currently utilizes its meter reader workforce to inspect exposed gas pipelines at meter set assemblies. This work is performed in accordance with General Order ("GO") 112E and DOT 192.481 (a). The current corrosion inspection process is incidental to the reading of gas meters and requires minimal incremental time to perform. When pipeline or meter corrosion is identified, meter readers use the handheld meter reading system to report the situation. Although uncommon, if emergency action is warranted, meter readers contact the field order dispatch office by phone to report gas leaks.

SoCalGas takes steps to educate customers in how to identify and report gas leaks. Today, approximately 330,000 gas leaks are reported annually, most by customers. Meter readers report less than 0.5% of gas leaks. SoCalGas will continue its practice of educating customers in how to identify and report gas leaks.

Department of Transportation Part 192.481 (a) Atmospheric corrosion control requires that each operator inspect each pipeline or portion of pipeline that is exposed to the atmosphere for evidence of atmospheric corrosion at least once every 3 calendar years, but with intervals not exceeding 39 months - if the pipeline is located onshore.

After the deployment of gas AMI, SoCalGas will conform to the industry standard practice of inspecting above ground pipelines for corrosion every three calendar years. SoCalGas will create special routes for the personnel performing this work and tools will be acquired to facilitate reporting. Additionally, SoCalGas will develop materials that can be distributed to customers notifying them of upcoming inspections at their premises.

SoCalGas estimates the costs associated with this activity will be approximately $48.0 million.

F. Customer Billing Services Costs

The SoCalGas AMI system will provide hourly meter reads on a daily basis, resulting in more data to process. Even though SoCalGas anticipates fewer billing adjustments will occur once gas AMI is implemented, the billing adjustments that do occur are expected to require additional labor to process.

When gas AMI meter modules fail, the billing department will coordinate the investigation process and resolve any bill related issues.

SoCalGas forecasts it will incur approximately $1.8 million in incremental O&M expense for exception processing during the post-deployment period.

G. SoCalGas Tariff Rule No. 31

SoCalGas Tariff Rule No. 31 – "Automated Meter Reading" has been in effect since December 8, 1990. SoCalGas was installing AMR technology on gas meters serving non-core customers at the time. AMR systems were relatively new and unproven, and the market segment being served could experience significant billing issues if technology-based meter reads were inaccurate.

Sub-section A.4. states "The Utility may render bills based upon readings from the automated meter reading device, provided an actual meter reading is obtained at least once every three (3) years." Since that time, AMR and AMI technology has been deployed throughout the United States, including California and has become more accurate and reliable. This requirement has not been placed upon the California regulated utilities who have received Commission approval to deploy AMI technology. SoCalGas requests Commission approval to eliminate sub-section A.4.

Sub-section B.9 states "A copy of this Rule will be provided to the customer when the automated meter reading device is installed". SoCalGas' tariffs, including all the Rules, are readily available at its website. To continue requiring SoCalGas to provide a hard copy of this Rule will add unnecessary cost and delay to its AMI deployment period. Therefore, SoCalGas requests Commission approval to eliminate sub-section B.9.

SoCalGas' cost benefit analysis does not include the costs associated with obtaining a manual meter read once every three years or providing customers with copies of SoCalGas Tariff Rule No. 31.

H. Other Post-Deployment Period Costs

SoCalGas expects to incur incremental post-deployment period costs in the customer contact center, meter reading and in gas distribution and transmission. These costs are described below.

1. Customer Contact Center

In the years that follow AMI deployment, new CSRs will be trained on how to use AMI information when responding to customer calls. SoCalGas estimates that approximately 100 new CSRs will need to be trained annually. The costs associated with CSR training are estimated to be approximately $0.022 million.

2. Meter Reading

Because there is a lag between gas AMI meter module deployment and when benefits are realized, there are meter reading transition costs that will occur in 2016. SoCalGas estimates that the post-deployment period transition costs will be approximately $0.094 million.

3. Gas Transmission & Distribution

SoCalGas estimates that the increased precision in estimating peak day demand once daily and hourly gas consumption information is available will result in SoCalGas delaying some capacity-related gas transmission and distribution construction projects. The benefits associated with the deferral of pipeline capacity projects are discussed in Section IX.I., Gas Transmission & Distribution Benefits.

In estimating the benefits of AMI, SoCalGas included in its analysis the impact of a one-year deferral of a $40.1 million gas transmission and distribution capacity project (from 2017 to 2018). In the analysis, SoCalGas forecast there would be a $40.1 million benefit in 2017 and a $40.1 million cost in 2018.

