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Witness: Christopher R. Olmsted

SOUTHERN CALIFORNIA GAS COMPANY
ADVANCED METERING INFRASTRUCTURE
REBUTTAL TESTIMONY

CHAPTER 4
INFORMATION SYSTEMS, APPLICATION DEVELOPMENT AND
INTEGRATION, AND AMI TECHNOLOGY

Prepared Rebuttal Testimony
of
Christopher R. Olmsted

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

May 7, 2009

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1 **I. BACKGROUND**

2 The purpose of this testimony is to respond to the intervenor testimony submitted by
3 California Public Utilities Commission’s (CPUC or Commission) Division of Ratepayer
4 Advocates (DRA) to the Southern California Gas Company’s (SoCalGas) Advanced Metering
5 Infrastructure (AMI) proceeding, A.08-09-023. SoCalGas’s AMI’s application and supporting
6 testimony¹ proposes to deploy AMI for 6 million gas meters at an estimated deployment cost of
7 \$1.08 billion over a 7 year period (2009-2015).² Specifically, this testimony will address issues
8 raised by DRA to SoCalGas’ Errata to Prepared Direct Testimony dated March 6, 2009 - Chapter
9 IV, Information Systems, Application Development and Integration, and AMI Technology.

10
11 **II. INTRODUCTION**

12 SoCalGas disagrees with DRA’s request to reduce IT costs associated with the project by
13 \$14.6 million. SoCalGas believes it has adequately evaluated and selected AMI and IT
14 components to provide a cost effective back-office solution. SoCalGas’ proposal was developed
15 in collaboration with a respected consulting firm in the AMI industry, Enspiria Consulting (see
16 Attachment IV-1). Enspiria provides extensive experience and knowledge of AMI
17 implementations, including assistance with SDG&E’s Request for Proposal (RFP) process,
18 evaluation and selection of AMI technology and deep understanding of Meter Data Management
19 System (MDMS) options and capabilities. The proposed IT solution was developed
20 collaboratively by SoCalGas and Enspiria. Potential solutions were validated utilizing
21 information culled from vendor discussions as well as site visits and interviews with clients of
22 proposed vendors. These clients are in various stages of AMI implementation demonstrating that
23 many of the components that SoCalGas hopes to be implementing already have “real world”

24 ¹ SoCalGas filed Prepared Direct Testimony supporting A.08-09-023 on September 29, 2008, Errata Testimony on
25 January 6, 2009, Supplemental Testimony on February 11, 2009 and Errata Testimony on March 6, 2009. The
26 Errata Testimony of March 6, 2009 supersedes the Errata testimony of January 6, 2009 and Supplemental
27 Testimony of February 11, 2009.

28 ² The California Public Utilities Commission denied SoCalGas request for 2009 pre-deployment funding of \$12.4
million. Since a final decision will not be rendered until the late 4th quarter of 2009, the 7 year deployment period
will shift to 2010-2016.

1 success and are proven at scale. Costs were developed based on RFPs and vendor quotes. DRA
2 has not demonstrated support for its assertions and positions relative to the proposed IT and
3 network costs in its AMI proposal. SoCalGas is confident that it has presented a robust solution
4 architecture that will deliver anticipated functionality and benefits to SoCalGas users and
5 customers.

6 7 **III. STANDALONE OPTION IS THE OPTIMAL CHOICE FOR SOCALGAS AMI 8 IMPLEMENTATION**

9 In its summary of recommendations for AMI-related IT and communications technology,
10 DRA states it:

11 “...does not contest at this time SoCalGas’ argument that the hybrid solution is
12 not viable.” (DRA, p. 5-4)

13 SoCalGas appreciates the support of DRA in coming to this conclusion. SoCalGas
14 believes it conducted a thorough analysis of the proposed options and identified costs that were
15 unique to the stand-alone and hybrid options, as well as common to both scenarios. SoCalGas is
16 in agreement with DRA that the hybrid solution will require significant time and resources to
17 implement and support that would far exceed that of the stand alone solution (see SoCalGas
18 witness Mr. Fong’s Errata to Prepared Direct Testimony and Supplemental Testimony).

19 **IV. SOCALGAS AMI PROPOSAL FULLY SUPPORTS PROJECED IT AND 20 NETWORK COSTS**

21 **A. DRA proposal to delay the AMI project because of perceived deficiencies in 22 SoCalGas’ overall estimates of IT and network costs is unwarranted.**

23 DRA proposes that the AMI project should be delayed due to deficiencies in SoCalGas’
24 estimates of IT and network costs. However, DRA presents no evidence or factual foundation as
25 to why these estimates are wrong. The SoCalGas proposal contains a detailed set of cost
26 estimates and documentation that supports the requested costs. SoCalGas’ proposed IT and
27 network costs should be approved.

