

Application No: A.17-10-002
Exhibit No.: _____
Witness: David Mercer

Application of Southern California Gas Company
(U 904 G) and San Diego Gas & Electric Company
(U 902 G) Regarding Feasibility of Incorporating
Advanced Meter Data Into the Core Balancing
Process.

A.17-10-002
(Filed October 2, 2017)

REBUTTAL TESTIMONY OF
DAVID MERCER
ON BEHALF OF
SOUTHERN CALIFORNIA GAS COMPANY AND
SAN DIEGO GAS & ELECTRIC COMPANY

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

August 10, 2018

TABLE OF CONTENTS

I. PURPOSE1

II. CLARIFICATIONS AND FACTUAL CORRECTIONS TO INTERVENOR
TESTIMONY1

III. THE INTERVENORS’ PROPOSALS ARE NOT APPROPRIATE WHEN
VIEWED IN THE CONTEXT OF THE SOCALGAS AMI SYSTEM.....5

IV. THE INTERVENORS’ PROPOSED FUNCTIONAL REQUIREMENTS ARE
NOT SUFFICIENTLY DETAILED TO BE THE BASIS FOR DEVELOPING
TECHNICAL REQUIREMENTS9

V. THE COST ESTIMATES PROVIDED BY INTERVENORS ARE
SPECULATIVE AND INCOMPLETE10

VI. RECOMMENDED APPROACH FOR A SOLUTION.....11

1 **REBUTTAL TESTIMONY**
2 **OF DAVID MERCER**

3 **I. PURPOSE**

4 The purpose of my rebuttal testimony on behalf of Southern California Gas Company
5 (SoCalGas) is to provide further clarification and factual corrections to the intervenor testimony
6 provided by Catherine E. Yap on behalf of Southern California Generation Coalition and
7 Indicated Shippers (SCGC/IS) and Greg Lander on behalf of Environmental Defense Fund
8 (EDF). My rebuttal testimony further provides recommendations that will guide the appropriate
9 technical solution to incorporate advanced meter data into the core balancing process, should the
10 Commission determine it is necessary for the core procurement groups to balance to actual core
11 demand.

12 **II. CLARIFICATIONS AND FACTUAL CORRECTIONS TO INTERVENOR**
13 **TESTIMONY**

14 The follow sections address clarifications and factual corrections in the testimonies of
15 EDF and SCGC/IS.

16 **A. EDF’s Recommendations to Reduce Data Transfer Lag and Implement On-**
17 **Command Read Functionality Should Not Be Adopted**

18 EDF recommends that a stakeholder process be developed to address the technical
19 feasibility of reducing the data transfer lag and/or using an “On-Command” read functionality to
20 obtain data within one hour.¹ As I describe below, reducing data transfer lag would result in
21 significantly decreased battery life for the Meter Transmission Units (MTUs). Further, there is
22 no “On-Command” read functionality for the MTUs as described by EDF.

¹ Exh. EDF-02 (Intervenor Testimony of Greg Lander) at 21-22.

1 As I described in my direct testimony, increasing the amount of data transfers between
2 the MTU and the DCU, although increasing the amount of data transferred within a certain time
3 period, would drastically decrease the battery life of the MTU.² This will always be true,
4 regardless of whether the AMI data would be used for the demand forecasting group to
5 incorporate into their forecast or be used for core to balance to actual demand. In this instance,
6 EDF proposes to decrease the data transfer lag of the AMI data by increasing the number of
7 communications between the MTUs and the DCUs.³ Increasing the currently configured data
8 transfer from every six hours to every one hour would reduce the data transfer lag but would also
9 reduce an MTU's battery life from 20 years to seven years. As provided in my direct testimony,
10 to the extent the MTUs must be replaced more quickly as a result of any accelerated decrease in
11 battery life, the illustrative cost to replace only the MTUs would be approximately \$640 million.⁴
12 To the extent EDF is recommending only a certain subset meters be configured to transfer data
13 every one hour rather than every six hours, that number of meters would need to be replaced in
14 seven years rather than 20 years, and would have costs commensurate with their accelerated
15 replacement.