IX. OPERATIONAL BENEFITS

The focus of this section is to demonstrate the estimated operating benefits that will result once the AMI project is implemented. The difficult-to-quantify benefits to be realized as a result of AMI deployment are discussed in Section X., Intangible Benefits.

Operating benefits are primarily those operating costs that SoCalGas no longer expects to incur, or will be able to avoid, after AMI deployment. SoCalGas estimates that AMI operational benefits will be approximately $1.4 billion over the useful life of the technology. Table III-10 summarizes the estimated operational benefits.

Table III-10
Operational Benefits
2009 - 2034
In 2008 Direct Dollars ($Millions)

Benefits Category	O&M	Capital
Meter Reading	$757.6	$19.9
Offset to Work Performed During Deployment Period	$44.7	$141.2
Customer Services Field	$270.5	$0
Customer Billing Services	$65.8	$50.6
Customer Contact Center	$4.8	$0
Facilities	$0	$15.0
Safety	$1.4	$0
Human Resources	$6.1	$0
Gas Transmission & Distribution Planning	$13.9	$40.0
Sub-Total Benefits	$1,164.7	$266.8
Theft	$2.4	$0
Total Benefits	$1,167.1	$266.8

To estimate the operational benefits anticipated to result after AMI is implemented, SoCalGas applied the assumptions discussed in Section VI., Forecast Assumptions.

A. Meter Reading Benefits

The current SoCalGas meter reading workforce is comprised of several different job classifications which can be grouped into the categories shown in Table III-11 below.

Table III-11
SCG Meter Reading Workforce
(2007 Average)

Job Classification	Full-Time Equivalent (FTE)
Part-Time Meter Readers	497
Full-Time Meter Readers	102
Full-Time Non-Management Other	66
Management	58
Total	723

During 2007, SoCalGas employed an average of about 970 meter readers. This number included 102 full-time employees and 868 part-time employees. Full-time meter readers represent about 10 percent of the total workforce (based upon headcount) and part-time meter readers represent about 90 percent.

Within the meter reading department, activities are performed to support the new business (meter growth) process. Activities that will continue to be necessary after AMI is deployed include assignment of various geographical attributes (section/segment, political subdivision, BTU district and altitude district) and the maintenance of utility records associated with annexations and other similar events.

Management functions currently performed in the meter reading department will be eliminated when meters are read remotely. Assuming Commission approval of the SoCalGas AMI Application, some management positions funded in the SoCalGas TY2008 GRC will not be filled. The costs associated with elimination of management functions are included as benefits in the cost benefit analysis.

1. Meter Reading O&M Expense

The benefits related to meter reading O&M cost reductions are estimated to be $757.6 million. This amount includes all labor and non-labor expense including mileage reimbursement and fleet vehicle costs. It excludes the cost loaders described in the testimony of SoCalGas witness Mr. Foster.

In the SoCalGas AMI cost benefit analysis, SoCalGas anticipates nearly all TY2008 GRC authorized meter reading expenses will be eliminated in the post-deployment period. SoCalGas estimates that at the end of the AMI deployment period the meter reading workforce reductions will total approximately ~~768~~ 718 FTEs.

2. Meter Reader Workforce

SoCalGas began using a predominantly part-time meter reader workforce beginning in 1998. The use of a part-time meter reader workforce was negotiated and agreed to by SoCalGas' labor unions to reduce operating costs and help prepare for implementation of automated meter reading technology. Both these goals were achieved, but the success in lowering costs ultimately resulted in making it difficult to cost-justify the deployment of AMR technology, except in certain geographic areas where meters are difficult to access and therefore more costly to read. During the past three years, SoCalGas has installed approximately 150,000 drive-by AMR modules on these gas meters.

Approval of the SoCalGas AMI Application will enable SoCalGas to avoid anticipated labor cost increases that would otherwise be incurred in future years. SoCalGas has estimated the benefit associated with avoided labor cost increases by assuming the workforce would be staffed, in the absence of AMI project approval, by full-time employees.

The direct benefits associated with avoiding future workforce cost increases are estimated to be $10.7 million.

3. Avoided Meter Reading Capital Costs

Capital benefits will be realized by implementing SoCalGas AMI because SoCalGas can avoid the need to periodically replace the meter reading handheld computers and peripheral system components.

The last SoCalGas meter reading handheld system upgrade was completed in 2005. The SoCalGas AMI project benefits include avoidance of system replacement costs that would

otherwise have been incurred in calendar years 2013, 2021 and 2029. The benefits associated with these system replacements are estimated to be approximately $19.9 million.

