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SOUTHERN CALIFORNIA GAS COMPANY
ADVANCED METERING INFRASTRUCTURE

CHAPTER III
SOCALGAS AMI DEPLOYMENT PLAN, COSTS, AND OPERATIONAL
BENEFITS

Prepared Direct Testimony
of
Mark L. Serrano

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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1 **I. INTRODUCTION**

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

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

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

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

23 Table III-1, below, contains the summary of costs and operational benefits included in
24 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.

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

4
5 **III. BACKGROUND**

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

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

12 The most significant operational benefits are realized through a reduction in meter
13 reading activities after approximately 6.0 million gas AMI meter modules have been installed.
14 The benefits resulting from the changes to meter reading operations are approximately \$777.5
15 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

1 (2009 through 2015) plus a 20 year post-deployment period which is based upon the 20 year
2 useful life of the gas AMI meter modules (2015 through 2034)¹. As stated in the testimony of
3 SoCalGas witness Mr. Fong, in the SoCalGas financial analysis, the annual direct costs are
4 loaded, escalated for inflation and stated in terms of nominal dollars by year. The same costs
5 (and benefits) are ultimately stated in terms of the present value of the revenue requirement
6 (“PVR”) reflecting the ratepayer impacts, in present value terms, over the life of the project.
7

8 **V. DESCRIPTION OF COST AND BENEFIT ESTIMATES**

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

13 This chapter addresses the costs and benefits for operations, project management, gas
14 AMI meter modules, gas meters and installation work. These costs and benefits are summarized
15 into four categories: Deployment Period Costs (2009-2015); Post-Deployment Period Costs
16 (2016- 2034); Operational Benefits; and Intangible Benefits.

17 In summary, SoCalGas’ cost benefit analysis incorporates the costs and benefits expected
18 to be realized over the entire analysis period extending from 2009 through 2034.
19

20 **VI. FORECAST ASSUMPTIONS**

21 This section describes the basis for SoCalGas forecasts of labor costs, non-labor costs,
22 meter growth, gas AMI meter module failure rates, incompatible meters, meter changes and curb
23 vault meters used in the SoCalGas AMI business case.
24
25

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

1 **A. Labor**

2 SoCalGas labor cost assumptions were consistent with those applied in the SoCalGas
3 TY2008 GRC. Labor costs were based on the number of full-time equivalent employees
4 multiplied by the annual labor rate for the impacted job classifications. Labor rates were based
5 on the 2007 SoCalGas market reference points and the utility's collective bargaining agreement
6 with its Unions escalated to 2008 dollars. Escalation was based on escalation indices published
7 by Global Insights² in its Utility Cost Information Service, as described in the testimony of
8 SoCalGas witness Mr. Foster.

9
10 **B. Non-labor**

11 Non-labor costs were also consistent with those applied in the SoCalGas TY2008 GRC.
12 They were based upon 2007 expense, and then escalated to 2008 dollars. Escalation was based
13 on escalation indices published by Global Insights³ in its Utility Cost Information Service, as
14 described in the testimony of SoCalGas witness Mr. Foster.

15
16 **C. Meter Growth Forecasts**

17 Meter growth forecasts were based upon the Global Insights⁴ Winter 2008 Regional
18 forecast (released February 2008).

19
20 **D. Meter Changes**

21 During the deployment period, SoCalGas will need to purchase and install approximately
22 2.0 million meters to replace those currently installed, excluding meters added to the SoCalGas

23 ² Global Insight is one of the largest private economic forecasting firms in the United States, and the scope and
24 levels of detail of its utility cost forecasting service make it uniquely qualified--the only one of its kind adequate
25 for our utility inflation forecasting needs. SoCalGas has successfully used this service for many years for internal
26 needs as well as in numerous regulatory cases--including the TY2008 GRC and the current SoCalGas BCAP
27 proceedings. Others agree; all the major California energy IOUs (including SDG&E, Edison, and PG&E) have
28 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

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

5
 6 **Table III-3**
 7 **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%		

18
 19
 20 **E. Gas AMI Meter Module Failures**

21 SoCalGas applied a variable gas AMI meter module failure rate in its cost analysis.
 22 Based upon vendor product information obtained during SoCalGas' investigation of available
 23 technology, the gas AMI modules are predicted to fail at a rate of about 0.5% percent annually
 24 during the first 16 years of service, and at greater rates in the remaining years of service life, as
 25 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

