

Application of San Diego Gas & Electric Company
(U-902-E) for Adoption of an Advanced Metering
Infrastructure Deployment Scenario and Associated Cost
Recovery and Rate Design.

Application 05-03-015

Exhibit No.: _____

**CHAPTER 9
AMI PROJECT MANAGEMENT AND SYSTEM SELECTION PROCESS**

JULY 14, 2006 AMENDMENT

**Prepared Supplemental, Consolidating,
Superseding and Replacement Testimony**

of

PATRICK CHARLES

SAN DIEGO GAS & ELECTRIC COMPANY

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

July 14, 2006

Material changes to this testimony can be found on pages: 1 and 17

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1 **CHAPTER 9**

2 **AMI PROJECT MANAGEMENT AND SYSTEM SELECTION PROCESS**

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4 **JULY 14, 2006 AMENDMENT**

5
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7 Superseding and Replacement Testimony**

8 **of**

9 **PATRICK CHARLES**

10 **SAN DIEGO GAS & ELECTRIC COMPANY**

11 **I. INTRODUCTION**

12 The purpose of this amended testimony is to refresh my March 28, 2006
13 testimony to include material information which will impact my (Chapter 9) testimony in
14 which I describe SDG&E's approach to advanced metering infrastructure (AMI) project
15 management, project management structure and related AMI project management costs,
16 including risk contingency costs, Human Resources (HR) incremental costs, and
17 incremental AMI facilities (office space) costs. With regard to AMI project management,
18 I discuss the RFP process through which SDG&E has refined and updated its business
19 case costs and benefits as well as describing activities related to SDG&E's AMI sourcing
20 strategy. The total direct capital dollars discussed in this chapter total approximately \$65
21 million and the associated Operations & Maintenance (O&M) direct dollars discussed
22 total approximately \$26 million. This testimony consolidates, supersedes, and replaces all
23 previous direct and supplemental testimony filed by me or by any other SDG&E witness
24 testifying in this docket, on the topics covered herein.

25 Specifically, this testimony corrects the allocation of contingency costs such that
26 approximately \$9 million is now included as O&M, and approximately \$39 million as
27 Capital (direct dollars). Additionally, AMI Project Management costs have been slightly
28 modified and the allocation of these costs has slightly changed. AMI project
29 management costs are allocated according to the overall O&M and Capital spending in
30 the case. Because these costs have changed in various areas (such as Mr. Pruschki's
31 Chapter 11 testimony and Mr. Gaines' Chapter 5 testimony), the allocation of the AMI
32 project management costs has also changed accordingly. Additionally, minor FTE count

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1 corrections are included that result in very small changes to HR and Facilities costs.

2 Other areas of my testimony remain unchanged.

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4 **II. AMI PROJECT MANAGEMENT – COSTS AND CONSIDERATIONS**

5 **A. Background**

6 SDG&E’s AMI project is large and complex and reflects more than a year of
7 IT system development and integration work followed by a two and one half year
8 deployment and installation phase. Moreover, the AMI project will touch each
9 and every customer premise that has a gas and electric meter over the deployment
10 period. Due to the size and complexity of the project, SDG&E has developed a
11 ‘Sourcing Strategy’ for AMI and AMI related services, and designed and
12 executed an RFP solicitation process that addresses the various components and
13 activities of the AMI project.

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14 **B. RFP Solicitation Process / SDG&E’s AMI ‘Sourcing Strategy’**

15 As detailed in D.05-08-018, the Commission granted SDG&E \$9.3M in AMI
16 pre-deployment funding as described in the multi-party settlement agreement.
17 Activities included in SDG&E’s AMI Sourcing Strategy are those included and
18 approved in SDG&E’s pre-deployment funding request (included in the budget
19 and settlement are 1) AMI Sourcing Strategy Development / Refinement /
20 Implementation, 2) AMI Technology Evaluation and Assessment, 3) AMI Project
21 Initialization, 4) AMI Beta Phase Design and Implementation, and 5) AMI
22 Regulatory and Financial Planning Support). The primary objective of these
23 activities was to issue solicitations for AMI-related products and services and to
24 develop a ‘Solution Implementation Roadmap’ for AMI deployment.
25 Development of this roadmap involved the following steps:

26 **1. Benefit Identification, Requirements Definition and RFP Issuance**

27 As indicated in Mr. Reguly’s testimony (Chapter 8) the overarching
28 strategy of SDG&E’s business case development approach is to utilize a

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1 benefits-driven approach ensuring attainment of the State's six policy goals,²
2 the demand response benefits included in the case, as well as the utility
3 operational benefits. Therefore, initial activities in SDG&E's AMI Sourcing
4 Strategy focused on identification and quantification of AMI related benefits.
5 This was achieved over several months of subject matter expert interviews
6 and follow-up analysis. These subject matter expert (SME) interviews were
7 conducted by the project team facilitated by SDG&E's consultant,³ retained in
8 recognition of the scope and complexity of this project, and to specifically
9 help guide the utility through the selection process. SME interviewees
10 represented over 20 impacted departments within SDG&E.