4. Timing of Meter Reading Benefits Realization

During AMI deployment, SoCalGas will attempt to deploy gas AMI meter modules on a route-by-route basis. After AMI technology has been deployed on all the meters on an entire string[9] of meter reader routes, a meter reader can be released or re-deployed.

SoCalGas forecasts that on average it will realize the benefits associated with discontinuing manual monthly meter reading the fifth month after deployment. This assumption is based upon SoCalGas' estimate that it will take about three months to deploy AMI technology on a very high percentage of meters in an entire meter reading route (this includes the meter retrofits, meter changes and resolving many difficult-to-access conditions), then another two to three months to convert enough meter reading routes to eliminate a complete string.

The benefits achieved by eliminating meter reading supervisor and field instructor positions will be realized in proportion to the system-wide percentage of meters where AMI technology has been deployed.

B. Offset to Work Performed During Deployment Period

During the AMI deployment period, SoCalGas will change approximately 850,600 above ground meters that would otherwise have been changed in future years. Because the costs associated with this work were included in the analysis (Section VII.B., Gas Meter Costs), there are offsetting benefits (avoided costs) that occur in future years. In future years, there will be less meter change work because the activities will already have been completed. The capital expense benefits associated with not purchasing new meters in future years is approximately

[9] A "string" is a set of 21 meter routes typically assigned to a single meter reader. On average, each meter reader has a meter route to complete each work day during the month.

$99.6 million. The O&M expense benefits associated with not performing meter change work in future years is approximately $28.7 million.

During the AMI deployment period, SoCalGas will change approximately 201,500 curb vault meters that would otherwise have been changed in future years. Because the costs associated with this work were also included in the analysis (Section VII.B., Gas Meter Costs), there are offsetting benefits (avoided costs) that occur in future years. The capital expense benefits associated with not purchasing new curb vault meters in future years is approximately $41.6 million. The benefits associated with not changing curb vault meters in future years are approximately $16.0 million.

C. Customer Services Field Operations Benefits

The field activities that will be impacted by AMI include "Gas-On Turn-On" orders, "Change of Account" orders, "Read & Verify" orders and "High Bill Inquiry" orders. This work is completed by personnel in the customer services field organization, who perform it as part of their portfolio of work assignments each day. The people performing the work are located throughout the SoCalGas service territory. SoCalGas estimates that at the end of the AMI deployment period there will be approximately 142 fewer FTEs in the Customer Services Field organization.[10]

The benefits associated with "Read & Verify" and "High Bill Inquiry" orders will be realized as meters are converted to AMI. The benefits associated with elimination of "Gas-On Turn-On" and "Change of Account" orders will not begin until 2012, after which time the meter data management ("MDM") system edits necessary to eliminate this work will have been defined, tested and verified as effective.

[10] These reductions are a direct benefit of the AMI project and do not address other future workforce impacts which may be attributable to new regulatory requirements or future programs.

1. Gas-On Turn-On Orders

SoCalGas performs services that are not performed by other regulated utilities within California. Included among these services are activities associated with manually obtaining (off-cycle) meter reads when new customers initiate service. At other utilities, when a premise is vacant for less than one month, the "starting read" for a new customer is based upon the difference between the meter read obtained when the prior customer closed service and the next regularly scheduled (on-cycle) meter read (obtained by meter readers). When a premise has been vacant for more than one month, the "starting read" for a new customer is based upon the difference in the regularly scheduled (on-cycle) meter reads obtained by meter readers. As AMI technology is deployed, other California utilities plan to use daily AMI-based meter reads for the "starting read" instead of manually obtained meter reads. SoCalGas plans to adopt practices that will be consistent with those at other California utilities after AMI deployment. Because AMI will provide SoCalGas with hourly consumption information, the utility will be positioned to monitor consumption on closed accounts and take action when conditions warrant.

When a customer makes a service request to close gas service, SoCalGas customer services field personnel visit the premise and complete a "Read Only Close" order. The meters at the premises' where this work is performed are known as "Soft Close" meters when service was not physically interrupted. SoCalGas does not propose to change its "Soft Close" procedures.

As previously stated, when new customers initiate service, SoCalGas customer services field personnel visit the premise to work a "Gas-On Turn-On" order to obtain a "starting read" for the new customer. When performing this work, customer services field personnel also measure the amount of gas passing through a meter by conducting a one-minute timed test. If the rate of gas flow during that one-minute test cannot be visually explained, then gas flow is physically restricted and the meter is said to be a "Hard Close."