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

6
 7 **VII. DEPLOYMENT PERIOD (2009 – 2015) COST ESTIMATES**

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

14
 15 **Table III-5**
 16 **Deployment Period Operational Costs**
 17 **2009 - 2015**
 18 **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 Assembly 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

1
2 **A. Gas AMI Meter Module (Hardware) Costs**

3 The costs of gas AMI meter modules and peripheral equipment⁵ used in this analysis are
4 based upon information obtained by SoCalGas in response to a Request for Proposal issued in
5 Q2 2008. SoCalGas calculated its costs based upon supplier pricing for each specific type of gas
6 AMI meter module to be acquired and the volume of each type of meter to be retrofit or
7 purchased new. The cost of approximately 6.0 million gas AMI meter modules, including those
8 for new business (growth) meters, is estimated to be \$303.7 million.

9
10 **B. Gas Meter Costs**

11 During the deployment period, SoCalGas will need to purchase and install approximately
12 2.352 million gas meters. Of this total, approximately 1.999 million are to replace existing gas
13 meters and 352,700 are new meters for anticipated growth.

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

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

23 SoCalGas proposes that gas meters removed from service to accommodate
24 implementation of SoCalGas AMI will be handled similar to how meter changes are otherwise
25

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

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

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

6 7 **C. Gas AMI Meter Module Installation Costs**

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

14 15 **D. Costs to Rebuild the Meter Set Assembly at Customer Premises**

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

24
25
26 ⁶ The meter set assembly includes the SoCalGas pipe, nipples, meter and regulator located between the SoCalGas
27 service-line and customer house-line. This discussion refers the physical changes to the pipes and nipples that
28 sometimes need to be made to enable proper installation of the gas AMI meter module.

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

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

8 The total direct SoCalGas customer contact center costs during the deployment period
9 (2011 – 2015) are estimated to be \$0.125 million.

11 **G. Customer Billing Services Costs**

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

19 **1. Bill-Related Exceptions**

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

24 Based upon SoCalGas experience deploying over 150,000 drive-by gas AMR meter
25 modules, there will also be exceptions created through the gas AMI meter module installation
26 process. During deployment, costs will be incurred to analyze and trouble-shoot installation
27

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

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

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

12

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

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

20

21 **H. Project Management Office Costs**

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

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

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

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

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

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

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

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

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

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

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

23 The estimated cost for the SoCalGas PMO operation, including the necessary facilities, is
24 \$27.7 million.

1 **I. Meter Route Maintenance Costs**

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

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

8
9 **J. Customer Communications Costs**

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

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

15
16 **Table III-6**
17 **Customer Communications Costs**
18 **In 2008 Direct Dollars (\$Millions)**

19

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

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22

23
24 **K. Other Deployment Period Costs**

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

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

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

10
 11 **1. Meter Reader Retention**

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

16 **Table III-7**
 17 **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%

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

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

3 4 **2. Meter Reading Management**

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

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

10 11 **3. Customer Services Field Training**

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

16 17 **4. Electronic Corrector Communications Equipment**

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

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

1 **5. Electronic Pressure Monitoring**

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

6 **6. Phase-In Costs**

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

12
13 **Table III-8**
14 **Deployment Period Phase-In Costs**
15 **2009 - 2015**
16 **In 2008 Direct Dollars (\$Millions)**

17

18 Cost Element	19 Capital	20 O&M
21 Gas AMI Modules (failures)	22 \$3.0	23 \$1.8
24 Customer Service Orders	25 \$0	26 \$13.3
27 Atmospheric Corrosion Control	28 \$0.2	\$3.3
29 Total Phase-In Costs	30 \$3.2	31 \$18.4

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

33 This section summarizes the costs SoCalGas expects to incur after the gas AMI
34 deployment period⁸. The post-deployment period costs do not include a provision for
35 contingencies. The total costs SoCalGas expects to incur during the post-deployment period are
36 estimated to be \$331.7 million in constant 2008 dollars.