16 The Series 3000 Core MTUs, which account for approximately 5.9 million meters, do not
17 have an "on-command" read capability as described by EDF. The system is currently configured
18 and designed so that all of yesterday's data from each MTU is in the Meter Data Management
19 System (MDMS) by, at the earliest, 3:45 PM today (i.e., when the scheduled 3:00 PM AMI Load

² Prepared Direct Testimony of David Mercer at 2 ("...With this configuration, the MTU batteries are expected to last up to 20 years.") and at 7 ("Currently installed Series 3000 MTUs, which have a 7-year battery life when configured to hourly transmission...").

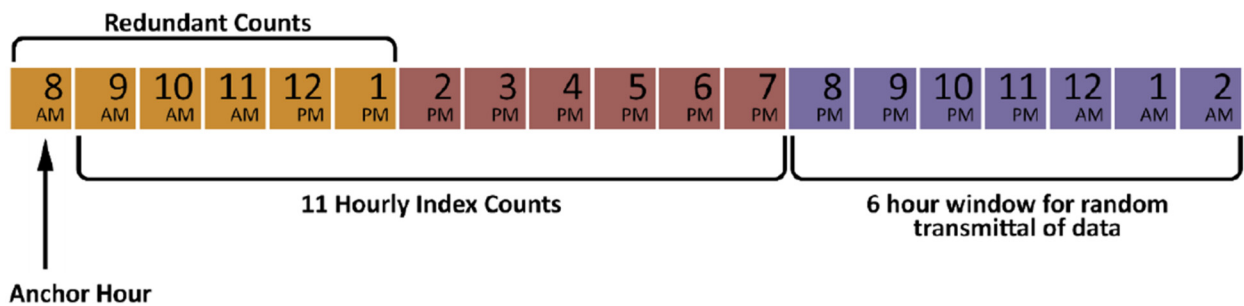
³ Exh. EDF-02 (Intervenor Testimony of Greg Lander) at 21-22.

⁴ Prepared Direct Testimony of David Mercer at 7-8. My testimony also describes other costs besides the MTUs that would need to be incurred to reduce data transfer lag.

1 Process finishes). As explained in my direct testimony, the current AMI technology was built to
 2 support a monthly billing process and next day, hourly customer energy presentment for
 3 SoCalGas' core customers, pursuant to Commission Decision (D.) 10-04-027.⁵ EDF's proposal
 4 would require the reconfiguration and redesign of the process by which the MTUs provide data
 5 to the MDMS. This would impact several other processes and steps, which were configured and
 6 designed to support a monthly billing process and next day, hourly customer energy presentment.

7 **B. SCGC/IS Testimony Relating to the Anchor Read Timing of the MTU**
 8 **Transmission Schedule Needs Clarification**

9 SCGC/IS includes a discussion of anchor reads that is based on information provided by
 10 SoCalGas in another proceeding, and although the statements remain logically accurate, the
 11 timing of the anchor read itself should be clarified. SCGC/IS depicts the anchor read as the *first*
 12 read of the MTU transmission as follows:⁶