11 Based upon the potential benefits identified during these sessions, SDG&E
12 documented the necessary business requirements to achieve these benefits. In
13 addition, a gap analysis between these requirements and the current business
14 processes were identified including key process changes that will be necessary
15 to realize the operational benefits. This was achieved through a series of
16 Business Process Design (BPD) sessions with impacted stakeholders. The
17 output of these BPD sessions was a list of the functional, system, information,
18 and technical requirements. These requirements were then included in vendor
19 solicitation documents or RFPs.

20 Concurrent with this activity, another aspect of the Sourcing Strategy was
21 to determine the approach SDG&E would take in the solicitation, ultimately
22 leading to the issuance of five Request for Proposals (RFPs) in the areas of 1)
23 AMI Technology, 2) Meter Installation, 3) Information Systems, 4) Systems
24 Integration, and 5) Prime Services / Program Management. The RFPs were
25 issued on October 20, 2005, and responses were due and were received on
26 December 1, 2005.

27 **2. RFP Response Evaluation Process and Selection of 'Solution Sets'**

² The CEC's six policy goals or functional requirements are described in the 'Joint Assigned Commissioner and ALJ's Ruling Providing Guidance for the Advanced Metering Infrastructure Business Case Analysis' of February 19, 2004.

³ Further information regarding Enspiria can be found following my qualifications.

1 SDG&E received in excess of 60 proposals from more than 30 interested
2 vendors across the five RFPs. Once these responses were received, SDG&E
3 began extensive bid assessment activities which continued over a three month
4 period. Evaluation teams assessed the functional and technical requirements
5 and based upon the results of those evaluations, the teams ranked the vendor
6 offerings in each of the RFP areas.

7 Independent from this technical and functional scoring and ranking
8 process, SDG&E conducted a vendor pricing analysis which included
9 coupling the 'external' costs represented by the vendor bids with a
10 representative set of 'internal' costs developed by the SDG&E AMI teams.
11 Based upon the results of these activities, a short list of bidders was
12 formulated, from which SDG&E developed a series of "solution sets"⁴ which
13 represents the most promising and cost effective implementation alternatives.
14 Field tests of the selected technologies will begin in the late spring of 2006.

15 Based on these solution sets, SDG&E estimated the overall total costs to
16 achieve the benefits of the AMI initiative. As part of this process, SDG&E
17 requested clarification and refinement of external vendor costs, and developed
18 related internal cost estimates for the identified solution sets (rather than the
19 generic set used initially). Additionally, trade-off analysis was conducted for
20 optional requirements to determine whether they should be included in the
21 AMI business case.

22 **C. AMI Project Management / Prime Services/Program Management RFP** 23 **Specifics**

24 SDG&E issued a prime services / program management (PS / PM) Request
25 for Proposal (RFP) on October 20, 2005 as part of the larger RFP solicitation. The
26 PS / PM solicitation was included with the other RFP solicitations because
27 SDG&E believes that selecting an experienced and proven PS/PM will reduce
28 overall project management risks. The purpose of the prime service program
29 management solicitation was to allow SDG&E to evaluate and select an

⁴ A 'solution set' consists of a unique grouping of vendor offerings across the five RFP areas. That is, vendor 'A' is included for AMI technology, vendor 'B' for meter installation, vendor 'C' for information systems, vendor 'D' for systems integration and vendor 'E' for prime services / program management. This solution set would be referred to as the 'A-B-C-D-E' solution set.

1 experienced and proven AMI project management service provider. The PS / PM
2 RFP provided four acceptable options for managing the overall AMI effort:

3 **Option 1:** Program Management with Service Level Agreement (SLA)
4 Requirements. Under this option, the 'Prime' (or vendor selected to manage
5 the overall effort) is responsible for the management of all aspects of the
6 project and is expected to contract with other firms for other aspects of the
7 project under a 'Service Level Agreement' arrangement. SDG&E would
8 likely have two contracts to manage in this option, one with the 'Prime' and
9 one with the vendor providing Operational Services.

10 **Option 2:** Operational Services. Under this option, the vendor chosen
11 would manage the installation of meters, gas modules, AMI communication
12 system components and would be responsible for activation of the system
13 during deployment working for an SDG&E Program Management Office
14 (PMO). Under this option, SDG&E would potentially need to manage
15 multiple contracts depending on the vendor mix selected to carry out project
16 implementation.

17 **Option 3:** Program Management with SLAs and Operational Services.
18 This option is very similar to option one, however, in this case, the Prime is
19 also responsible for Operational Services, that is, the Prime service provider
20 would contract with other firms under an SLA arrangement. The Prime would
21 also manage the installation of meters, gas modules, AMI communication
22 system components, be responsible for activation of the system during
23 deployment and would also act as the overall management agent or PMO.
24 Under this option, SDG&E would have the advantage of managing a single
25 contract with the Prime contractor.