1 In multiple places in Chapter 5, DRA expresses the opinion that somehow the IT and
2 network cost estimates provided by SoCalGas are found wanting and cannot be depended upon
3 to move the project forward. DRA's position is summarized best in its Chapter 5 conclusion:

4 *"SoCalGas has not adequately developed a comprehensive view of the AMI*
5 *system. Unresolved issues such as how best to position system functionality and,*
6 *particularly, the communications protocol for supporting in-home displays, make*
7 *it difficult to justify IT and AMI costs and demonstrate best value for the proposed*
8 *approach. The initial filing and workpapers supporting IT costs had omissions*
9 *casting question on the accuracy of the balance of costs presented. Even after the*
10 *Errata filing, notably missing are the costs for in-home displays, an essential*
11 *component to achieving conservation benefits. Of those costs that have been*
12 *identified, excessively high data warehousing and device management costs are*
13 *not justified.*

14 *Beyond these immediate exclusions, however, for the reasons cited above,*
15 *DRA finds that the cost estimates provided for the IT and AMI infrastructure are*
16 *not reliable for accurate assessment of value and require further substantiation.*
17 *Key decisions regarding AMI technology, and better justification of the planned*
18 *approach, should be resolved prior to authorization to proceed and warrant*
19 *postponement in deploying the SoCalGas AMI proposal" (DRA, p. 5-15)*

20
21 SoCalGas believes the cost documentation it has submitted is thorough, comprehensive,
22 and more than sufficient as the basis for moving forward. SoCalGas concedes that its original
23 filing had errors. These errors, remedied in the errata filing, were cell reference and linking
24 items and not ones of omission of key IT activities or components and have been fully resolved
25 by the March 6, 2009 Errata Testimony.

26 In the March 6, 2009 Errata filing, SoCalGas provided extensive supporting
27 documentation and workpapers identifying the corrections. DRA has not identified inaccurate
28

1 calculations or further errata beyond what is contained in SoCalGas March 6, 2009 Errata filing.
2 DRA's position to postpone implementation is not supported by its testimony in which DRA
3 provides no evidence that its estimates for IT costs are more accurate. Indeed, DRA has no other
4 overall estimates. In a requested budget of \$316.5 million, DRA expressly proposes to reduce
5 costs by \$14.6 million. Aside from those specific criticisms, DRA has not pointed to a single
6 error or incorrect calculation in SoCalGas errata filing of March 6, 2009 that would lead to
7 different IT cost estimates presented by SoCalGas.

8
9 DRA does make some specific references to three areas of general concern:

- 10 • Omission of the costs of in-home display devices that DRA argues are necessary
11 for SoCalGas to meet its conservation goals;
- 12 • Use of SDG&E experience to estimate SoCalGas costs; and,
- 13 • Lack of an adequate investigation of alternatives.

14 I will address these concerns individually below.

15
16 **1. In-Home Displays (IHDs) are Not Included in Cost Estimates**

17 With respect to IHDs, SoCalGas did not include costs for these devices because
18 SoCalGas does not plan on providing gas only dedicated IHDs and is not expecting customers to
19 purchase and install gas only dedicated IHDs. Therefore, the cost of IHDs was not mistakenly
20 omitted in SoCalGas' cost estimates. The specifics on SoCalGas' position on IHDs can be found
21 in Mr. Martin's rebuttal testimony.

22 **2. Where Appropriate SoCalGas Relied on SDG&E Experience to Aid in**
23 **Formulating Its Cost Estimates**

24 In terms of using SDG&E experiences to estimate SoCalGas costs, DRA states:

25 *“As noted in DRA testimony Chapter 2, significant differences preclude using*
26 *Electric AMI deployments as a basis for assumptions in a gas-only AMI*
27 *scenario.” (DRA, p. 5-7)*