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

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

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

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

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

18 **Table III-9**
 19 **Post Deployment Period Costs**
 20 **2016-2034**
 21 **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

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

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

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

14 SoCalGas estimates the costs associated with this activity will be approximately
15 \$48.0 million.

17 **F. Customer Billing Services Costs**

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

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

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

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

5
 6 **Table III-10**
 7 **Operational Benefits**
 8 **2009 - 2034**
 9 **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

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

21
 22 **A. Meter Reading Benefits**

23 The current SoCalGas meter reading workforce is comprised of several different job
 24 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.

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

6 **2. Meter Reader Workforce**

7 SoCalGas began using a predominantly part-time meter reader workforce beginning in
8 1998. The use of a part-time meter reader workforce was negotiated and agreed to by SoCalGas'
9 labor unions to reduce operating costs and help prepare for implementation of automated meter
10 reading technology. Both these goals were achieved, but the success in lowering costs ultimately
11 resulted in making it difficult to cost-justify the deployment of AMR technology, except in
12 certain geographic areas where meters are difficult to access and therefore more costly to read.
13 During the past three years, SoCalGas has installed approximately 150,000 drive-by AMR
14 modules on these gas meters.

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

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

22 **3. Avoided Meter Reading Capital Costs**

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

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

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

4 **4. Timing of Meter Reading Benefits Realization**

5 During AMI deployment, SoCalGas will attempt to deploy gas AMI meter modules on a
6 route-by-route basis. After AMI technology has been deployed on all the meters on an entire
7 string⁹ of meter reader routes, a meter reader can be released or re-deployed.

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

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

18 **B. Offset to Work Performed During Deployment Period**

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

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

1 \$99.6 million. The O&M expense benefits associated with not performing meter change work in
2 future years is approximately \$28.7 million.

3 During the AMI deployment period, SoCalGas will change approximately 201,500 curb
4 vault meters that would otherwise have been changed in future years. Because the costs
5 associated with this work were also included in the analysis (Section VII.B., Gas Meter Costs),
6 there are offsetting benefits (avoided costs) that occur in future years. The capital expense
7 benefits associated with not purchasing new curb vault meters in future years is approximately
8 \$41.6 million. The benefits associated with not changing curb vault meters in future years are
9 approximately \$16.0 million.

11 **C. Customer Services Field Operations Benefits**

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

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

26
27 ¹⁰ These reductions are a direct benefit of the AMI project and do not address other future workforce impacts which
28 may be attributable to new regulatory requirements or future programs.

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

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

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

18 The cost benefits associated with eliminating “Gas-On Turn-On” orders is estimated to
19 be approximately \$198.1 million. The incremental costs associated with mailing materials to
20 customers are also included in SoCalGas’ cost benefit analysis.

22 **2. Change of Account Orders**

23 When a customer makes a service request to close gas service and a second customer
24 places a service request to initiate gas service within close proximity to one another, the two
25 service requests are “matched” and worked concurrently as a “Change of Account” order.
26
27
28

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

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

7 8 **3. Read & Verify Orders**

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

11 12 **4. High Bill Inquiry Orders**

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

18 19 **D. Customer Billing Services Benefits**

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

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

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

6 **1. Exception Processing**

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

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

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

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

23 **2. Working Cash**

24 Working cash can be reduced because AMI will reduce the time that elapses between
25 when a meter reading is obtained and when a bill is issued to a customer. By validating AMI
26 daily meter read data throughout the month, SoCalGas will be able to produce bills in one less
27 day than is required today using monthly batch processes.

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

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

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

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

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

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

20 **4. Non-Core Customer Metering**

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

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

5
 6 **1. OSHA Recordable Injuries and Motor Vehicle Incidents**

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

11 **Table III-12**
 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

21 * Estimated based upon 2002 through 2007 data

22
 23 AMI will eliminate employee exposure to injury, resulting in a reduction in the costs
 24 associated with OSHA recordable injuries and motor vehicle incidents. The estimated cost
 25 benefits associated with elimination of these incidents is included in the Workers Compensation
 26 loader applied to meter reading labor.