Because AMI will provide SoCalGas with daily meter reads, and there will be hourly consumption information to replace the one-minute timed test, the "Gas-On Turn-On" work will

no longer need to be performed. SoCalGas has included the benefits associated with elimination of this work in its cost benefit analysis.

The 1994 GRC decision from A.92-11-017, I.93-02-026 stated that when completing the "Gas-On Turn-On" order "SoCalGas should notify customers **in writing** *(emphasis added)* of the safety information that is included on the tags left at the premises in case the new customer did not see the tag." In addition to the safety information, SoCalGas customer services field personnel also deliver a "Gas Facts" booklet and a notice that details the customer's name, address, account number and the company telephone number the customer can call for service.

SoCalGas seeks Commission approval to discontinue the in-person delivery of this information. SoCalGas will instead mail to customers, within one week after the establishment of a new account where there is a "Soft Close" meter, a notice that details the customer's name, address, account number and the company telephone number the customer can call for service. As is currently the case, this material will normally be provided in English and Spanish but will also be available in Mandarin, Cantonese, Korean or Vietnamese for those customers requesting information be sent in one of these languages at the time of the service request. In addition to the notice, the "Gas Facts" booklet and a notice, which makes it clear to the new customer that appliance service is provided free of charge, will be mailed to new customers.

The cost benefits associated with eliminating "Gas-On Turn-On" orders is estimated to be approximately $198.1 million. The incremental costs associated with mailing materials to customers are also included in SoCalGas' cost benefit analysis.

2. Change of Account Orders

When a customer makes a service request to close gas service and a second customer places a service request to initiate gas service within close proximity to one another, the two service requests are "matched" and worked concurrently as a "Change of Account" order.

SoCalGas seeks expressed Commission authorization to adopt industry best practice and discontinue issuing these orders to customer services field personnel. SoCalGas will mail new customers the same materials it does for "Gas-On Turn-On" orders.

SoCalGas has included the benefits associated with elimination of this work in its cost benefit analysis. The benefit that will result by eliminating the fielding of "Change of Account" orders is estimated to be approximately $70.0 million.

3. Read & Verify Orders

The benefit associated with eliminating "Read & Verify" orders incurred today due to inaccurate manually obtained meter readings is estimated to be approximately $1.1 million.

4. High Bill Inquiry Orders

Because AMI will eliminate the errors inherent to manually obtained meter readings, some customers will no longer make calls to the customer contact center regarding high bills. Therefore, some of the "High Bill Inquiry" orders currently worked by customer services field personnel will no longer be issued by the customer contact center. The benefits associated with elimination of this field work are estimated to be approximately $1.3 million.

D. Customer Billing Services Benefits

In 2007, SoCalGas issued over 65 million customer-billing statements and manually processed nearly 1.4 million billing exceptions. Implementation of AMI at SoCalGas will provide more accurate billing data and improve data validation processes, resulting in fewer billing exceptions.

SoCalGas billing department benefits include a reduction in working cash requirements because bills will not be delayed until associated exceptions are manually processed. Working cash benefits reflect a reduction in the time that elapses between when a meter reading is obtained and when the bill is issued.

The estimated billing department benefits resulting from reductions in O&M expenses are $65.8 million and the benefits resulting from reducing working cash requirements are estimated to be $50.6 million. SoCalGas estimates that at the end of the AMI deployment period there will be approximately 35 fewer FTEs in its billing department.[11]

1. Exception Processing

When meter readers are unable to manually obtain meter reads, the SoCalGas billing system estimates gas consumption for bill generation purposes. Estimated bills often result in billing exceptions and may also result in adjusted bills in subsequent months. AMI is expected to reduce the frequency of estimated bills.

Based upon a review of billing exceptions work, SoCalGas estimates that the number of billing exceptions will be reduced once AMI is implemented. SoCalGas estimates that about one-third of the billing department's exception-related workload will be eliminated once AMI is implemented.

Meter read errors and estimates currently account for over 39% of adjusted bills. Since AMI meter reads will be transmitted electronically, the number of billing adjustments is expected to drop dramatically. Reduced billing adjustments due to meter read errors and estimates will eliminate approximately 254,000 gas re-bills annually.

Generally, the reductions in staffing attributable to reduced exception processing and re-billing will occur in proportion to AMI system deployment. The benefit associated with the reduction in exception processing is estimated to be $56.5 million.

2. Working Cash

Working cash can be reduced because AMI will reduce the time that elapses between when a meter reading is obtained and when a bill is issued to a customer. By validating AMI

[11] These reductions are a direct benefit of the AMI project and do not address other future workforce impacts which may be attributable to new regulatory requirements or future programs.

daily meter read data throughout the month, SoCalGas will be able to produce bills in one less day than is required today using monthly batch processes.

