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

CHAPTER 29

Prepared Rebuttal Testimony

of

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SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

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I. Introduction

The purpose of this rebuttal testimony is to address several issues raised by the Division of Ratepayer Advocates (DRA) and the Utility Consumers' Action Network (UCAN) August 14, 2006 filed testimony regarding SDG&E's Advanced Metering Infrastructure application, A.06-03-015. In summary, SDG&E has resolved the issues that DRA has identified in DRA Witness Mr. Enderby's testimony (DRA, Chapter 7). More important, SDG&E clearly refutes UCAN's assertion that energy theft benefits should not be included in SDG&E's business case (see SDG&E's Witness Mr. Fong's rebuttal testimony, Chapter 17) and refutes the estimated level of energy theft benefits claimed by UCAN.

II. DRA Testimony

1. DRA Witness Mr. Enderby states on p. 7-2 that DRA is "concerned that tariff rule 9A5 does not allow SDG&E to estimate bills for an unlimited period of time …" (see also pages 7-4 through 7-8)

SDG&E will submit modified language to SDG&E tariff rule 9A5 to the Commission for review that will permit SDG&E to estimate bills as a result of AMI.

SDG&E will submit to the CPUC modified language to its Rules to specifically allow bills to be estimated for a short period of time in cases where a customer has prevented SDG&E from installing an AMI meter by denying SDG&E access to the meter location. The length of time (or number of months) that SDG&E will be allowed to estimate a customer bill due to AMI will be consistent with the procedures and practices that will be developed to manage customer premise access issues during AMI

meter installation. These issues are addressed in SDG&E's Witness Mr. Carranza's testimony, Chapter 28.

III. UCAN Testimony

1. UCAN's assertion that the utilities are made whole for estimates of energy theft ignores that real benefits exist for the overwhelming majority of customers. (UCAN, chapter 2, p. 42, Section 4)

On page 42, in Section 4, UCAN states that the utilities are made whole for any estimates they have for energy theft. That is not the point. It's the vast majority of customers who pay for their energy usage each and every month who benefit by not having to pay for the energy stolen by others. Reducing theft increases revenue from the customers who are currently stealing energy. This allows SDG&E to lower rates for all customers and still meet its revenue requirement. Although the total revenue requirement does not change through the reduction of energy theft, all law abiding customers will have lower rates. This is a quantifiable and tangible benefit for our customers. To argue differently is absurd.

2. UCAN's assertion that the ability of Automated Meter Reading (AMR) to detect theft is ineffective is an example of UCAN's selective use of industry sources and misunderstanding of the facts. (UCAN, p. 43)

SDG&E has calculated conservative benefits for energy theft.

SDG&E estimates that 8.5% of revenue lost due to theft will be recovered through the implementation of AMI. This amount is conservative because the 8.5% total assumes:

- detection of only simple energy theft
- a deduction for energy theft that would not be collectible
- an estimate of potential new energy theft due to loss of monthly visits by meter readers
- subtracting the energy theft already received by SDG&E's Meter Revenue Protection department.

This may be better illustrated with the following example. In 2012, the total revenue theft at SDG&E could be reasonably projected as 0.30% times the annual revenue per meter ($1645.65[1]) or $4.94 per meter. The benefit claimed in 2012 is $615,229[2] divided by 1,463,768 meters, or $0.42 per meter, which is 8.5% of the total energy theft on a per-meter basis.

SDG&E is not claiming any benefits for sophisticated meter bypasses or any other unlikely thefts that UCAN has raised. UCAN asserts that AMI cannot detect sophisticated meter bypass. SDG&E has not included detection of sophisticated bypass as a benefit.

Almost all simple energy theft will be uncovered during installation of meters.

Some simple methods of energy theft include simple meter bypass, meters turned upside-down, and meters with drilled holes or dials adjusted. These methods are not necessarily seen by meter readers during their monthly meter reading cycle visits, but will be detected during AMI installation.

AMI Systems Will Detect Energy Theft.

AMI is much more capable of detecting energy theft than the simple, first generation automated meter reading (AMR) systems such as those cited by UCAN. UCAN cites a study by Chartwell of utilities that have installed an AMR system. SDG&E is not proposing to install an AMR system, but an AMI system (Advanced Metering Infrastructure) so comparison of these two dramatically different systems is not meaningful. Energy theft detection capabilities in an AMI system are far superior. The "infrastructure" in an AMI system includes information systems that are capable of processing large amounts of interval data for use in discovery of energy theft. This contrasts dramatically with AMR systems that generally only automate the monthly consumption read.