1 SoCalGas does not dispute the differences between the functional aspects of an electric
2 AMI solution when compared to a gas AMI solution. That does not preclude using an electric
3 AMI system as a basis for a gas solution when developing technical estimates. This is
4 particularly true when the electric utility is also implementing AMI for gas meters, as is SDG&E.
5 As long as functions applicable to gas-only implementations are taken into consideration,
6 extrapolation of an electric AMI implementation to a gas AMI implementation can be performed.
7 For example, SoCalGas will not be incorporating features that pertain specifically to electric
8 AMI, such as remote disconnect, on demand reads or time of use billing reducing security and
9 infrastructure requirements when compared to electric. Taking this example into account allows
10 an IT team to decompose costs into units that are independent of business function. The
11 decomposed units can then be accumulated for a different business scenario. There are also
12 many similarities in the type of systems impacted by the implementation of an AMI system,
13 regardless of service. Examples include AMI integration with customer information systems,
14 work management systems and asset management systems. The building blocks are very similar
15 – meters, communication devices, collection devices, reads, alerts, work orders, etc.

16 Ignoring the experience of a technical implementation of an AMI system would have
17 been irresponsible on SoCalGas' part. Marrying the information gathered from SDG&E's
18 implementation with input from Enspiria based on their experience with electric versus gas
19 implementations provided a solid platform from which SoCalGas was able to develop and
20 validate its approach and estimates.

21 **3. SoCalGas Adequately Considered IT Alternatives**

22

23 Finally, in terms of adequately investigating alternatives, DRA states:

24 “...(SoCalGas) has not demonstrated it has sufficiently evaluated and planned the
25 best option for assembling the AMI communications and data processing
26 components...” (DRA, p. 5-8)

27
28

1 SoCalGas strongly refutes this claim. To the contrary, SoCalGas went to great lengths to
2 utilize industry expertise to ensure the utmost accuracy when developing its solution and
3 associated costs. Enspira was contracted to perform this service. As stated earlier, Enspira
4 provides extensive experience and knowledge of AMI implementations, evaluation and selection
5 of AMI technology and deep understanding of MDMS options and capabilities. They were
6 integrally involved in developing the solution architecture that was included in SoCalGas' filing,
7 a similar approach that was approved for SDG&E in their AMI filing. They were also involved
8 in reviewing the AMI communication RFPs, helping assess the bids obtained and their feasibility
9 within SoCalGas' environment.

10 DRA specifically cites concerns with the over-purchase of functionality between head-
11 end and MDMS products.³ During its AMI RFP evaluation process, SoCalGas questioned each
12 AMI vendor on the functions and features of its offerings. The guidance provided by the
13 vendors (and validated by Enspira) was that their head end systems should not be utilized as a
14 MDMS for SoCalGas. This directed SoCalGas to vendors with specific MDMS solutions. None
15 of the California utilities are looking to implement a "thick" head-end choosing to centralize
16 functionality in the MDMS contrary to DRA's concerns regarding overlapping functionality.

17 Overall, DRA's concerns about the validity of the IT and AMI network cost estimates
18 provided by SoCalGas in its Errata testimony are unsupported. The fact is that SoCalGas has
19 performed its due diligence in developing these cost estimates – and is not subject to "excessive
20 risk" as DRA has suggested.⁴ The costs developed by SoCalGas are based on vendor responses
21 to SoCalGas AMI Technology and IT systems development and integration RFPs. They are
22 buttressed by a comparison to, and sometimes use of, the cost experience of SDG&E for the
23 applicable parts of its AMI project.⁵

25 ³ DRA, pg. 5-9

26 ⁴ DRA p. 5-8.

27 ⁵ Detailed documentation of the assumptions underlying the IT cost estimates is contained in the March 6, 2009
Errata to Prepared Direct testimony and accompanying workpapers.

1 SoCalGas recognizes that the proposed solution architecture and associated costs may
2 change as the project moves forward. IT projects of this size in the early phase of development
3 should anticipate changes in requirements. SoCalGas has not negotiated final contract terms,
4 scope of work, or prices, which are all contingent upon Commission approval of this application.
5 In some cases, additional costs may be necessary and in other cases, negotiations may reduce
6 some costs. However, at this stage in the project, SoCalGas has done everything possible, short
7 of launching the project, to obtain reasonable, well documented cost estimates for the AMI
8 project. The SoCalGas cost estimates are thorough, accurate and fully substantiated by industry
9 experts and should be approved.