Working cash will also be reduced due to the utility's ability to read all summary bill account meters on the same day. Summary bills will be sent to customers sooner because there will not be a significant time delay between the reading of the first meter and the last meter included on a summary bill. Working cash will be reduced further because closing bills will be issued based upon meter reads obtained via the AMI system, and will not need to be delayed until a fielded "Close" order has been completed.

The benefits associated with reductions in working cash are estimated to be approximately $50.6 million.

3. Electronic Bill Presentment & Payment ("EBPP")

AMI will afford SoCalGas customers the opportunity to view gas consumption information via the SoCalGas website. SoCalGas plans to promote customer use of this information for conservation as described in the testimony of SoCalGas witness Mr. Martin.

Once at the website, SoCalGas anticipates some customers will elect paperless electronic bill presentment and payment (EBPP) options instead of receiving hard-copy bills and continuing to mail bill payments to SoCalGas.

The benefits associated with customers electing EBPP options when accessing SoCalGas website gas consumption information is estimated to be approximately $3.9 million.

4. Non-Core Customer Metering

Deployment of the AMI network will enable SoCalGas to eliminate expense associated with use of dedicated phone lines and cellular wireless communication to about 80% of current non-core customer meter sites. Instead, SoCalGas will use the AMI communications network backhaul to transmit the information from these meters to its billing department. In so doing, SoCalGas estimates current telecommunications expense will be reduced by approximately $5.4 million.

E. Customer Contact Center Benefits

SoCalGas expects there will be a reduction in bill-related customer calls that originate due to errors inherent to manual meter reading and to meter read estimates. There should also be fewer customers who need to call-in meter reads, complain regarding the meter reader actions and make inquiries regarding the amount of their bill. SoCalGas expects to realize approximately $4.8 million in cost benefits at the customer contact center due to the expected reduction in customer call volume. SoCalGas estimates that at the end of the AMI deployment period there will be five fewer FTEs at its Customer Contact Center.[12]

F. Facilities Benefits

Historically, as the number of customers in SoCalGas' service territory has grown, SoCalGas has needed to: (1) Expand the number of district facilities where field service and meter reading personnel report; (2) Expand the size of facilities where field service and meter reading personnel report; and (3) Purchase property adjoining existing facilities to accommodate employee parking requirements.

After deployment of AMI, facility constraints will be less of an issue in future years. In its cost benefit analysis, SoCalGas estimates there will be approximately $15.0 million in facility benefits. These benefits are based upon the avoided costs associated with the purchase of property adjacent to existing facilities for employee parking. SoCalGas estimated that one satellite parking lot could be avoided in 2016 and another in 2018.

G. Safety Benefits

The nature of manual meter reading lends itself to a high number of safety incidents, largely attributable to the work environment. SoCalGas expects AMI will reduce the number of motor vehicle incidents and OSHA recordable injuries (injuries where treatment is prescribed by a doctor) at the utility. Because OSHA recordable injuries associated with this function will not occur, there will also be a reduction in lost work day cases and the associated costs.

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[12] These reductions are a direct benefit of the AMI project and do not address other future workforce impacts which may be attributable to new regulatory requirements or future programs.

SoCalGas estimates there will be approximately $1.4 million in benefits achieved as a result of reduced workload in the Safety Services staff that assists in safety incident investigations and workforce training. SoCalGas estimates that at the end of the AMI deployment period there will be one fewer FTE in the Safety Services department.[13]

1. OSHA Recordable Injuries and Motor Vehicle Incidents

The installation of AMI will reduce employee exposure to injury and motor vehicle incidents. Table III-12 below summarizes the number of meter reading department OSHA recordable injuries and motor vehicle incidents since 2000. Minor injuries and first aid incidents are not included.

Table III-12
Meter Reading Safety Incidents

Year	OSHA Recordable Incidents	Preventable Motor Vehicle Incidents	Non-Preventable Motor Vehicle Incidents	Total Safety Incidents
2000	97	38	22*	157
2001	73	36	21*	130
2002	56	38	20	114
2003	72	41	28	141
2004	67	47	20	134
2005	61	36	35	132
2006	62	41	22	125
2007	78	38	16	132
Total	566	315	184	1,065

* Estimated based upon 2002 through 2007 data

AMI will eliminate employee exposure to injury, resulting in a reduction in the costs associated with OSHA recordable injuries and motor vehicle incidents. The estimated cost

[13] These reductions are a direct benefit of the AMI project and do not address other future workforce impacts which may be attributable to new regulatory requirements or future programs.

benefits associated with elimination of these incidents is included in the Workers Compensation loader applied to meter reading labor.