[1] Item 8 on SDG&E's Financial Template - Billing-AMI-DR-Elec.xls workbook, AMI(SB-3) EnergyTheft sheet.
[2] From SDG&E's Financial Template - Billing-AMI-DR-Elec.xls workbook. AMI(SB-3) EnergyTheft worksheet

It's Not About the Tamper Flags.

UCAN inappropriately relies on anecdotal stories and reports that relate to prior AMR (not AMI) installations where tamper alarms are so sensitive that false alarms overwhelm the system. Unlike the AMR systems discussed by UCAN, AMI can intelligently sort and prioritize tamper flags. This reduces unnecessary investigations. In addition, AMI is far more tamper proof than AMR when utilizing solid state meters. For example, a solid-state electric meter does not have a spinning disc that can be slowed down. Inverted meters will also be detected quickly through the daily collection of hourly data. Other forms of theft will be discovered through investigation of tamper flags, although benefits derived from tamper flags are not included in SDG&E's AMI business case.

3. UCAN's examples of the limited ability of AMR to mitigate energy theft are not representative of the current state of AMI technology. (UCAN, p. 45)

There Are Many AMR Success Stories.

Hundreds of utilities that have installed AMR systems have experienced benefits of additional revenues from discovery and prevention of energy theft and the elimination of meter error due to slowing electro-mechanical meters. How ironic that UCAN chose to share only the negative experiences and failed to mention the positive examples. The following articles describe successful use of AMI systems and even older AMR systems to deter and identify energy theft:

a) PECO has had success with its AMR installation, even without using hourly data, as reported in Transmission and Distribution World Magazine[3]:

> "In 2004, PECO completed the deployment of a fixed network AMR system from Cellnet (Alpharetta, Georgia, U.S.). The PECO AMR network currently reads more than 2.2 million meters daily. This system is designed to deliver both energy consumption and meter-data tamper flags such as reverse rotation, magnetic fields, outage notification/restoration and outage counts. …
> Throughout the past year, PECO has been working with Cellnet to design several reports that identify conditions indicative of meter tampering. These reports guide the field revenue protection forces in deciding which premises require on-site inspection. This effort has yielded significant improvements over traditional meter

[3] From http://tdworld.com/mag/power_smart_solution_energy/

investigation methods. Furthermore, there is a measurable increase in metered usage and associated revenue for those meters that have been successfully investigated (Fig. 1).

…

Based on this success, PECO integrated these reports into its existing revenue-protection processes. Cellnet delivers the reports on a monthly or as-needed basis. The reports continue to be successful; so far, theft has been validated at 90% of the premises identified."

b) Even UCAN's primary source on this subject, Chartwell[4], reported success in discovering theft by companies that use an AMR in conjunction with a meter data management system (MDMS):

"ATLANTA – February 23, 2006 – Energy theft in the United States is a billion dollar business, and by many accounts, represents between .5% and 1% of any singular utility's overall revenue. … As many utilities have discovered, AMR is best used in conjunction with a meter data management system (MDMS). For example, this enables utilities to sift individual customer consumption reads through special queries and programs built into their systems. In some cases, it helps identify losses that may have gone undetected before, especially on a commercial scale. Commercial accounts usually represent a significant - if not a majority – of revenue lost due to meter theft or non-theft related losses at the meter."

SDG&E's AMI should provide equal or greater benefits than those reported by Chartwell.

c) In "Short Survey on AMR Indicators[5]," a survey conducted by UtiliPoint in September 2005 only 2 of 27 utilities, reported to UtiliPoint that the AMR tamper indicators were not useful. In the executive summary, they stated:

"…utilities have found that using tamper indicators together and with other information is useful for theft detection. Most utilities with AMR installed either use AMR tamper indicators as part of their theft detection effort or plan to in the future."