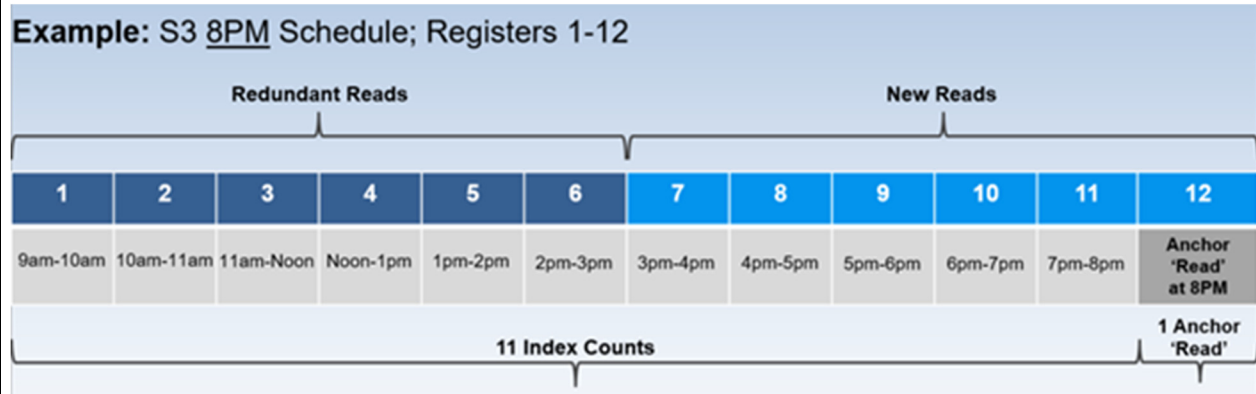


13 However, the anchor read is actually the *last* read of the data transmission packet. The SCGC/IS
 14 depiction of the anchor read for the fourth send of the S3 transmittal schedule should be
 15 corrected to reflect that the 8 PM hour as the anchor read. A clarified graphical depiction of the
 16 S3 data transmission for 8PM is shown in Figure II-1.
 17

⁵ Prepared Direct Testimony of David Mercer at 1.

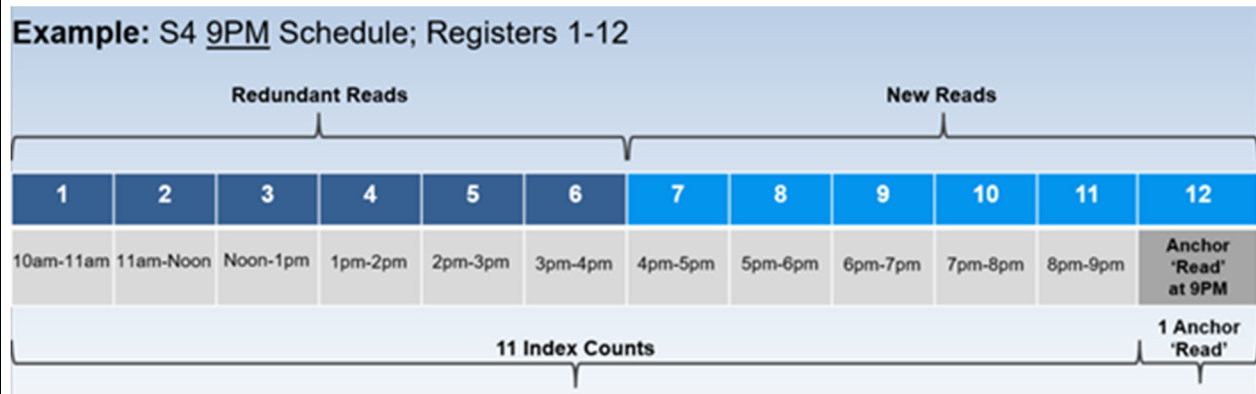
⁶ Direct Testimony of Catherine E. Yap at 38 (Figure 4).

Figure II-1 – Clarified S3 Data Transmission



Similarly, SCGC/IS describes the S4 transmittal schedule as having the anchor read at 9am, but as described above, the anchor read is the last read in the MTU transmission and is 9 PM.⁷ A clarified graphical depiction of the S4 data transmission for 9PM is shown in Figure II-2.

Figure II-2 – Clarified S4 Data Transmission



C. SCGC/IS’ Contentions Regarding System Cost Comparison are Taken Out of Context and Not Accurate

SCGC/IS argues that “Applicants have vastly increased their estimates of costs ‘from the in excess of \$90 million level’ to the more than \$750 million-dollar level” concluding that “the

⁷ Direct Testimony of Catherine E. Yap at 38 (Figure 4).

1 level of costs associated with Gas Acquisition balancing to actual have gone up by nearly an
2 order of magnitude” even though Applicants are making the same basic claims.⁸

3 The actual statements referred to have been taken out of context and are incomplete. The
4 reference regarding the original \$90 million cost estimate was, “[a] quick, back-of-the envelope
5 estimate is that such a change would reduce meter battery life from approximately 20 years to
6 approximately 7 years - with an associated additional *annual* cost in excess of \$90 million.”⁹