10 **B. MDMS selection is the most technologically and cost effective solution for**
11 **SoCalGas**

12 DRA challenges SoCalGas' MDMS selection, failing to recognize that SoCalGas made a
13 strategic decision that was validated by an AMI industry consulting firm that verified SDG&E's
14 selection was also the most viable solution for SoCalGas. DRA attempts to show that SoCalGas'
15 decision to move forward with Itron's MDMS offering, Itron Enterprise Edition (IEE), was made
16 simply due to the fact that the particular MDMS was already chosen by SDGE. They state:

17 *"SoCalGas might be purchasing more functionality in its MDMS than it needs..."*

18 *(DRA, p. 5-10)*

19 *"...ignores the potential for procuring a more tailored and value-added solution*

20 *either using a better suited MDMS or leveraging more value from the AMI*

21 *vendor's product(s)." (DRA, p. 5-11)*

22
23 As stated in DR-033⁶ sent to DRA, "San Diego Gas & Electric (SDG&E) conducted an
24 analysis of the MDMS market as part of their AMI project and chose Itron. When SoCalGas
25 began its review of MDMS solutions, Itron was a clear choice as it was already under contract
26 and being implemented by the IT organization that supports both SoCalGas and SDG&E."

27 ⁶ SoCalGas Response to Data Request #33 of DRA dated February 25, 2009.

1 SoCalGas worked with Enspiria to assess changes in the market since the SDG&E decision in
2 order to determine if a different MDMS selection would be warranted for SoCalGas. Included in
3 the assessment were comparisons on technology and functions, user interface, project
4 development, support and cost projections. The analysis, which was shared with DRA via the
5 aforementioned data response, pointed to IEE as being the best solution on the market for
6 SoCalGas.

7 IEE architecture is already able to accommodate both gas and electric reads. If SoCalGas
8 were to choose a different MDMS, then the Sempra utilities would be required to support two
9 different MDMS infrastructure products for processing and storing gas reads from AMI (i.e., IEE
10 for SDG&E gas reads and another product for SoCalGas reads). Supporting two different
11 products for AMI gas reads is not a reasonable solution. Simply put, the IEE architecture is the
12 most technologically and cost effective solution for SoCalGas.

13 **V. COST REDUCTIONS**

14 DRA proposes reductions totaling \$14.6 million but provides no sound basis for the
15 reductions. SoCalGas recognized the need to involve outside help to develop a robust solution at
16 a cost effective price. As indicated previously, Enspiria was contracted to perform this service.
17 Upon completion, costs were developed utilizing additional vendor input and internal expertise
18 where appropriate. Each cost reduction is addressed below.

19 **A. SAP**

20 SoCalGas looked at utilizing its existing legacy application in addition to SAP's asset
21 management solution. The addition of communication modules and collectors is a paradigm
22 shift from traditional utility asset systems that track meters. SAP is an enterprise application
23 within the Sempra companies and is already being used for supply chain functions which makes
24 it a logical choice for meter and module inventory, maintenance and management functions.
25 SoCalGas was able to leverage SAP analysts familiar with Sempra's SAP implementation to
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1 validate its asset management approach, including Device Management (DM), and associated
2 costs.

3 DRA indicates that projected maintenance costs for the SAP system are too high,
4 exceeding maintenance costs for the MDMS which is a more complex system⁷. SoCalGas
5 agrees that MDMS maintenance costs are higher. In order to accurately compare MDMS and
6 SAP DM, DRA needed to include associated labor costs for MDMS maintenance found in
7 SoCalGas' workpapers,⁸ which are estimated to be approximately 3 times higher than SAP DM.
8 Comparing like figures confirms DRA's argument that SAP DM costs should not exceed similar
9 costs to support the MDMS. DRA also claims that Itron's proposal indicated that their MDMS
10 could provide the functionality SoCalGas required.⁹ In fact, Itron stated in their RFP that, "the
11 level of tracking and analysis SCG requires would require an asset management system. IEE
12 MDM can be integrated with existing meter inventory and asset management applications from
13 third-party vendors such as SAP."¹⁰ Enspira's analysis of the RFP confirmed that IEE was not
14 an alternative to support SoCalGas' asset management needs.

15 **B. Data Warehouse**

16 DRA's proposed reduction of data warehousing (DW) costs should be dismissed. The
17 DW figures were based on market prices supplied by a DW vendor. DRA's contention that
18 storage and hardware costs are too high has no supporting basis and is incorrectly drawn from
19 estimates that were developed for MDMS storage purposes, not DW.

20 **C. MDMS**

21 DRA's proposed reduction related to MDMS costs is short sighted. SoCalGas has not
22 entered into any formal agreements making it premature to suggest changes to the estimates.
23 Isolating areas within the proposed solution and requesting reductions takes a narrow view of the
24 overall implementation. It is the nature of large IT projects in this phase of development to have

25 ⁷ DRA, p. 5-5

26 ⁸ Errata Testimony, Chapter IV Workpapers, Fin Temp_IT 6.1M.xls->Financial Template tab->references 10
and 11.