2. Lost Work Day Cases

Some OSHA recordable incidents become lost work day cases because the injury requires an employee take time off from work to recover or rehabilitate. Although these incidents occur less frequently than other OSHA recordable incidents, they are typically more severe and can have a more significant long-term impact upon people. From January 2002 through December 2007, meter readers incurred 84 injuries that became lost work day cases. To date, there have been a total of 11,269 lost work days associated with these injuries (134 lost work days per case). Because 49 of the 84 lost work day cases were still open at the end of 2007, the total and average number of lost work days per case will increase.

AMI deployment will reduce employee exposure to injury, thus SoCalGas anticipates there will be a reduction in the frequency of lost work day cases. Fewer people will require extended time away from work to recover. The estimated cost savings associated with OSHA recordable incidents that result in lost work day cases is also embedded in the Workers Compensation loader.

3. Third Party Claims

When SoCalGas meter readers are involved in preventable motor vehicle incidents involving third parties, the utility may be liable for damages and injuries to the other party. After AMI is deployed, there will be a reduction in the costs associated with third party claims resulting from preventable motor vehicle incidents. The cost savings associated with third party claims is included in the Personal Liability & Property Damage ("PLPD") loader.

H. Human Resources Benefits

The human resources ("HR") department devotes resources to staffing and supporting the meter reading department. Once AMI is deployed, the workload in the HR department will decrease.

The benefits associated with eliminating HR work associated with meter reading staffing and other HR support are expected to be approximately $6.1 million. SoCalGas estimates that at the end of the deployment period there will be ~~four~~ three fewer FTEs in the Human Resources department.[14]

I. Gas Transmission & Distribution Benefits

This section describes the estimated operational benefits associated with utilizing the AMI network to monitor pipeline pressure and gas transmission and distribution ("T&D") capacity planning. These estimated benefits result from use of the AMI communications network and having additional gas demand data available to improve planning accuracy for capacity projects. The AMI project is expected to benefit the gas transmission and distribution department by delaying the need to make future capacity investments. The cost benefits associated with T&D capacity planning are based upon engineering judgment that the higher precision gas demand data provided by AMI will result in a one-year deferral of a major gas transmission and distribution capacity project.

AMI will provide daily gas demand data that can be correlated with daily temperature data at daily rather than monthly intervals. This increased data frequency provides many more "colder" data points for projecting gas demand to the 29 degree Fahrenheit design temperature. The improved granularity of "colder day" gas use data will improve the precision of engineering estimates of peak day demand.

SoCalGas estimates that the increased precision in estimating peak day demand will result in SoCalGas delaying some capacity-related construction projects. SoCalGas will need to evaluate the actual data after deployment to determine how much it changes the planning design margin. Projects going forward in future general rate cases are expected to reflect changes to the engineering design margin and corresponding gas capacity project costs.

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[14] These reductions are a direct benefit of the AMI project and do not address other future workforce impacts which may be attributable to new regulatory requirements or future programs.

Because this testimony presents AMI costs and benefits in direct, undiscounted 2008 dollars, the benefits associated with the deferral of pipeline capacity projects can not be quantified until the impacts of escalation and discounting are applied. In its analysis, SoCalGas estimated a $40.1 million capacity project was delayed one year - from 2017 to 2018. Since the entirety of the capacity project cost is deferred one year, the benefit is completely associated with the time value of money related to delaying the projects. When calculating the discounted cash flow benefits for the AMI project, as described in the testimony of SoCalGas witness Mr. Foster, SoCalGas estimates the net present value of discounted cash flow benefits associated with deferral of pipeline capacity projects to have a one-time benefit of approximately $1.6 million.

SoCalGas currently uses various types of equipment to monitor pipeline pressure. Some pressure information is obtained manually and some is transmitted electronically. The information that is transmitted electronically is currently done over cellular wireless communication channels. After the AMI network is deployed, SoCalGas will convert many of these sites to communicate over the AMI wireless network backhaul. The benefits associated with this change in communication channels are estimated to be approximately $13.8 million.

X. INTANGIBLE BENEFITS

Societal and ratepayer benefits are very real and are an important consideration in determining the reasonableness of the SoCalGas AMI. Societal benefits of SoCalGas AMI include improvements in customer experience, reductions in energy theft, reduction of green house gases and other potential environmental benefits, as well as benefits expected to result from other SoCalGas AMI capabilities. Although these societal benefits do not directly impact SoCalGas' revenue requirement, the benefits that can be quantified will be included in the financial assessment of SoCalGas' AMI. Ratepayer conservation benefits are discussed in more detail in the testimonies of SoCalGas witnesses Dr. Sarah Darby and Mr. Martin.