4. UCAN asserts that "SDG&E expresses considerable uncertainty that energy theft benefits may not be positive."

UCAN mischaracterizes an SDG&E e-mail note, which was a product of an initial risk brainstorming session, as a 'report'. In fact, the e-mail note's first line states that it is a "first cut at risks" and it clearly does not represent any final conclusions on these matters by SDG&E. The purpose of the e-mail was to gather an exhaustive list

[4] From http://www.chartwellinc.com/pressrelease.cfm?pressrelease_id=109
[5] Confidential and proprietary report published November 2005 by Utilipoint - www.utilipoint.com

of all potential risks, regardless of their probability of occurrence. This note was only a starting point for discussion of these issues for developing risk analysis and mitigation strategies. Further, both items quoted by UCAN explicitly stated that they are substantially accounted for in the business case as of January, 2006. SDG&E would be remiss not to initially identify all potential risks. SDG&E's business case, as filed, reflects final conclusions regarding risk mitigation. SDG&E is certain that energy theft will be reduced.

5. UCAN asserts that UFE is unstable so energy theft and meter accuracy benefits cannot be as high as estimated. (UCAN, p. 49)

The data from CPUC's 1998 Distribution Loss Factors Working Group Report is the valid comparison for unaccounted-for energy data (UFE), not 2001-2005 data cited.

On UCAN p. 49, UCAN states that "meter accuracy and energy theft benefits are based on outdated data". They cite UFE data for 2001 through 2005 not being static. The data they chose to cite (introduced in response to Data Request DRA-15 Q1) is not appropriate for estimating future UFE. The amounts recorded in SDG&E's accounting system are the same as reported in FERC Form 1. This data is not reliable after 1998 due to California's operating environment. UFE reported in 2001 of 1.58% is physically impossible. Well-documented research requested by the CPUC in R.94-04-031 and I.94-04-032 (Distribution Loss Factors Working Group) is the appropriate data for analysis, as described further below.

FERC Form 1 UFE data is not reliable after 1998.

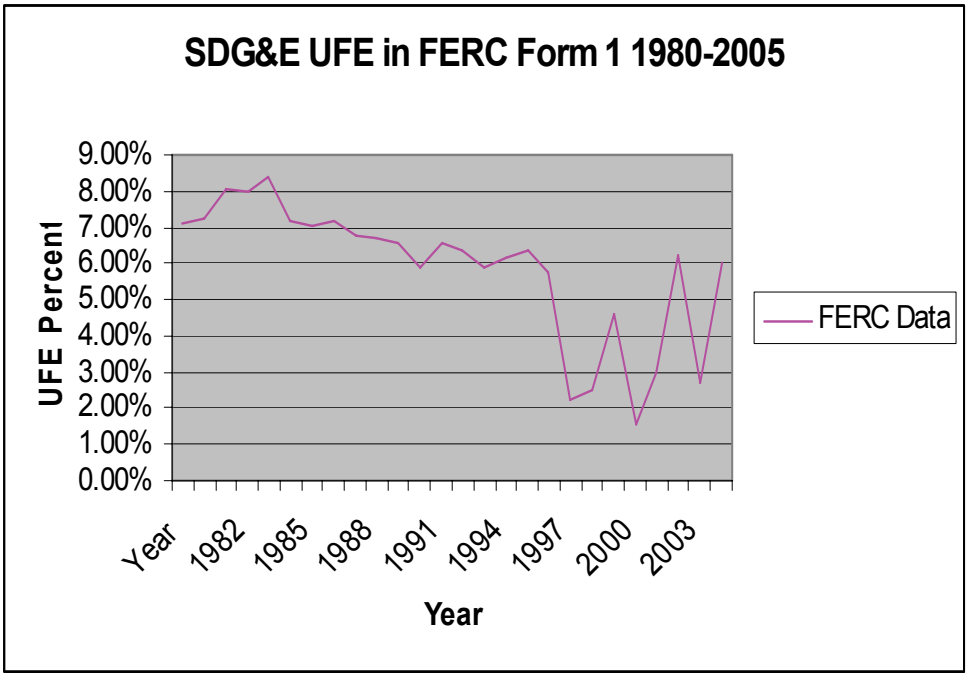
UFE reported in FERC Form 1 was reasonably stable prior to 1998. In 1998, all California investor-owned utilities (IOU) were ordered to implement Direct Access (DA). A major outcome of DA was the ability of customers and their energy service providers (ESPs) to provide their own metering and to schedule the delivery of their own power purchases. Instead of IOUs controlling all deliveries of power in a particular region, large customers and energy service providers were permitted to schedule the delivery of their own power purchases. After 1998, SDG&E was

ordered to divest itself of its major power plants. Beginning in 2001, the California Department of Water and Power began buying electricity for the IOUs. In addition, SDG&E experienced an increase in customers who generated their own power. Calculating UFE was no longer a simple matter of comparing the generated output of SDG&E's power plants with its deliveries to its customers. To the extent there is an imbalance between energy receipts by delivering entities (utility, DWR, ESPs, customer owned generation) and recorded meter reads by delivering entities, UFE will be inaccurate.