27 ⁹ DRA, pg. 5-5

28 ¹⁰ SCG A0809023-033, Attachment DRA DR-33 Q2 ©.pdf, page 29.

1 some costs go up and some go down. Proposing localized reductions puts SoCalGas at greater
2 risk of costs overruns, a position that DRA concedes is typical of IT projects.¹¹

3 **D. Revenue Protection Suite (RPS)**

4 DRA suggests that SoCalGas should utilize current methods to recognize revenue
5 protection benefit rather than investing in a software tool.¹² DRA’s recommendation is
6 impractical and does not take into consideration that hourly usage data will be available through
7 AMI. The sheer volume of data that will be available for analysis requires a software tool to
8 effectively and efficiently identify discrepancies and patterns. SoCalGas is currently using
9 monthly reads that are obtained through manual meter reading. Each month, via a customer’s
10 bill, customers are informed of an approximate date that a meter reader will be on-site taking a
11 read. After the proposed AMI solution is implemented, SoCalGas will be “on-site” every hour
12 (virtual on-site). This gives customers much less opportunity to manipulate the system based on
13 the next time the company will be reading their meter. And for those that choose to attempt
14 energy diversion measures, SoCalGas will have much better diagnostic data to determine
15 irregularities in consumption patterns. Finding those irregularities will not occur without
16 diagnostic tools. RPS is a cost effective option as it is already integrated with the consumption
17 data stored in the MDMS. A tool of this nature will be necessary to contribute to the \$2.4
18 million in revenue protection benefits presented in Mr. Serrano’s testimony (Chapter III).

19 **E. Mass Market Customer Care (MMCC)**

20 DRA incorrectly associates costs for web presentment to demand response¹³. DRA goes
21 to great lengths to demonstrate that the electricity and gas businesses are fundamentally different.
22 SoCalGas agrees which is why the conservation initiatives described by Dr. Darby (Chapter V)
23 and Mr. Martin (Chapter 6) in their testimonies are based on customer feedback, not demand

24 ¹¹ DRA, pg. 5-8

25 ¹² DRA, p. 5-12

26 ¹³ “...value of this application is more directed at demand management...applicability and benefits of such demand
27 response attributes from this application are questionable.” (DRA, p. 5-13)

1 response. Software tools are required to provide customer specific gas usage data presentation to
2 customers. The presentation of timely customer specific usage profile and historic usage is
3 fundamental feedback required for customer behavioral changes. Much like RPS, MMCC is
4 already integrated with MDMS consumption data making it an economical choice to provide
5 online presentment services.

6 **VI. CONCLUSION**

7 SoCalGas recognizes the technological challenge it faces implementing a solution of this
8 magnitude. This is the very reason SoCalGas leveraged industry expertise and real-world
9 experience of other AMI implementation when developing its solution and associated costs. The
10 solution that has been presented is achievable and can be delivered. SoCalGas asks that the
11 recommended technology solution be approved and IT Application Development and Integration
12 costs remain as submitted in the business case. Overall, the solution and estimates are
13 reasonable, defensible, and should be accepted by the Commission.

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15 This concludes my rebuttal testimony.
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Attachment IV-1

Enspira Solutions: Qualifications for Southern California Gas Company AMI Project

Inspired Energy Solutions

Summary

Enspira Solutions has a strong AMI practice that is unparalleled in the industry. Our AMI practice reflects a broader commitment to utility enterprise integration and Smart Grid. Over the past five years, more than 35 utilities have turned to the Enspira team for help in defining and implementing AMI and smart grid strategies — strategies impacting over 60 million meters across North America.

Our team was uniquely qualified to provide the lowest risk and most cost effective AMI support to Southern California Gas Company in the execution of its AMI project for the following reasons:

- ▶ Enspira has a deep and experienced team of technical and business consultants that was made available to Southern California Gas Company
- ▶ Enspira has a proven AMI project track record, unparalleled in the industry
- ▶ Enspira has developed intellectual capital through proven methodologies, frameworks, and templates that was leveraged for Southern California Gas Company
- ▶ Our flexible and comprehensive project approach ensured Southern California Gas Company's success

Experienced Team

Enspira's professional staff has been evaluating, planning, designing, and implementing information and automation technology solutions for electric and gas utilities, specifically including AMI solutions, for almost two decades. We have hands-on experience across all phases of technology solution implementation lifecycle — from strategy and regulation to planning and design to procurement, deployment, and benefits realization. We also possess the depth and breadth of experience across the utility business — from customer service, metering and billing to transmission and distribution system planning, network management, system operations and outage management. Our consultants average over 15 years experience in the industry.