26 **Option 4:** Prime Aggregator. Under the Prime Aggregator option, the
27 vendor would take complete legal and financial responsibility for the delivery
28 of all components of the AMI solution in accordance with SDG&E's
29 specifications and includes the PMO with SLA responsibilities as well. Like
30 Option three, under this option SDG&E would have the advantage of
31 managing a single contract.

1 **Option 5 (Alternative Offerings):** Open ended. Under this option, the
2 vendors could propose other, original PS / PM approaches.

3 SDG&E will complete the PS / PM selection process in Q3 2006 and, as
4 discussed in Mr. Reguly's testimony (Chapter 8), once this selection is made,
5 SDG&E will file the executed contract(s) by Advice Letter.

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7 **D. AMI Project Management Base Assumptions**

8 SDG&E's AMI RFP responses were due on December 1, 2005 and 11
9 vendors responded to the PM / PS RFP under these various options. At this point,
10 SDG&E has not made a final vendor or option decision regarding the PM / PS
11 function. However, after reviewing the RFP responses of the various vendors and
12 reviewing the associated external (vendor) and internal costs associated with the
13 PM / PS function, SDG&E can, at this point, describe how project management
14 and risk mitigation fundamentals will be handled and can also provide cost
15 estimates associated with AMI Project Management on a 'not to exceed' basis.

16 In order to determine what costs to include related to AMI Project
17 Management / PM/PS, the various vendor responses to the PM/PS RFP were
18 examined and internal costs associated with the most promising approaches were
19 developed. In examining the multiple approaches available, 'solution sets' were
20 developed (as described above). Cost estimates are based on, and will not exceed,
21 the higher of the solution set costs derived from the RFP process. The final costs
22 may, however, be less than the higher of the solution set costs depending on
23 negotiation outcomes and final vendor and option choices.

24 **1. Project Management and Risk Mitigation**

25 SDG&E is currently considering multiple vendors to fulfill the roles
26 described above. In all cases, the vendors under consideration have well
27 qualified personnel, extensive experience and a wide range of tools that will
28 be brought to the SDG&E AMI effort. Each vendor under consideration also
29 has impressive certification and training levels. Additionally, each vendor has
30 a proven framework with which to manage such things as overall program
31 planning and execution to include work plan development, stakeholder web

1 portal availability, schedule development, resource assignment, dependency
2 development, financial / budget reporting tools, logistics management
3 frameworks and tools and development of overall monitoring/continuous
4 improvement loops. Other areas such as scope management, overall
5 flexibility/adaptability and communications are also noted as strengths of the
6 various vendor teams under consideration.

7 Additionally, costs for a joint SDG&E / vendor project management office
8 (PMO) are included. The focus and structure of the PMO varies by project
9 phase and focuses on various aspects of the project depending on the phase.
10 For example, in the early stages, program management personnel are brought
11 in and ‘as is’ process flows are examined. Post implementation process
12 designs are also refined and “change management” issues are examined and
13 plans for addressing these issues are put in place. In later stages of the
14 project, installation ramp-up, customer communication development and issue
15 resolution, system commissioning and transition become the focus.

16 **a. Risk Mitigation**

17 Risk mitigation is also cornerstone of SDG&E’s approach to the AMI
18 project. Due to the critical role that vendors will play in the project, an
19 early and carefully considered aspect of risk mitigation is the contracting
20 approach to the project. Due to the type and number of responses received
21 to the PM / PS RFP, SDG&E anticipates that one or more contracts with
22 major vendors may be necessary. As shown by the PM / PS RFP response
23 options, this would mean that the PM / PS vendor could potentially
24 contract with multiple sub-contractors for whom SDG&E requires specific
25 SLAs to be put in place.

26 SDG&E anticipates selecting a contracting structure that will protect
27 the interests of both the company and our customers. For example,
28 SDG&E intends to combine the contract obligations of the PM / PS with
29 the systems integration and information systems development functions.
30 For purposes of risk mitigation, a single fixed price contract with a single
31 point of accountability is the goal for the PM / PS, systems integration (SI)

Deleted: Please refer to Ms. Welch’s testimony (Chapter 10) for more detail.

1 and information systems area, along with as many of the other contracting
2 areas as possible. SDG&E anticipates that the PM / PS, SI and
3 information systems contract will be signed in the latter part of 2006
4 contingent on CPUC approval of SDG&E's case-in-chief. As part of this
5 contract, SDG&E will employ financial structures and instruments to
6 share aggregated project risks and rewards. These financial structures and
7 instruments may include performance and milestone based fees,
8 incentives, limitations of liability, consequential damages, liquidated
9 damages, performance bonds, and warranties.

