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 8
SUMMARY OF AMI IMPLEMENTATION AND OPERATIONS

JULY 14, 2006 AMENDMENT

Prepared Supplemental, Consolidating, Superseding and Replacement Testimony of TED M. REGULY

SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

July 14, 2006

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I. INTRODUCTION

The purpose of this *amended* testimony is to update my March 28, 2006 testimony to include material information which impacts my (Chapter 8) testimony in which I present a summary of San Diego Gas & Electric's (SDG&E) Advanced Metering Infrastructure (AMI) solution selection – i.e. the AMI related combination of business processes and technology – and implementation. Specifically, I will summarize: (1) SDG&E's philosophy for selecting and implementing an AMI solution, (2) SDG&E's interpretation of the functional criteria set forth in the state's policy goals,[1] (3) SDG&E's approach to AMI that will enable operational benefits through the implementation of a cost effective solution (4) SDG&E's approach to providing a flexible, scalable next generation AMI architecture, (5) SDG&E's plan to fully integrate our AMI solution into SDG&E's information and other systems, and (6) SDG&E's plan to provide a complete "end-to-end" solution that includes the flexibility to add functionality at a later date. Reflected in this July 14 amended version of my testimony is the addition of the cost benefit analysis of programmable thermostat to the business case. In subsequent discussion with vendors the cost of this enabling technology has been reduced such that the inclusion of it in the business case seemed prudent. This testimony consolidates, suspersedes, and replaces all previous direct and supplemental testimony filed by me or by any other SDG&E witness testifying in this docket, on the topics covered herein.

[1] For further detail, please refer to the 'Joint Assigned Commissioner and ALJ's Ruling Providing Guidance for the Advanced Metering Infrastructure Business Case Analysis' of February 19, 2004.

II. BACKGROUND

A. The State's Functional Criteria/Policy Goals

As part of the R.02-06-001 rulemaking, the CPUC, in conjunction with the CEC, provided policy direction regarding the minimum level of system functionality that should be supported by an AMI for purposes of analyzing a full-scale AMI deployment. Specifically, guidance was given that the AMI system functionality requirements are driven by the type of rate structures and programs the system is expected to support. Mindful of the Commission's guidance, SDG&E is fully committed to seeking an AMI system that will maximize the amount of demand response and operational benefits that can be achieved cost effectively.

In developing SDG&E's AMI proposal, SDG&E rigorously assessed the AMI marketplace, seeking systems capable of fulfilling the following six policy goals (or functional requirements).[2]

1. Implementation of the following price responsive tariffs for:
    a. Residential and Commercial Customers on an opt out basis:
        i. Two or three period time-of-use (TOU) rates with ability to change TOU period length;
        ii. Critical peak pricing with fixed (day ahead) notification (CPP-F);
        iii. Critical peak pricing with variable or hourly notification (CPP-V) rates;
        iv. Flat / inverted tier rates.
    b. Large customers (200kW to 1MW) on an opt out basis:
        i. Critical peak pricing with fixed or variable notification;
        ii. Time-of-use;
        iii. Two part hourly real-time pricing.
    c. Very large customers (over 1MW) on an opt out basis:

[2] 'Joint Assigned Commissioner and ALJ's Ruling Providing Guidance for the Advanced Metering Infrastructure Business Case Analysis' of February 19, 2004, p. 3, 4.

i. Two part hourly real-time pricing;
ii. Critical peak pricing with fixed or variable notification;
iii. Time-of-use pricing.

2. Interval usage data collection that supports customer understanding of hourly usage patterns and how those usage patterns relate to energy costs;
3. Customer access to personal energy usage data that can support customer changes in preference without additional AMI system hardware costs;
4. Compatibility with customer education and energy management applications, customized billing and improved complaint resolution;
5. Compatibility with other utility system applications that promote operating efficiency and service reliability; and,
6. Capable of interfacing with load control communication technology.

Additionally, SDG&E's AMI technology solution will at a minimum:

a. Be a technology independent, next generation solution supporting:
   i. Open architecture;
   ii. Fully upgradeable;
   iii. Scalablility;
   iv. Flexibility; and
   v. A complete end-to-end solution.
b. Be fully integrated with existing operational infrastructures.
c. Be able to support additional functionality at a later date without the need for significant additional systems hardware.

B. SDG&E Filed its Preliminary AMI Business Case.

On March 15, 2005, SDG&E filed with the Commission its preliminary AMI business case (A.05-03-015). Although the case submitted was based on the best available information at the time, SDG&E did not have the benefit of a completed Request for Proposal (RFP) process. On August 25, 2005, the Commission issued D.05-08-018, granting SDG&E approval for AMI pre-deployment funding of $9.3 million in order to perform an extensive RFP process, solicits vendor AMI proposals and other activities as detailed in the multi-party settlement agreement

attached to the decision. This supplemental testimony includes costs obtained from RFP replies.