Proven Methodologies, Frameworks and Templates

Enspira Solutions has honed its methodologies, and developed field-proven frameworks and templates for AMI strategy, benefits capture, business process impact assessment, business case development, solution architecture, requirement specifications, technology assessments, request for proposals, proposal evaluation, solution implementation roadmaps, and acquisition support. These frameworks and templates have been proven to accelerate project schedules while ensuring accuracy and comprehensiveness of results. Enspira's frameworks and templates include (not limited to):

- ▶ Enspira AMI Benefits Model

- ▶ Enspira AMI Cost/Benefit Model
- ▶ Enspira Solutions AMI/MDMS Solution Architecture Framework
- ▶ Enspira AMI Technology Assessment Framework
- ▶ Enspira Communications Assessment Framework
- ▶ Enspira Competitive Solicitation Framework
- ▶ Enspira Vendor Evaluation Framework
- ▶ Enspira Solutions Solution Implementation Roadmap
- ▶ Enspira Solutions AMI Field Testing Tools/Frameworks
- ▶ Enspira Solutions Change Management Readiness Assessment Framework
- ▶ Enspira Solutions Segmentation, Pre-deployment Selection, and Deployment Sequencing Methodologies and Output

Project Experience

The matrix below summarizes Enspira’s extensive experience supporting utilities on AMI projects.

	Key Project Components										
	AMI	MDMS	Business Case / Cost-benefit Analysis	Requirements, Design, and Specifications	Technology / Vendor Assessment	Regulatory Support	Deployment Options / Implementation Plan	RFP Development / Evaluation and Selection	Field Test / Performance Management	Systems Deployment and Integration	Program Management / Oversight
Enspira Solutions, Inc.											
AMI Clients											
Alliant Energy	X	X	X	X	X	X	X	X	X	X	X
Anaheim Public Utilities (CA)		X		X	X		X	X		X	X
Baltimore Gas & Electric	X	X	X	X	X	X	X	X			
Burbank Water and Power	X	X	X	X						X	X
Colorado Springs Utilities	X	X		X						X	
Columbia Water & Power Systems (TN)	X		X	X	X		X				
CPS Energy	X	X	X	X	X		X	X		X	X
ENMAX (Calgary)	X		X	X	X		X				
Exelon Energy Delivery/ComEd	X	X	X	X	X		X	X			X
Exelon Energy - PECO	X		X		X	X	X	X			
FirstEnergy	X		X	X			X				
Hawaiian Electric Company (HECO)	X	X	X	X	X	X	X	X			
JEA (Jacksonville, Florida)	X	X	X	X			X			X	X
NV Energy	X	X	X	X	X			X			
Ontario IESO		X		X						X	
Pacific Gas and Electric	X		X								
Pepco Holdings, Inc. (PHI)	X		X	X	X	X	X	X	X		
Portland General Electric	X								X	X	X
San Diego Gas and Electric	X	X	X	X	X	X	X	X	X	X	X
Tallahassee, Florida		X		X				X			X
Tri-State G&T		X		X	X			X			
TXU Energy Delivery	X	X		X			X	X		X	

AMI and Smart Grid Project Summaries

Client	Project Summary	Business Case	Technology Assessment	Regulatory Support
Alliant Energy	Deploying Sensus FlexNet system for 1.4 million meters.	X	X	X
Anaheim (CA) Public Utilities	Implementing MDM		X	
Baltimore Gas & Electric	BGE is piloting two AMI technologies for an eventual rollout to around 2 million meters.	X	X	X
Burbank Water and Power	Burbank is currently evaluating MDM proposals supported		X	
Cleco Power		X		
Columbia (TN) Power & Water		X	X	
CPS Energy (San Antonio)	CPS is in the process of selecting final vendor for negotiations	X	X	
ENMAX		X	X	X
EPCOR		X	X	
Exelon (ComEd)	ComEd is currently reviewing AMI proposals.	X	X	X
Exelon (PECO)	PECO is working on its regulatory filing due August 14, 2009	X	X	X
FirstEnergy	Evaluating AMI options for both Ohio and Pennsylvania.	X	X	
Hawaiian Electric Company	HECO is the early deployment stages for Sensus FlexNet and looking at MDM systems.	X	X	X
Indianapolis Power & Light	IPL has had a full Cellnet deployment for almost 10 years.		X	
Nicor Gas		X		
NV Energy	RFP for MDM, AMI and Endpoint Installation out 4/2009	X	X	X
Pepco Holdings, Inc.	PHI is pilot deployment of the Silver Spring Networks technology in Delaware.	X	X	X
San Antonio Water System	Business case submitted	X	X	