The attached Figure JT 29-1 of UFE data reported in FERC Form 1 show that until 1998 the UFE factor varied only slightly from year to year. Beginning in 1998 with the implementation of DA, a number of considerations caused the UFE reported in the FERC Form 1 line-item to become unstable, inconsistent, and of questionable operational value. The FERC Form 1 reporting format simply does not provide for the consistent reporting of power procured, measured, and delivered into the SDG&E system by non-utility entities. The FERC Form 1 data consists of only the energy sales and deliveries of the utility distribution company.

Figure JT 29-1
Historical UFE Data Reported to FERC 1980 – 2005

Year	FERC Data
1980	7.12%
1981	7.27%
1982	8.03%
1983	8.01%
1984	8.42%
1985	7.20%
1986	7.04%
1987	7.18%
1988	6.77%
1989	6.73%
1990	6.55%
1991	5.92%
1992	6.55%
1993	6.38%
1994	5.88%
1995	6.19%
1996	6.35%
1997	5.75%
1998	2.21%
1999	2.53%
2000	4.58%
2001	1.58%
2002	2.98%
2003	6.21%
2004	2.71%
2005	5.99%



UFE of 1.58% is physically impossible.

Major components of UFE are distribution and transmission losses. Both transmission losses and distribution losses, alone, have been determined by technical experts to be far greater than 1.58%. Energy cannot be transmitted through the SDG&E operating system without losing power when energy is transformed. All California utilities report losses far exceeding that amount. SDG&E estimates that approximately 6% of power is lost at the transmission and distribution levels. PG&E

estimated losses of 1.3% - 3.3% at lowest - to -highest UDC load for Primary LF (loss factor) and 6.35% - 10.14% Secondary LF[6].

The Distribution Loss Factors Working Group report is the most reliable estimate of UFE.

These well-documented research and the conclusions by technical professionals have received regulatory scrutiny and approval and are the appropriate information sources for UFE.

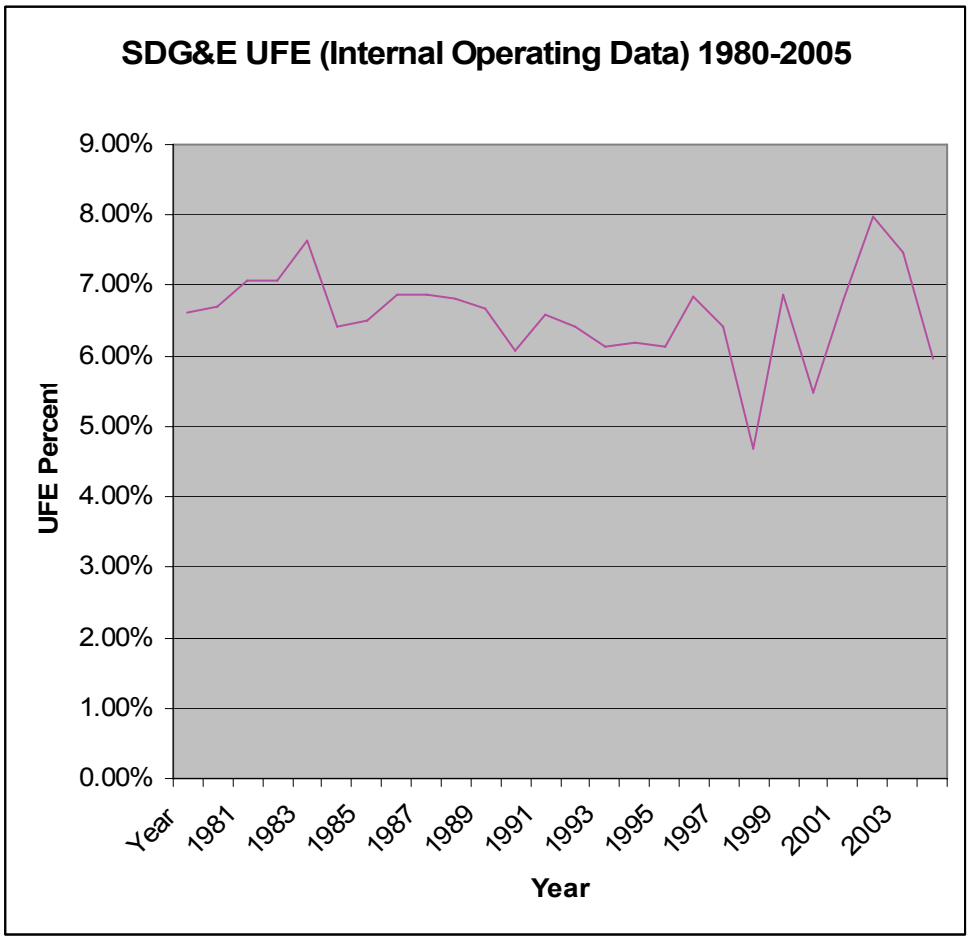
SDG&E's internal operating UFE data continues to confirm conclusions from the 1998 Study.