The pre-deployment funding allows SDG&E to evaluate several AMI technologies through field tests. This funding also supports the necessary activities to prepare for mass meter installation, systems readiness for meter changes and systems interfaces to translate meter reads for collection, billing, outage management, customer energy presentment, and service order processing. From June 2005 through March 2006, SDG&E has committed time and resources, both internally and externally, to identify an AMI solution that can achieve the estimated benefits for the stated not-to-exceed costs. Cost estimates are based on, and will not exceed the higher of, the solution set costs derived from the RFP process. The final costs however, may be less than the higher of the solution set costs.

III. SUMMARY OF IMPLEMENTATION AND OPERATIONS

A. SDG&E Proposes a Full Deployment of AMI Balanced by Prudent Risk Mitigation.

Utilizing union labor, SDG&E proposes to deploy an AMI system including approximately 1.4 million electric meters and 900,000 gas meters over approximately 2.5 years. As required by the RFP, by December 2010, the deployed AMI system will cover 99.5% of SDG&E's meters. SDG&E has completed a comprehensive project risk assessment and mitigation process in preparing for AMI implementation. The risk management data and background regarding loss prevention, exposure avoidance, and risk diversification is discussed in more detail in Chapters 9 – 12. To develop mitigation approaches that protect SDG&E and its customers, SDG&E: 1) employed subject matter experts, and 2) utilized internal and external benchmark data to identify real and potential risks. This process resulted in a range of risk management steps including:

1. The adoption of a "Design, Build, Run, Transfer" approach. This approach will include detailed Service Level Agreements that require the AMI communication system vendors to maintain responsibility throughout the full deployment period and for a minimum of six months thereafter.

2. Execution of a rigorous RFP process that will result in the evaluation of proven technologies coupled with field tests to ensure full scalability prior to selecting vendors for communications technology, systems and software technology, and meter procurement and installation.
3. Completion of quality reviews of each vendor to ensure adequate capacity capabilities to minimize possible supply chain disruption.
4. Execution of a contractual agreement with an established, project management vendor versed in implementing AMI solutions. Further, SDG&E intends to incorporate a joint project management organization utilizing proven project management tools and techniques for managing supply chain, field activities and back office exceptions.
5. The intention to specify AMI contractual conditions and requirements that will provide the greatest protection against AMI technology and software vendors that do not meet their technical and contractual requirements.
6. Employment of a buy-as-opposed-to-build philosophy to ensure efficiency, cost containment, schedule compliance, and benefit realization from vendors' experience on other projects.
7. Completion of several site visits, teleconferences and meetings with utilities (nationally as well as internationally) to obtain first hand accounts of successes and challenges. SDG&E visited or interviewed:
   a. Pennsylvania Power & Light Co. (PPL)
   b. Idaho Power
   c. TXU Electric Delivery
   d. Jacksonville Electric Authority (JEA)
   e. Ontario Electricity Distributors Association (EDAM)
   f. Utility AMI Organization
   g. City of San Diego Water Department
   h. Anaheim Municipal Utility
   i. Pacific Gas & Electric (PG&E)
   j. Southern California Edison (SCE)

8. The inclusion of a 15% deployment cost contingency that will help mitigate any unforeseen risks.

AMI risk assessment and management continues as SDG&E progresses toward full-scale implementation. SDG&E will evaluate other alternatives such as contractual risk transfer to the vendor/contractor in control of the scope of work and, where feasible and commercially available, commercial insurance, or other financial instruments (letter of credit, etc.). As appropriate, protective provisions will be incorporated in installer and product manufacturer contracts, such as "transfer of risk" under the Indemnity/Hold Harmless, Insurance, Limitation of Liability, Liquidated Damages, Warranty, and other related clauses. In summary, in considering the AMI scope of work, SDG&E has taken all identified logical and prudent risk management steps.

B. Vendor Sourcing and Selection Process

To ensure a systematic, structured, sound, and fair approach to selecting AMI vendors and solution sets, while also mitigating risk, SDG&E developed an open RFP process that is function and benefits-driven, and oriented towards producing a solution implementation roadmap. SDG&E secured the services of experienced consultants to take a comprehensive look at the marketplace without bias toward any specific vendor technology or product for an AMI solution.