Client	Project Summary	Business Case	Technology Assessment	Regulatory Support
San Diego Gas and Electric	See summary in back of this section. SDG&E Selected Itron Openway for deployment.	X	X	X
Sempra	OpEx 20/20: Utility of the Future initiative, including Field Force Enablement, Smart Grid, and Asset Management, including MWM, DMS/OMS, GIS, WMS, and other advanced technologies.		X	
Southern California Gas Company		X	X	
Southern Maryland Electric Coop		X	X	
Tallahassee, Florida	Tallahassee is under full deployment of an Elster RF network.		X	
TXU - Oncor	Oncor installing 3,000 – 5,000 meters/day of Landis+Gyr AMI			

Additional SDG&E Project Background

Sempra Energy/San Diego Gas and Electric — AMI Business Case, Vendor Solicitation Support, and Field Testing

Contact: Ted Reguly
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treguly@semprautilities.com

Enspira Solutions assisted with developing a strategic implementation roadmap and associated business case and vendor solicitation for San Diego Gas & Electric's Smart Metering program, and is currently supporting the pilot testing of the solution.

The Enspira efforts included AMI vision and strategy, business requirements, AMI sourcing strategy, and total cost of ownership and benefit analysis, vendor solicitation and selection, enterprise architecture of information systems and to-be business process integration, and implementation plan. Enspira provided the expertise, guidance, and facilitation skills to help the utility arrive at its optimal AMI solution. Project tasks included:

- ▶ Documenting business process requirements associated with implementing AMI Initiative, including defining the target stage or "to-be" AMI business processes as they relate to San Diego Gas & Electric business, personnel, process, and technology
- ▶ Developing functional, system, and technical requirements for maximizing the benefits of the AMI initiative
- ▶ Developing a viable Sourcing Strategy, which describes how San Diego Gas & Electric will go to market with requirements for the AMI Initiative
- ▶ Preparing and issuing Solicitation(s) and evaluating vendor responses
- ▶ The Solicitation(s) will contain requirements for services and products necessary to achieve the business benefits outlined in the AMI testimony to the California Public Utility Commission, as well as those discovered in the process of this work.
- ▶ Verifying reasonableness of costs and attainable benefits for preferred AMI scenarios
- ▶ Developing a Solution Implementation Roadmap with associated enterprise architecture, Total Cost of Ownership, and Benefit Models
- ▶ Participating in the development and iterative refinement of SDG&E's regulatory strategy including developing responses to data requests, participating in interviews, developing direct and rebuttal testimony and participating as an expert witness for cross examination
- ▶ Identifying, quantifying, and articulating the value and impact of AMI Initiative to San Diego Gas & Electric stakeholders and regulators

As part of the project, Enspira supported the AMI application process by helping answer questions from CPUC and Consumer Advocacy groups, and by being expert witness in regulatory proceedings. Enspira continues to support the regulatory relations by serving on the CPUC Technical Advisory Panel on behalf of SDG&E.

Enspira has also been retained to help SDG&E develop and manage formal field tests of the short-listed AMI technologies prior to final selection. This includes development of a test strategy, detailed formal test plans, and a data analytics and measurement tool to quantify performance of the systems under test.

In addition, Enspira Solutions assisted Sempra with their OpEx 20/20: Utility of the Future initiative, including Field Force Enablement, Smart Grid, and Asset Management, including MWM, DMS/OMS, GIS, WMS, and other advanced technologies. We reviewed their technology strategy and implementation plan, and developed and evaluated RFPs to help them select a Lead System Integrator and multiple workstream implementation teams.