7 The \$90 million estimate was an annual cost that would be expected to reoccur over several
8 years as MTU batteries degraded. Additionally, this \$90 million annual estimate referred only to
9 the costs of replacing all 6 million MTUs which would be required if system-wide transmissions
10 were increased and depletion of battery life were accelerated. The \$90 million annual estimate
11 did not include other necessary costs, including but not limited to supervisorial personnel,
12 scheduling/routing personnel, customer contact personnel, warehouses, training, vehicles,
13 logistic services, as well as meters, parts, and fittings. As stated in my testimony, to the extent
14 all MTUs must be replaced more quickly as a result of any accelerated decrease in battery life,
15 the illustrative cost to replace all MTUs would be approximately \$640M.¹⁰ This estimate was
16 derived from SoCalGas’ Advanced Meter’s Mass Installation actual expenditures.

17 **III. THE INTERVENORS’ PROPOSALS ARE NOT APPROPRIATE WHEN**
18 **VIEWED IN THE CONTEXT OF THE SOCALGAS AMI SYSTEM**

19 Pursuant to D.10-04-027, the current AMI technology was built to support a monthly
20 billing process and next day, hourly customer energy presentment for SoCalGas’ core customers.
21 D.10-04-027 did not describe the advanced meter system as being designed and used to acquire

⁸ Direct Testimony of Catherine E. Yap at 49.

⁹ A.15-06-020, Response of Southern California Gas Company and San Diego Gas & Electric Company to the Motion of Southern California Edison Company on behalf of the Customer Coalition for Consideration of Winter Reliability Measures, (September 2, 2016) at 18 (emphasis added).

¹⁰ Prepared Direct Testimony of David Mercer at 7.

1 same day, daily measurement quantities that could be allocated and aggregated to the respective
2 core balancing agents for calculating OFO noncompliance charges. In the following sections, I
3 respond to certain specific proposals from intervenors regarding modifications to the AMI
4 system to support a different balancing regime.

5 **A. SCGC/IS' Proposed Use of Staging Tables is Not Appropriate**

6 SCGC/IS makes the following assertions regarding staging tables:

7 It is possible however to access the data in the staging tables
8 during the Measurement Day.¹¹

9 ...

10 However, it would be much simpler to select the sample data from
11 the staging tables if there were a file containing both the MTU
12 identification number and the data transmission schedule to which
13 the MTU had been assigned.¹²

14 ...

15 As discussed previously, the MTU data is stored in the staging
16 tables after passing out of the HE and before being processed by
17 the MDMS.¹³

18 This recommendation is not appropriate and should not be adopted. The Staging Tables referred
19 to in SCGC/IS' testimony are transition tables that are part of the Head End (HE) to the MDMS
20 interface. These tables hold temporary data and are not designed to be accessible for any other
21 purposes than to facilitate the transfer and transformation of data from the HE to the MDMS.
22 The data being transferred by way of these staging tables has not been through the Validation,
23 Estimation and Edited (VEE) process and is not the same quality of data that ends up being
24 stored in MDMS, which is where the VEE process occurs. Additionally, any additional
25 processing for the staging tables could result in delays for the current processes that are taking

¹¹ Direct Testimony of Catherine E. Yap at 46.

¹² *Id.* at 55.

¹³ *Id.*

1 place. SoCalGas has not done any studies regarding the feasibility and costs of utilizing the
2 staging tables and has not done an analysis on other processes or requirements that will be
3 impacted by these proposed changes. However, for the reasons described here, it is highly
4 unlikely that SoCalGas would modify the current system interface in the manner described.

5 **B. SCGC/IS' Proposed Use of Direct CIS Queries is Not Appropriate**

6 SCGC/IS makes the following assertions regarding CIS:

7 The AMI and CIS databases each contain the MTU unique
8 identifier, so they can be successfully queried simultaneously.¹⁴

9 . . .

10 Third, the requisite programming should be developed that would
11 simultaneously query the AMI data and the CIS data and produce
12 for the Measurement Day.¹⁵

13 . . .