In the recent SDG&E Decision, the Commission stated, "These various benefits (and potentially others) are real, even if not quantified." Appropriately, SoCalGas describes identified societal benefits below.

A. Customer Privacy & Security

AMI deployment will permit gas meters to be read remotely, eliminating the need for SoCalGas to ingress and egress on customer property each month. Since SoCalGas will no longer need access to its meters on customers' property each month, customers will no longer need to leave gates unlocked on meter reading days or provide SoCalGas with copies of their keys. Thus, many customers will be able to secure their property better.

In its AMI application, Southern California Edison ("SCE") stated that customers would benefit from improved customer security.[15] SCE conducted focus groups with its customers (most of whom are also SoCalGas customers), who identified safety and security as compelling benefits of its AMI. SCE indicated that some customers cited the need to put their dogs inside on meter reading days as a security issue because the dogs are otherwise a theft deterrent. Additionally, some customers in the SCE focus groups cited the need to unlock doors or gates to allow meter readers access as a source of security concerns.

B. Energy Theft

Implementing the AMI project will improve SoCalGas' ability to identify energy theft. The gas AMI meter modules will be equipped with "tamper alarm" features to indicate when potential energy diversion has occurred. Such capability will aid in more rapid identification and investigation of potential tamper conditions.

SoCalGas estimates that about 1.0% of revenue is lost due to meter error, energy theft and gas leakage. Ratepayers benefit when gas theft losses are reduced because energy costs will be reallocated to those who use (steal) it instead of being allocated among all customers.

[15] See Edison SmartConnect™ Deployment Funding and Cost Recovery Exhibit 3: Financial Assessment And Cost Benefit Analysis, Chapter IV Societal Benefits (Non-Financial), p. 40.

Using gas AMI meter module tamper alarms and meter data management system edits can help identify gas theft but will not likely eliminate it altogether. SoCalGas estimates that reallocated gas costs will approximate $2.4 million.

C. Bill Accuracy & Timeliness

Bill accuracy and timeliness and the availability of meter reads will improve with AMI. Since meter data will be available on a more frequent basis it will be possible to resolve anomalies more quickly, shortening the time required for SoCalGas to resolve bill-related problems. The frequency of estimated bills will decline because meter access issues under customer control (i.e., dangerous dogs or other unrestrained animals, locked gates, blocked access, etc.) or forces of nature (i.e., snow, mudslides, fires, etc.) will become less relevant.

D. Change Party Bills Based Upon Actual Meter Reads

Currently, when the account status of a customer changes in mid-bill cycle, the "closing meter read" or "starting meter read" for some customer bills are prorated. Because AMI will provide daily (and hourly) meter reads, closing and opening bills will be more accurate because they will be based upon actual gas usage.

E. Access to Gas Consumption Information

With AMI, customers will have access to more frequent and detailed gas consumption information via the SoCalGas website. Gas consumption data may be used by SoCalGas customers to better manage their gas usage. These benefits are described in greater detail in the testimony of SoCalGas witness Mr. Martin.

F. Quicker Detection of Anomalies

New system edits will make it possible to detect abnormal gas usage in days rather than weeks. Faster identification of abnormally high gas usage will allow SoCalGas to investigate these situations earlier than it has historically. Earlier discovery of abnormally high gas usage can reduce the financial burden on customers. Also, SoCalGas will be able to identify consumption on closed accounts, should people begin using gas without first establishing service, and take action.

With AMI, the SoCalGas billing department will receive hourly and daily meter reads. This information will enable the billing department to identify gas meters that fail to register consumption more quickly than they have in the past. By identifying and correcting these conditions sooner, customers will be properly billed.

G. Environmental

The elimination of the manual meter reading function will reduce motor vehicle emissions associated with the 6.3 million miles currently driven by SoCalGas' meter reading department employees each year. By reducing vehicle emissions, SoCalGas expects to reduce CO_2 emissions as described in the testimony of SoCalGas witness Mr. Martin. This will help improve air quality in the SoCalGas service territory and reduce harmful impacts to the environment.

H. Motor Vehicle Traffic

By eliminating over 6.3 million vehicle miles each year, SoCalGas will help reduce motor vehicle congestion in Southern California. In areas where vehicle parking spaces are very difficult to locate, the reduction in meter reader vehicles will be of benefit.