10 In concert with SDG&E risk mitigation approaches, SDG&E expects
11 the PM / PS vendor to bring proven risk mitigation approaches to the
12 project. Many of these vendors have managed far larger projects than
13 SDG&E's AMI effort and, in some cases, across multiple industries and
14 even across multiple countries. SDG&E believes vendor experience and
15 the accompanying tools the vendors compliment and fortify SDG&E's
16 risk mitigation and program management efforts. These tools include
17 proven project management frameworks, planning methodologies,
18 techniques, risk profile development approaches, monitoring tools, as well
19 as AMI specific risk identification insights that are expected to
20 complement the experience of SDG&E management.

21 As also discussed in Mr. Fong's testimony (Chapter 2) and Mr.
22 Reguly's testimony (Chapter 8), SDG&E has set in place plans to address
23 both the reducible and irreducible risks involved with the AMI project. In
24 general, prudent business practices and prudent management can address
25 the reducible risks. Such things as bringing in a recognized project
26 management partner / vendor, planning for and conducting extensive field
27 tests and carrying out an effective 'design, build, run, transfer' approach to
28 the deployment (discussed further in Mr. Pruschki's testimony
29 (Chapter 11) address the reducible risks associated with the project. As
30 for the irreducible risks, the prudent addition of contingency costs is our
31 primary mitigation approach.

1 **b. Contingency Costs**

2 Another aspect of risk management is the prudent inclusion of
3 contingency costs. Experienced managers recognize the need to build in
4 reasonable contingency costs into project plans and budgets. Large
5 organizations that carry out construction project implementations have
6 very sophisticated methods of determining a reasonable level of
7 contingency to include in project budgets, usually based on the level of
8 confidence associated with requirement definitions and/or the ‘stage’ of
9 the project / estimate (the earlier the stage, the larger the contingency).⁶
10 The more confident one is that project requirements are fully and
11 accurately developed and the later the planning stage, the less contingency
12 is necessary. Conversely, the less well defined the requirement or the
13 earlier the stage, the greater the contingency requirement. As the CPUC
14 observed, “[w] ***e do not know a priori the particular mix of rates,***
15 ***programs, and customer service functions that will meet this cost***
16 ***effective ideal.***⁷ Thus it makes sense to analyze an AMI system that
17 supports a wide variety of potential rate structures and customer service
18 options that the Commission may approve over the useful life of the AMI
19 system.”

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20 Some of the risks SDG&E considered when developing the overall
21 contingency included:

- 22 i. Unforeseen disruptions in the supply chain.
23 ii. Unforeseen equipment issues (manufacturing or design defects).

⁶ [United States Department of Energy, Cost Estimating Guide DOE G 430.1-1, March 28, 1997, Chapter 11, pg 11-6, figure 11-1. The discussion and figure illustrate stages as ‘preliminary’, ‘budget’ and ‘final design’ with contingency ranges from 30-50% in the earliest stage to 5-15% in the ‘final design’ stage. The DOE Cost Estimating Guide can be found at <http://www.directives.doe.gov/pdfs/doe/doetext/neword/430/g4301-1chp11.html>](http://www.directives.doe.gov/pdfs/doe/doetext/neword/430/g4301-1chp11.html)

⁷ See page 2 of the ‘Joint Assigned Commissioner and Administrative Law Judge’s Ruling Providing Guidance for the Advanced Metering Infrastructure Business Case Analysis’ of February 19, 2004. Emphasis added to illustrate the uncertainty in the regulatory / legislative environment.

- 1 iii. Unforeseen scalability issues related to IT systems.
- 2 iv. Unforeseen data or system compatibility issues between vendors
- 3 and / or between vendors and SDG&E.
- 4 v. Unforeseen / additional testing required to achieve quality
- 5 requirements for hardware and / or software components.
- 6 vi. Unforeseen regulatory changes.

7 Risk based allowances or contingency costs are a well recognized
8 component of an overall project cost estimate or budget to provide for
9 these sorts of uncertainties. In fact, the United States Department of
10 Energy (DOE) has described a project cost contingency as ‘an integral part
11 of the total estimated costs of a project.’⁸ The DOE further refines the
12 definition of a contingency as follows:

13 ‘Covers costs that may result from incomplete design, unforeseen
14 and unpredictable conditions, or uncertainties within the defined
15 project scope. The amount of the contingency will depend on the
16 status of design, procurement, and construction; and the complexity
17 and uncertainties of the component parts of the project. Contingency
18 is not to be used to avoid making an accurate assessment of expected
19 cost.’⁹

20 The American Association of Cost Engineers also recognizes the
21 requirement for cost contingencies and provides the definition of a
22 risk-based cost as ‘a specific provision for unforeseeable elements of
23 cost within the defined project scope. This is particularly important
24 where previous experience relating estimates and actual costs has
25 shown that unforeseeable events which will increase costs are likely
26 to occur.’¹⁰

27 In establishing the overall amount of the contingency to include, each
28 phase and component of SDG&E’s AMI project was considered, as well

⁸ United States Department of Energy, Cost Estimating Guide DOE G 430.1-1, March 28, 1997, Chapter 11, pg 11-1. This can be found at <http://www.directives.doe.gov/pdfs/doe/doetext/neword/430/g4301-1chp11.html>

⁹ *ibid*, Chapter 11, pg 11-1.