SDG&E will choose the most cost-effective, least risky, long-term business solution that facilitates the broad adoption of AMI, diminishes technology and functional risks, and empowers consumers with tools to 1) improve their understanding of their personal energy use and, 2) meet or exceed the six policy goals / functional requirements noted above. The AMI solution SDG&E selects will be compatible with other utility applications and will improve service reliability and create operating efficiencies.

SDG&E meticulously pursued a benefits-driven approach to AMI to ensure fulfillment of the six policy goals, realization of demand response and operational benefits, while providing for the lowest total cost of ownership. SDG&E plans to enter into contract negotiations and field tests beginning Q2 2006. Once vendor

selections are made and contracts are finalized, SDG&E intends to inform the Commission by filing the executed contracts via advice letter.

SDG&E's bid selection process fully supports the goals of General Order (GO) 156[3] and includes the rules and guidelines set forth in that order supporting both workforce and supplier diversity. Consistent with SDG&E's business practice, monitoring and reporting measures are in place to ensure that diversified business practices are performed and measured. In addition, safety is an integral part of SDG&E's core workplace values and is a primary consideration of the AMI project. All installment, operations and administration will follow strict safety guidelines and sound ergonomics principles. Safety standards are a crucial part of the RFP evaluation process.

SDG&E anticipates that contract negotiations will not have a material impact on the cost estimates included in this business application. If, however, negotiations result in materially different cost assumptions, SDG&E will file an advice letter to reflect the new assumptions. Mr. Charles discusses the vendor solution set and selection process in more detail in Chapter 9.

C. SDG&E Will Evaluate Multiple Technologies and is Committed to Open Architecture.

SDG&E's commitment to selecting the most cost effective, next generation solution compels us to examine various communication technologies such as Broadband over Power Lines (BPL), WiMax, WiFi and other broadband technologies that have the potential to provide synergies with other utility applications. SDG&E's AMI vision allows for flexibility with regard to communications technologies and offers minimal overlap costs in this area should any broadband technology substantiate a more viable solution. Should a material or 'transformational' change in the AMI technology or product market occur from March 2006 through the deployment period, SDG&E may request a delay in this proceeding and/or in the AMI deployment activities. SDG&E's philosophy is to continue actively valuating and assessing new emerging AMI technologies even

[3] GO 156: Rules Governing the Development of Programs to Increase Participation of Women, Minority and Disabled Veteran Business Enterprises in Procurement of Contract from Utilities as Required by Pub. Util. Code §§ 8282 – 8286.

as SDG&E completes field tests that resulted from the AMI request for proposal (RFP). Moreover, as part of prudent business practice, SDG&E will continue to review and assess new emerging AMI technologies, communications methods and in-home demand response enabling technologies. As a result of this market place monitoring, SDG&E may issue an addendum to the AMI RFPs issued in October 2005, or a new RFP that will allow for the evaluation of new technologies. Any new AMI technologies or new market product offerings would need to provide SDG&E customers with additional value and functionality or reduced costs such that the net incremental benefits from the potential new technology or offering exceeds the cost to convert or change from the selected SDG&E AMI solution set(s).

Open architecture and communications standards allows SDG&E the ability to adopt multiple technologies with minimal incremental cost impact. SDG&E proactively supports open architecture through participation in groups such as UtilityAMI and OpenAMI. As Mr. Pruschki details in Chapter 11, SDG&E is considering various WAN and head-end systems technology that offer open architectures. Local Area Network (LAN) and AMI communications systems do not have readily available open architecture.

D. The CPUC Should Not Consider Broadband Over Power Line in This Proceeding

Issues related to BPL should not be considered by the CPUC in this proceeding. Consolidation of these issues here would cause unnecessary delay and largely waste the progress that has been made in the AMI proceeding over the past three years.

Since mid-2002, the Commission and numerous parties have invested significant time and thought in the R.02-06-001 rulemaking considering a host of AMI issues, minimum criteria and business case analytical methodology. That effort has revealed that AMI has it own benefits and can be accommodated through a number of communications systems, of which BPL may be one. The significant benefits of AMI should not be delayed by regulatory consideration of BPL as one of those alternatives.

E. AMI Program Management

SDG&E recognizes that the size and complexity of this proposed AMI project requires the services of a project management firm with demonstrated expertise in large projects to ensure a successful deployment. Through the RFP process, SDG&E entered the marketplace, seeking vendors interested in performing all AMI program management activities, all AMI field operational services, or both. The various options include multiple layers of service level and financial responsibilities. Mr. Charles discusses AMI project management and related costs in greater detail in Chapter 9.