XI. AMI PROJECT RISK AND RISK MITIGATION STRATEGY

To achieve the benefits described in this chapter, SoCalGas' must (1) deploy effective AMI technology on schedule; (2) operate the network and back office systems effectively; and (3) reduce operating costs in the projected timeframes. This section describes the technology and deployment risks and the strategy SoCalGas will employ to mitigate them.

A. Technology Risk

To "Deploy effective AMI technology on schedule", SoCalGas must select technology that is capable of meeting its operating requirements. The AMI technology supplier will be a financially viable business enterprise with the capacity to provide required products when needed. SoCalGas will mitigate risk by selecting proven technology that has been deployed at other large utilities within the United States. The chosen supplier will have a significant market

presence and will have demonstrated commitment to support its products. Contract terms and conditions will be structured to provide adequate protection for ratepayers and the utility. A design, build, run, transfer mechanism will be incorporated into supplier contracts.

For the selected AMI technology to operate effectively, the gas AMI meter modules will need to communicate wirelessly with the AMI communications backhaul. The communications backhaul will be deployed prior to the time meter modules are deployed in a geographic area. By so doing, SoCalGas will be able to verify that each endpoint communicates effectively at or near the time of its installation.

The risks associated with network deployment and back-office systems are described in the testimony of SoCalGas witness Mr. Olmsted.

B. Deployment Risk

To deploy AMI technology on schedule, gas meters and gas AMI meter modules must be available to deploy, and labor must be available to perform the installation work. SoCalGas will structure the contracts with its technology suppliers to mitigate risks associated with product availability.

To minimize risk associated with installation delays, SoCalGas will use multiple labor sources. Some of the work will likely be performed by in-house personnel and some by third party providers. By having both internal and external sources of labor, SoCalGas will have greater flexibility to manage potential deployment delays.

For work performed under contract, SoCalGas will negotiate terms and conditions that will mitigate ratepayer and utility risk. In some situations, multiple suppliers will be used to provide opportunity for SoCalGas to reallocate work based upon performance. As SoCalGas meter reader positions are no longer needed, SoCalGas or its contractors may choose to hire the people in these positions to perform AMI deployment work.

Access to the SoCalGas meters will be necessary, regardless of who performs AMI deployment work. When deploying drive-by AMR technology at about 150,000 sites, SoCalGas

found that by following defined procedures for customer notification and interaction, about 99% of its meters could be accessed in a timely manner.

When customers do not provide SoCalGas timely access to its meters, SoCalGas will incur additional costs and delay. To mitigate these delays and achieve its operating benefits, SoCalGas may need to estimate the bills of these customers until meter access is granted. In the event customers are unwilling to provide SoCalGas with access to its meters, SoCalGas will exercise its rights under its tariffs to discontinue service. Reestablishment of service at a premise will require the customer fully compensate SoCalGas for all costs incurred to both disconnect and reestablish service.

XII. CONCLUSION

AMI will enable SoCalGas to enhance the already strong service it provides to customers. Customer bills will be more accurate and timely. Customers will be better able to schedule same-day service transactions, such as discontinuing or initiating service on the day of their choice. By collecting hourly consumption information, SoCalGas will be able to improve its ability to identify consumption anomalies and take action before incidents occur that could adversely impact people's safety. Customers will receive the benefit of lower operating costs which should decrease rates. Finally, customers will benefit from intangible improvements that can be achieved through elimination of manual processes.

SoCalGas employees will not be exposed to the injuries inherent in manual meter reading. Entry-level jobs will be more technical in nature, offering increased responsibility and compensation. New jobs will also be created which will offer employees more challenging opportunities. During the transition, retraining will take place which will help prepare people for the future.

XIII. WITNESS QUALIFICATIONS

My name is Mark L. Serrano, and I am presently employed by the Southern California Gas Company. My business address is 555 W Fifth St., Los Angeles, California, 90013.

My present position is Manager, Meter Reading. I manage meter reading department operations and associated metering services and strategies at SoCalGas. I am directly responsible for the meter reading function and associated services provided to SoCalGas customers.

I have been employed by SoCalGas since 1980. I have never in the past served as a witness in a CPUC proceeding. Between 1980 and mid-1995 I worked in various positions within the Industrial Engineering, and later Performance Measurement department. Over that period, my primary responsibilities were to support, lead, supervise or manage performance improvement and performance measurement projects. Since mid-1995, my primary responsibility has been to manage the meter reading function. I also coordinate and support other special projects and initiatives.

I received a Bachelor of Science degree from the University of California, Los Angeles in 1979.

This concludes my prepared direct testimony.