¹⁰ *ibid*, Chapter 11, pg 11-1.

1 as the stage of the procurement cycle / system selection. After reviewing
2 these items, the AMI project management team's professional judgment
3 resulted in the addition of approximately 15% of the overall projected
4 capital outlay for the 2007 – 2011 period (which equates to approximately
5 \$57M) as a prudent contingency amount. If one compares this amount to
6 the overall anticipated expenditure (O&M and Capital) during this period,
7 this contingency amount represents approximately 12.6% of project costs
8 during this period. Based on the preceding discussion, SDG&E believes
9 that adding this amount to the overall AMI project cost estimate is
10 appropriate and reasonable.¹¹

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11 **c. Contingency Cost Controls**

12 Risk contingency fund expenditures will be controlled using SDG&E's
13 standard project change management process, whereby the project
14 manager (Director, AMI Program Office) is responsible for managing the
15 risk contingency. When changes to scope are identified, the project
16 manager will ensure that a thorough analysis of the proposed change is
17 conducted, including impacts to costs, resources and schedule. Based on
18 the results of this analysis, the project manager will approve or deny the
19 use of the risk contingency funds. The project manager will track all
20 expenditures of contingency funds and will report these expenditures to
21 the executive project sponsors (Senior Vice President, Customer Services
22 and Senior Vice President, Information Technologies). However, should
23 the proposed expenditure be of such a magnitude that inclusion of the
24 change would result in a significant budget variance (in excess of 10% of
25 the overall project budget), approval is required from utility senior
26 management.

27

¹¹ If one refers to the United States Department of Energy, Cost Estimating Guide DOE G 430.1-1, of March 28, 1997, Chapter 11 (Contingency), it is clear that the stage of cost estimate development helps in the determination of the appropriate level of contingency to include. As shown in figure 11-1 on page 11-6 of this reference, 40% of the overall cost of the project as contingency is the upper limit at the 'budget estimate' stage moving downward to 15% as the recommended upper limit for the 'final design estimate' stage. As of March 28, 2006, SDG&E is somewhere between these two stages since the AMI technology choice will not be finalized until Q2, 2007.

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4 **d. Transformational Technology Advances**

5 Another aspect of AMI project planning that SDG&E has considered
6 is that a ‘transformational’¹² technology could come to market during the
7 planning, deployment or post-deployment stages of the AMI business case
8 time horizon¹³. If this occurs, a financial evaluation of the incremental
9 costs of analyzing, selecting and implementing such a technology would
10 have to be weighed against the benefits of such an approach. Given that
11 this could occur during the AMI deployment period, this process would
12 likely delay the deployment for 12-18 months, however, given the state of
13 the marketplace / technology, SDG&E has not included a specific cost
14 associated with this in this business case.

15 **E. AMI Technology Evaluation and Assessment Related Tasks and Timing**

16 An investment of this magnitude requires an extensive level of due diligence.
17 The AMI Technology Evaluation and Assessment phase of the project allows
18 SDG&E to mitigate risks to the company and our customers. This phase provides
19 the opportunity to take the results of the RFP process and field test the meters and
20 communication network to ensure system and technical performance.

21 These AMI technology field test activities are scheduled to start during the
22 second quarter 2006 and be completed by the second quarter 2007. The duration
23 of this project activity is significantly longer than was previously estimated as part
24 of our pre-deployment settlement. SDG&E determined that the most prudent
25 approach would be to conduct as much due diligence in this area as the overall
26 schedule permits.¹⁴ Specifically, SDG&E will be able to simultaneously move
27 forward with the IT related activities required to support AMI while these field

¹² A ‘transformational’ technology might include a cost effective, technically proven Broadband over Powerline (BPL) or other communication solution not available or considered previously in the SDG&E RFP process. See Mr. Paul Pruschki’s [Chapter 11](#) testimony for a further discussion on this issue.

¹³ Witness Scott Kyle provides the reasoning regarding SDG&E’s business case analysis time horizon (2007-2038) in chapter 13.

¹⁴ The ultimate goal is project completion by December 31, 2010.

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1 tests are being conducted. The IT activities require 18 months for systems
2 development and integration of legacy system changes as well as implementation
3 of a meter data management system.

4 **F. AMI Project Management - Summary of Costs and Benefits**

5 The estimated costs included in table PC 9-1 below are based on internal
6 SDG&E costs and external vendor costs included in a 'not to exceed' solution set.
7 However, because vendors have not been selected or actual contracts put in place,
8 these estimates may change depending on contract negotiation outcomes. These
9 estimates are seen as reasonable as of March 2006 and will provide a sound,
10 fundamental project management and risk mitigation framework as described
11 above.