Industry Thought Leadership

Press Articles

- ▶ “AMI Vendor Selection Case Study and Guidelines.” *Intelligent Utility*, Jan/Feb 2009 (co-authored with Pepco Holdings)
- ▶ “The Evolution of Geospatial Technology: From Enabling Technology to Critical Foundation for the Smart Grid.” *Utility Automation and Engineering T&D*, December 2008
- ▶ “Challenges of Implementing AMI,” *Electric Energy T&D*, September/October 2008.
- ▶ “Trends in Meter Data Management System Acquisitions,” *Energy Central Metering eNewsletter*, April 2008.
- ▶ “Managing the Advanced Metering Lifecycle,” *Utility Automation & Engineering T&D* (June 2008) – Dave Elve
- ▶ “Asset Management for Advanced Metering Infrastructure.” *Electric Energy T&D Magazine*, September/October 2007.
- ▶ “Enhancing Outage Management with AMI,” *Utility Automation & Engineering T&D*, February 2008.
- ▶ “Advanced Metering Gets Smarter.” (Executive Roundtable), *Next Generation Power and Energy*, Q3 2007.
- ▶ “Planning Guide for AMI: How to manage the metering selection process.” *Public Utilities Fortnightly*, September 2007.
- ▶ “How Vendor Mergers are Shaping T&D.” *Utility Automation and Engineering T&D*, July 2007.
- ▶ “AMR Improves Outage Management: Southern California Gas Company OMS Integration Provides Operation and Maintenance Savings, Shorter Outages, and More Satisfied Customers.” (Co-authored with Exelon), *T&D World*, September 2006.

Presentations

- ▶ “Technical and Operational Considerations in Using Smart Metering for Outage Management.” 2008 IEEE PES Transmission and Distribution Conference.
- ▶ “Blazing New Trails in Portland’s Million Meter AMI System Implementation.” (Co-presentation with Portland General Electric), DistribuTECH 2008.
- ▶ “Meter Data Management Integration.” Metering and Billing/CIS America 2008.
- ▶ “Best Practices in First Stage Implementation of an AMI System.” (Co-presentation with PGE), Autovation 2008.
- ▶ “A Practical Approach to Change Management — Alliant Energy Case Study.” (Co-presentation with Alliant), Autovation 2008.
- ▶ “Selection of an AMI Solution at Pepco Holdings, Inc. — Regulatory Considerations.” (Co-presentation with PHI), Autovation 2008.
- ▶ “Modernizing business practices to leverage AMI investments in communications and data with centralized advanced DMS applications.” (Co-presentation with BC Hydro), Autovation 2008.
- ▶ “Using AMI and PI for Distribution Planning and Reliability Improvements.” (Co-presentation with Exelon/Southern California Gas Company), OSIssoft PI T&D User Group Meeting 2008.
- ▶ “MDMS and Hosted Solutions — Defining the Market and the Business Rationale for a Hosted MDMS Solution.” MDMS Webinar, May 2008
- ▶ “AMI: Strategies and Processes around the AMI Lifecycle.” Metering and Billing/CIS America 2008.
- ▶ “Pre-deployment Area Selection and Deployment Sequencing at Alliant Energy.” (With Alliant), AMRA 2008.
- ▶ “And the Names Keep Changing: How Vendor Mergers are Shaping the Energy Delivery Industry.” DistribuTECH 2008 — Panel organizer and moderator
- ▶ “Technical and Operation Considerations in Using Smart Metering for Outage Management to the Submission Site.” IEEE PES Transmission and Distribution Conference 2008.
- ▶ “Advanced Metering Infrastructure: The AMI Lifecycle,” Smart Metering Conference, Ontario Canada 2007.
- ▶ “AMI for Business Process Change.” Chartwell Audio Conference, October 2007.
- ▶ “AMI Planning & Pre-Deployment at San Diego Gas & Electric.” (With SDG&E). AMRA 2007.
- ▶ “Use AMR to Improve Outage Management.” TechAdvantage 2006.

Courses

- ▶ Smart Metering Project Management (Half-day course), Autovation 2009.
- ▶ AMI Information Technology and System Integration (Full-day course), Autovation 2009.
- ▶ “Utility Business Transformation with AMI, DR and SmartGrid.” Autovation 2008.
- ▶ “AMI/MDM — Technology That Can Change Your Future.” CS Week 2008/ /Autovation 2008/2007 CIS Conference/AMRA 2007.

- ▶ “Utility Business Transformation with AMI, DR, and Smart Grid.” (Half-day course), AMRA 2007.
- ▶ “Enterprise Integration of AMI.” (Half-day course), 2006 AMRA International Symposium.
- ▶ “How to Achieve Enterprise-Wide Business Optimization and Benefits through AMR.” (Half-day course), AMRA International Symposium 2005.
- ▶ “Improved Outage Management training module.” (Full-day course), Penn State University — Power Engineering Program, October 2005, 2006, and 2007.