IV. SUMMARY OF OPERATIONAL COSTS

The incremental operational costs of deploying an AMI system are found primarily in Chapters 9 - 12. This testimony represents the revised estimates of implementing an AMI system with results from the Request for Proposal (RFP) process. The operational costs included within this supplemental testimony will not be reflected in SDG&E's General Rate Case.

A. Chapter 9, Testimony of Patrick Charles

In Chapter 9, Mr. Charles describes SDG&E's human resource, facilities and project management costs for a contracted workforce This includes the additional costs related to employee recruitment and office facilities necessary for incremental labor to implement and maintain an AMI system. Mr. Charles also describes SDG&E's plan to establish a project management office (PMO) operated by well-established vendors and SDG&E personnel. The PMO will focus on establishing a comprehensive project plan that maximizes the potential to complete the AMI project on time and within budget, while managing foreseeable project risks, and identifying unforeseen project risks.

B. Chapter 10, Testimony of Dawn Welch

In Chapter 10, Ms. Welch describes SDG&E's scalable and flexible AMI Information Technology (IT) systems. Scalability allows for application growth, the adoption of new technology without replacement, price sensitive rates and compatibility with load control devices affecting demand response. Ms. Welch also describes the introduction of new systems architecture promoting both flexibility and cost effectiveness of future systems changes. In addition, Ms.

Welch describes buying available systems versus building them, leveraging completed research and development experience from various vendors. Further, Ms. Welch discusses benefits derived from collecting and storing interval data, next day online presentment of electric consumption to customers and full integration of AMI into SDG&E's current information systems.

C. Chapter 11, Testimony of Paul Pruschki

In Chapter 11, Mr. Pruschki describes AMI communications systems capable of full two-way communications providing daily retrieval of fifteen minute and hourly usage data from electric meters and one-way communication providing daily usage data from gas meters. In addition, Mr. Pruschki describes how SDG&E's AMI communications system provides near real-time data for outage management, and daily data for theft detection, and forecasting. Mr. Pruschki also discusses a two way communications conduit into the home or office to facilitate the use of Programmable Controllable Thermostats (PCTs), an enabling technology which will help customers manage there energy usage and stimulate demand response. Further, Mr. Pruschki describes SDG&E's AMI communications enabled bi-directional electric meters capable of recording and storing consumption that will support programs like net metering and California's Solar Initiative

D. Chapter 12, Testimony of Jose Carranza

In Chapter 12, Mr. Carranza describes the process to replace and/or retrofit a projected 1.4 million electric meters and 900,000 natural gas meters in approximately two and one-half years. Additionally, Mr. Carranza describes SDG&E's requirement that installation vendors partner with the International Brotherhood of Electrical Workers (IBEW) Local Union 465. Further, Mr. Carranza discusses SDG&E's role in establishing a close working relationship with installation vendors to minimize service disruption to customers, ensure safety, and audit quality of workmanship.

V. CONCLUSION

SDG&E's AMI project is large and complex. SDG&E believes it has taken the necessary steps to effectively evaluate the potential AMI technology solutions and to quantify the operational benefits associated with deploying the system. This will ensure that expected operational and demand response benefits can be achieved in a cost effective manner.

SDG&E expects to implement an AMI solution is capable of exceeding the six functional requirements / policy goals referenced above, and can: 1) support a variety of dynamic pricing tariffs and operational efficiencies; 2) collect energy usage for electric customers on a 15-minute or hourly interval basis and natural gas customers on a daily basis; 3) provide online presentation to customers of their specific usage; 4) provide flexibility and scalability without significant additional hardware; 5) provide the capability of interfacing with all other SDG&E systems; and 6) offer operating costs and benefits that support achieving the expected demand response benefits.

In summary, SDG&E's AMI project provides a viable solution to improve customer experience and education, and to provide the opportunity for seeking operational efficiencies in delivering reliable energy service.

This concludes my testimony.

VI. QUALIFICATIONS OF TED M. REGULY

My name is Ted Michael Reguly and I am employed by San Diego Gas and Electric Company (SDG&E). My business address is 8326 Century Park Court, San Diego, CA 92123.

My present position is Director of AMI Program Office in the AMI Program Office Department of SDG&E. My primary responsibility is to oversee the development and implementation of the AMI program. I have been employed by SDG&E since 1981. I have held various positions of increasing responsibility in Electric Generation, Electric and Gas Distribution, Supply Management, and Gas and Electric Customer Service supervision. In 2005, I assumed the position of Director of the AMI Program Office in the Customer Services Division of SDG&E. I am a registered California Mechanical Engineer. I received a B.S. in Mechanical Engineering from California State University, Long Beach, and an MBA from San Diego State University.

This concludes my prepared direct testimony. I have not previously testified before the California Public Utilities Commission.