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

6 **I. Gas Transmission & Distribution Benefits**

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

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

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

26 Because this testimony presents AMI costs and benefits in direct, undiscounted 2008
27 dollars, the benefits associated with the deferral of pipeline capacity projects can not be

1 quantified until the impacts of escalation and discounting are applied. In its analysis, SoCalGas
2 estimated a \$40.1 million capacity project was delayed one year - from 2017 to 2018. Since the
3 entirety of the capacity project cost is deferred one year, the benefit is completely associated with
4 the time value of money related to delaying the projects. When calculating the discounted cash
5 flow benefits for the AMI project, as described in the testimony of SoCalGas witness Mr. Foster,
6 SoCalGas estimates the net present value of discounted cash flow benefits associated with
7 deferral of pipeline capacity projects to have a one-time benefit of approximately \$1.6 million.

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

14 15 **X. INTANGIBLE BENEFITS**

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

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

1 **A. Customer Privacy & Security**

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

7 In its AMI application, Southern California Edison ("SCE") stated that customers would
8 benefit from improved customer security.¹¹ SCE conducted focus groups with its customers
9 (most of whom are also SoCalGas customers), who identified safety and security as compelling
10 benefits of its AMI. SCE indicated that some customers cited the need to put their dogs inside
11 on meter reading days as a security issue because the dogs are otherwise a theft deterrent.
12 Additionally, some customers in the SCE focus groups cited the need to unlock doors or gates to
13 allow meter readers access as a source of security concerns.

14
15 **B. Energy Theft**

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

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

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

26 _____
27 ¹¹ See Edison SmartConnect™ Deployment Funding and Cost Recovery Exhibit 3: Financial Assessment And Cost
28 Benefit Analysis, Chapter IV Societal Benefits (Non-Financial), p. 40.

1
2 **C. Bill Accuracy & Timeliness**

3 Bill accuracy and timeliness and the availability of meter reads will improve with AMI.
4 Since meter data will be available on a more frequent basis it will be possible to resolve
5 anomalies more quickly, shortening the time required for SoCalGas to resolve bill-related
6 problems. The frequency of estimated bills will decline because meter access issues under
7 customer control (i.e., dangerous dogs or other unrestrained animals, locked gates, blocked
8 access, etc.) or forces of nature (i.e., snow, mudslides, fires, etc.) will become less relevant.
9

10 **D. Change Party Bills Based Upon Actual Meter Reads**

11 Currently, when the account status of a customer changes in mid-bill cycle, the “closing
12 meter read” or “starting meter read” for some customer bills are prorated. Because AMI will
13 provide daily (and hourly) meter reads, closing and opening bills will be more accurate because
14 they will be based upon actual gas usage.
15

16 **E. Access to Gas Consumption Information**

17 With AMI, customers will have access to more frequent and detailed gas consumption
18 information via the SoCalGas website. Gas consumption data may be used by SoCalGas
19 customers to better manage their gas usage. These benefits are described in greater detail in the
20 testimony of SoCalGas witness Mr. Martin.
21

22 **F. Quicker Detection of Anomalies**

23 New system edits will make it possible to detect abnormal gas usage in days rather than
24 weeks. Faster identification of abnormally high gas usage will allow SoCalGas to investigate
25 these situations earlier than it has historically. Earlier discovery of abnormally high gas usage
26 can reduce the financial burden on customers. Also, SoCalGas will be able to identify
27
28

1 consumption on closed accounts, should people begin using gas without first establishing
2 service, and take action.

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

7 8 **G. Environmental**

9 The elimination of the manual meter reading function will reduce motor vehicle
10 emissions associated with the 6.3 million miles currently driven by SoCalGas' meter reading
11 department employees each year. By reducing vehicle emissions, SoCalGas expects to reduce
12 CO₂ emissions as described in the testimony of SoCalGas witness Mr. Martin. This will help
13 improve air quality in the SoCalGas service territory and reduce harmful impacts to the
14 environment.

15 16 **H. Motor Vehicle Traffic**

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

20 21 **XI. AMI PROJECT RISK AND RISK MITIGATION STRATEGY**

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

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

6 Access to the SoCalGas meters will be necessary, regardless of who performs AMI
7 deployment work. When deploying drive-by AMR technology at about 150,000 sites, SoCalGas
8 found that by following defined procedures for customer notification and interaction, about 99%
9 of its meters could be accessed in a timely manner.

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

17 18 **XII. CONCLUSION**

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

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

6
7 **XIII. WITNESS QUALIFICATIONS**

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

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

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

21 I received a Bachelor of Science degree from the University of California, Los Angeles in
22 1979.

23 This concludes my prepared direct testimony.
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