SDG&E's internal operating UFE data is consistent over time, including the years 2001-2005.

[6] Distribution Loss Factors Working Group Report, 8/11/1998, Appendix F, pages 10-11.

Figure JT 29-2
Historical UFE Operational Data 1980 – 2005

Year	Oper. Data
1980	6.62%
1981	6.70%
1982	7.06%
1983	7.07%
1984	7.64%
1985	6.43%
1986	6.49%
1987	6.87%
1988	6.87%
1989	6.82%
1990	6.67%
1991	6.07%
1992	6.58%
1993	6.43%
1994	6.13%
1995	6.20%
1996	6.12%
1997	6.84%
1998	6.42%
1999	4.69%
2000	6.88%
2001	5.48%
2002	6.79%
2003	7.97%
2004	7.47%
2005	5.97%



6. UCAN asserts that PG&E electric meters ran 0.03% slow versus the 0.3% SDG&E rate. (UCAN, p. 50)

UCAN References outdated PG&E rebuttal testimony. PG&E's electro-mechanical meters run an average of 0.34% slow based on revised rebuttal testimony of Mr. Young Nguyen on February 25, 2006.

On February 8, 2006 PG&E filed rebuttal testimony in A.05-06-028 and in chapter 10, page 10-3 at line 11 PG&E states:

"The average accuracy of PG&E's electric meters is approximately 0.03% slow…"

On February 25, 2006 PG&E revised their rebuttal testimony, and in chapter 10, page 10-3 at line 10 PG&E states:

"The average accuracy of PG&E's electro-mechanical meters is approximately 0.34% slow…."

The meter accuracy rate reported by PG&E in its revised rebuttal testimony is therefore **higher** than SDG&E's 0.30% figure.

7. UCAN asserts that SDG&E's testimony treats off but registering (OBR) as a non-quantifiable benefit. (UCAN, p.52)

SDG&E Correctly Categorized OBR Benefits, which include both Quantifiable and Non-quantifiable components.

Non-quantifiable component: SDG&E stated on pp. JST-10 and -11 of Witness Mr. Teeter's prepared direct testimony that "quicker detection of anomalies, such as customers who begin using a meter in 'off' status, will allow a customer to resolve their account before an adjusted bill is required." That customer service benefit was listed as a non-quantifiable benefit because the benefit to customers of not receiving a larger bill is difficult to quantify. We know customers appreciate not receiving a large, delayed bill, but we don't know how much that saves society or the utility.

Quantifiable component: On the other hand, OBR usage that is detected and billed due to the implementation of AMI that otherwise would have been lost **is** quantifiable. For example, when SDG&E discovers lost usage for residential customers, Rule 18 forbids billing beyond three months. To the extent a bill can be issued earlier than three months under an AMI system, that revenue will no longer be lost. In addition, availability of meter usage data on an hourly basis will enable SDG&E to identify with greater accuracy the time during which energy was used, and therefore the responsible customer. Therefore, SDG&E listed the benefits where UCAN states, on page 52, that "SDG&E workpapers calculate a nominal value to the

benefit." It is nevertheless quantifiable. There is no reason to exclude the benefit from the business case analysis.

This concludes my prepared rebuttal testimony.