12 **G. AMI Project Management - Conclusion**

13 As stated, SDG&E expects the AMI project to be complex and far reaching.
14 Accordingly, this testimony describes the costs associated with project
15 management organization and methodology commensurate with the project scope
16 and risks. SDG&E recognizes the project risks involved and has developed a
17 reasonable plan and included reasonable contingency costs to mitigate these risks.
18 The RFP process through which SDG&E has refined its business case and
19 provided the updated costs and benefits represents over ten months of effort
20 involving some twenty departments at SDG&E. Additionally, the AMI
21 technology evaluation and assessment process also represents a necessary and
22 prudent step before choosing a specific AMI technology.

23 **III. INCREMENTAL HUMAN RESOURCES COSTS AND INCREMENTAL**
24 **FACILITIES COSTS ASSOCIATED WITH AMI**

25 |
26 **A. Background**

27 SDG&E recognizes that the AMI project will have widespread impact across
28 the company in terms of work areas that will no longer be necessary,
29 modifications to existing work processes and creation of completely new
30 processes and activities. Additionally, SDG&E is planning to work with multiple
31 vendors and contract employees as a result of the project (most notably during the

1 roll-out / deployment of the equipment), and recognizes the associated challenges
2 as well.

3 SDG&E recognizes the value of our employees and has developed an
4 approach to manage these labor force impacts (most notably the FTE reductions
5 associated with the project) as effectively and efficiently as possible. SDG&E's
6 approach to this issue and the zero layoff policy is described in detail in Mr.
7 Teeter's testimony (Chapter 3).

8 Along with the automation-driven FTE reductions, AMI will also bring new
9 areas of work for the utility. AMI network operations, trouble-shooting and
10 maintenance functions, as well as load research and customer interface personnel
11 will be required once the system (and a 'demand response' rate structure) is put in
12 place. Along with these long term work force implications, there will also be
13 labor issues associated with the IT system development and implementation and
14 meter and module installation. That is, many short term primarily contractor /
15 vendor full-time employee (FTE) additions, as well as some SDG&E FTE short
16 term additions, will be required.

17 Incremental costs that are anticipated to accrue to SDG&E's Human
18 Resources (HR) organization associated with these FTE additions are included in
19 this chapter. That is, the incremental impact to our HR organization for the
20 administration, recruiting, hiring, reassignment, and job progression / bidding
21 activities as a result of the AMI project are included herein. The vast majority of
22 the incremental labor costs themselves are included elsewhere (for example, the
23 incremental contract labor costs associated with meter installations are included in
24 Mr. Carranza's testimony (Chapter 12). The incremental HR costs included here
25 reflect the addition of one recruiter early in the roll-out period, advertising costs,
26 and relocation expenses associated with a reasonable fraction of the incremental
27 number of management employee hires.

28 Facilities costs are also included here as they relate to incremental office space
29 requirements brought about by the project. Given the volatility of property values
30 in Southern California, it is difficult to predict facility costs into the future.

1 However, SDG&E used conservative estimates based on actual, historical data
2 and reasonable projections.

3 **B. Base Assumptions**

4 The estimates that follow are as of March, 2006 and are subject to change as
5 project timing, vendor selection and other issues are pending at this point.

6 Short run job function additions (which are anticipated to be necessary prior to
7 and during the roll out) will occur within the AMI Project Management,
8 Information Technology (IT) and meter, module and AMI communication
9 installation areas and are envisioned to be vendor / contractor employee additions
10 for the most part. Along with this relatively large group of short-term vendor /
11 contractor additions, company employee additions are also envisioned in these
12 areas to fulfill liaison, quality assurance and communications functions.

13 Additionally, short term resource additions are anticipated in the Mass / Major
14 Markets area (to fulfill project coordination functions), the Customer Contact
15 Center (CCC), the meter reading department (Meter Route Analysts to assist in
16 re-routing during system cut-over), the billing department (Associate Billing
17 Analysts needed due to more complex rates), meter revenue protection or MRP
18 group (MRP Analyst/Field personnel needed due to the additional bypass/theft
19 situations that will be identified during the roll-out), and the measurement data
20 operations (MDO) area (MDO Analysts need to manage the data flow produced
21 by the network) .

22 Longer term job additions (phased in during the roll-out and existing
23 thereafter) will need to be made in the electric metering operations area (Single
24 Phase Meter Technicians and Electric Meter Technicians), the measurement data
25 operations (MDO) (Analysts, Specialists and Supervision), the MRP group (MRP
26 Analyst/Field personnel) the billing department (Associate Billing Analysts), the
27 IT / network communications area (AMI communications system analysts,
28 engineers, and various maintenance personnel), the load research area (Load
29 Research Analysts), the Mass and Major Markets area (Rate Analysts, Account
30 Representatives, and a Project Coordinator) and within the customer service field
31 department.

1 Facilities (office space) incremental costs associated with the AMI project are
2 also included in this chapter and are associated with the estimated FTE additions /
3 reductions and consider the anticipated timing of the project, space requirements
4 and other facilities needs of these groups (such as parking). Also included in the
5 facilities assumptions is the termination of a leased site dedicated to Meter
6 Reading and Meter Reading Training. The site is a 10,000 square foot modular
7 structure with parking for employee and company vehicles. The decrease in lease
8 and ongoing operational costs for that site are netted against assumptions which
9 include the addition of 35,000 square feet of suburban office space to house the
10 incremental FTEs during rollout (short term labor additions). A space reduction
11 in 2012 reflects the decrease in FTEs, but allows for the ongoing longer term job
12 additions. Vacancies at the current SDG&E headquarters location in the Kearney
13 Mesa area of San Diego (Century Park campus) are currently less than 5%,
14 necessitating the lease of similar type office space to accommodate the
15 incremental rollout and long run functional positions that AMI requires.

16 **C. Summary of Costs and Benefits – HR and Facilities**

17 Costs included in this chapter relate to incremental costs to SDG&E's Human
18 Resources area and the net incremental facilities costs related to additional office
19 space required due to the AMI project. HR costs associated with the addition of
20 one FTE during the roll-out period to help manage issues associated with the large
21 contractor work-force will be necessary to support the AMI roll-out and to
22 manage the internal work force attrition and churn. Additional incremental funds
23 associated with employee relocation expenses and advertising expenses
24 anticipated for hard-to-fill positions such as network communication engineers /
25 AMI communications and System Analyst positions are included in the HR cost
26 estimates. Incremental facilities / office space costs consider timing issues (ie:
27 ramp up of additional personnel / timing and other issues with work group
28 displacements) and are net numbers (additions less reductions).

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Table PC 9-1
AMI Proj Mgmt, Contingency, HR & Facilities
Direct Dollars (Dollars in Thousands)

	Total Dollars					
Costs	Total	2007	2008	2009	2010	2011-2038
Capital						
Total AMI Proj Mgmt Capital Costs	22,555	4,200.8	5,700.1	5,948.1	6,194.4	511.9
Total AMI Proj Mgmt Contingency Capital Costs	38,589	3,344.8	8,583.9	12,095.2	12,072.1	2,492.5
Total Facilities Capital Costs	3,890	3,890.0	0	0	0	0
Total Capital Costs	65,034	11,435.6	14,284.0	18,043.4	18,266.5	3,004.3
O&M						
Total AMI Proj Mgmt O&M Costs	4,850	903.3	1,225.7	1,279.1	1,332.0	110.1
Total AMI Proj Mgmt Contingency O&M Costs	8,974	942.3	2,074.2	2,741.5	2,673.8	542.0
Total HR O&M Costs	11,412	1,014.9	289.7	184.7	0	0
Total O&M Costs	25,981	3,145.0	4,625.8	5,255.8	5,056.5	7,897.5
Total Costs	91,014	14,581	18,910	23,299	23,323	10,902

D. HR and Facilities - Conclusion

AMI is an enormous undertaking for the utility and SDG&E fully recognizes that it will carry with it an equally large impact for many of our employees. SDG&E is committed to managing this impact as carefully, effectively and efficiently as possible.

This concludes my testimony.

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1 **IV. QUALIFICATIONS OF PATRICK CHARLES**

2 My name is Patrick Charles and I am employed by San Diego Gas & Electric
3 Company (SDG&E). My business address is 8326 Century Park Court, CP62C, San
4 Diego, CA. 92123.

5 My present position is Planning and Analysis Manager within the AMI,
6 Remittance Processing and Special Projects Department of the Customer Operations
7 Division at SDG&E. I have been employed by SDG&E since 1999. I was the SDG&E
8 witness that sponsored the AMI 'pre-deployment' costs in the March, 2005 application
9 (revised in supplemental testimony in May, 2005). Previous positions relevant to my
10 testimony include Project Manager of SDG&E's participation in the CPUC / CEC
11 facilitated, WG3 sponsored Statewide Pricing Pilot (SPP) and prior to that I was
12 Customer Services Manager within SDG&E's Major Markets / Federal Accounts
13 department.

14 I received a bachelor's degree in Business Administration (marketing) from the
15 University of Colorado at Boulder in December, 1989 and a Masters Degree in Business
16 Administration (finance) from the University of Missouri at Kansas City in 1999.

1 **V. QUALIFICATIONS OF ENSPIRIA SOLUTION**

2 **A. Enspira Solutions, Inc., Corporate Overview**

3 Enspira Solutions, Inc.TM — a company dedicated to the energy and utility
4 marketplace — offers a unique combination of experience, strategy, and implementation
5 expertise. Enspira Solutions helps utilities improve operational effectiveness, asset
6 performance, customer service, and energy efficiency.

7 Enspira Solutions experts provide business and technology consulting, systems
8 integration and implementation, data services, lifecycle data management, and
9 maintenance/upgrade services. Headquartered in Denver, Colorado, the company is
10 backed by the financial strength of parent company Osmose Holdings, Inc., with \$550
11 million in revenue.

12 Enspira offers solutions based on proven industry software products, integration
13 standards, and business models. Providing rapid delivery through integration frameworks
14 and configurable solutions, we deliver complete business solutions, not just enabling
15 technology. These services enable utilities to fully realize the benefits of past, current,
16 and future technology investments. We specialize in:

- 17 ▶ Advanced Metering Infrastructure/Automated Meter Reading (AMI/AMR)
- 18 ▶ Substation/Distribution Automation
- 19 ▶ Geographic Information Systems (GIS)
- 20 ▶ Outage Management Systems (OMS)
- 21 ▶ Mobile Work Management and Field Force Automation
- 22 ▶ Work Management
- 23 ▶ Asset Management

24 **B. AMI Expertise**

25 Enspira Solutions personnel are experienced across the full spectrum of Advanced
26 Metering Infrastructure (AMI) planning and implementation including:

- 27 ▶ AMI visioning and strategic planning
- 28 ▶ Formal AMI requirements specification
- 29 ▶ AMI business structure options and business case development
- 30 ▶ AMI technology assessment
- 31 ▶ Development of AMI-enabled to-be business process models

- ▶ AMI competitive solicitation development and administration
- ▶ Technology/vendor selection and negotiations
- ▶ AMI enterprise architecture design and solution implementation roadmap
- ▶ AMI system deployment and integration
- ▶ AMI system operations and benefits realization

Enspira brings unique knowledge and experience in realizing AMI benefits across the utility enterprise – from customer service, metering and billing, revenue and energy management to Transmission and Distribution system planning and operations, outage and asset management.

Enspira Solutions personnel have supported the Automatic Meter Reading Association (“AMRA”) for many years through session coordination, papers, presentations, and courses. Enspira Solution is also a member of the Advisory Committee of DistribuTECH, which has a strong focus on AMI and enterprise integration of AMI and related technologies.

VI.. Project Experience

The Enspira Solutions staff has worked at utilities across the U.S. Each member of our technical staff has been extensively involved in the conception, development, implementation, and integration of utility and business technology systems. Representative client organizations that our staff has recently supported are presented in Table 1. We met and/or exceeded client expectations with regards to budget and schedule performance on all projects.

AMI Project Experience

Client	Project Summary
JEA (Jacksonville, FL)	Conducted Network Meter Reading (NMR) consulting engagement to develop project implementation plan, business case, system integration and data requirements, and business process alignments. Also played key role in implementation project to deliver a new meter data management system repository for NMR data to serve as a single source for metering and billing related analysis and business intelligence.
Exelon Energy Delivery/ ComEd	Supported Exelon’s AMR Strategy Project, evaluating and recommending the implementation of AMR in the ComEd service territory. Developed AMR system architecture, assessing costs and benefits, and evaluated candidate AMR technologies with respect to customer segmentation. Provided visionary AMR strategy, solid implementation plan, and sound business case for management approval.

Client	Project Summary
FirstEnergy	Assisted FirstEnergy with the development of an AMI Pilot Strategy. The project included defining business requirements, associated benefits, and building a business case for justification of an Enterprise AMI deployment across FirstEnergy's service territory.
TXU Electric Delivery	Supporting TXU's AMI project, including requirements gathering, documenting requirements, and assisting in defining the system/integration architecture.
Kansas City Power and Light (KCP&L)	Assisted KCP&L to realize benefits of its AMR investments and to increase the return on investments of the other related information technologies. Developed an enterprise integration strategy, implementation roadmap and business case for enhancing the benefits of KCP&L's investments in AMR and related information technologies.
Puget Sound Energy	Designed, developed, and deployed Puget Sound Energy's Personal Energy Management (PEM) customer portal to PSE's 1.3 million customers. The project won the "Performed By Schlumberger" Gold award for 2001 and was shown to President Bush by the CEO of Puget Sound Energy.
Alliant Energy	Pilot AMI project planning including: Cost/benefit review, prioritization, and refinement; Defining high-level enterprise requirements in three categories: AMI technology (communication network and meters), information systems and systems integration, and business process impacts; Developing overall total cost of ownership (TCO) model for implementing and operating AMI at Alliant Energy, enterprise wide. Supporting the Alliant project team in recommending pilot project charter, goals, requirements, recommendations, and costs/benefits to senior management.
Colorado Springs Utilities	Supporting the development of AMI/meter data management system requirements, architecture, and system design.
Indianapolis Power & Light Company (IPL)	Defined high-level functional and integration requirements for outage management and mobile workforce management, including integration with SCADA and Automated Meter Reading systems. Developed a phased implementation plan. Facilitated vendor selection and supported contract negotiations with the selected vendor.

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