14 Third, the Applicants should develop the necessary programs to
15 jointly query the CIS data with the converted and verified partial
16 day MTU data that has been uploaded to the Data Warehouse.¹⁶

17 SoCalGas' CIS system has its own requirements, design, and configuration specifications, and is
18 not designed to support direct queries to its database without adversely impacting its central
19 functions of supporting Customer Contact Center (CCC) agents or the Billing Department and its
20 associated processes. Because CIS was designed and built to efficiently serve several hundred
21 CCC agents working in real time as well as to support Billing functions in the evening (both
22 exceptionally demanding tasks), a real-time interface or direct queries to CIS can negatively
23 impact the overall system performance and its overall response time. SoCalGas has not done any
24 studies regarding the feasibility and costs of directly querying CIS and has not done an analysis

¹⁴ Direct Testimony of Catherine E. Yap at 40.

¹⁵ *Id.* at 53.

¹⁶ *Id.* at 56.

1 on other processes or requirements that will be impacted by these proposed changes. However,
2 because it is imperative that CIS not be adversely impacted or burdened with additional
3 requirements, it is very unlikely that SoCalGas would redesign CIS to enable this direct query
4 functionality. As such, SoCalGas recommends that the Commission deny any intervenor
5 proposals to the extent they rely on directly querying CIS.

6 **C. SCGC/IS' and EDF's Proposed Uses of Data Warehouse and ICDA is Not**
7 **Appropriate**

8 SCGC/IS and EDF make several statements regarding proposed uses for Data Warehouse
9 and ICDA:

10 First, the identity of each core customer's gas procurement agent
11 should be added to the master data file that is uploaded daily from
12 the CIS database to the Data Warehouse.¹⁷

13 ...

14 The requisite programming should be performed to ensure that this
15 data is uploaded to the Data Warehouse as quickly as possible.¹⁸

16 ...

17 The requisite programming should be developed that would upload
18 the nearly 5.9 million meter reads for the entire previous
19 Measurement Day that are in the MDMS at 5:00 p.m. to the Data
20 Warehouse.¹⁹

21 ...

22 Second, the Applicants should develop the programs required for
23 uploading a portion of the MTU partial day data directly from the
24 staging tables to the Data Warehouse.²⁰

25 ...

¹⁷ Direct Testimony of Catherine E. Yap at 53.

¹⁸ *Id.*

¹⁹ *Id.* at 54.

²⁰ *Id.* at 55.

1 Third, the Applicants should develop the necessary programs to
2 jointly query the CIS data with the converted and verified partial
3 day MTU data that has been uploaded to the Data Warehouse.²¹

4 ...

5 by accessing the pertinent data from the ICDA/ICDW.²²

6 ...

7 To accomplish this, the UGPD and the CTAs should have access to
8 the current day deliveries as they are loaded from the AMI data to
9 the ICDA and/or the ICDW.²³

10 SoCalGas' Data Warehouse and ICDA systems cannot support the necessary activities to
11 provide AMI information to core balancing agents on a daily basis as proposed by SCGC/IS and
12 EDF. The systems were not designed to support the level of availability and reliability that
13 would be required for the type of system contemplated by SCGC/IS and EDF, nor with the
14 necessary processing speeds or memory requirements. SoCalGas has not done any studies
15 regarding the feasibility and costs of utilizing Data Warehouse or ICDA and has not done an
16 analysis on other processes or requirements that will be impacted by these proposed changes.
17 SCGC/IS' and EDF's proposals would likely require increased processing loads, memory
18 demands, and/or system redundancy and uptime requirements into the current environments.
19 SoCalGas recommends that the Commission deny any intervenor proposals to the extent that
20 they utilize either Data Warehouse or ICDA.

21 **IV. THE INTERVENORS' PROPOSED FUNCTIONAL REQUIREMENTS ARE NOT**
22 **SUFFICIENTLY DETAILED TO BE THE BASIS FOR DEVELOPING**
23 **TECHNICAL REQUIREMENTS**

24 The intervenors' testimony does not provide sufficient clarity nor are their technical ideas
25 comprehensive or thorough enough to appropriately evaluate a technical solution to incorporate

²¹ *Id.* at 56.

²² Exh. EDF-02 (Intervenor Testimony of Greg Lander) at 13.

²³ *Id.* at 15.

1 the AMI data into the core balancing process. Notwithstanding, even if sufficient detail can
2 somehow be provided through this proceeding, there has been no analysis of a) the impact to the
3 current systems, b) the additional software or hardware requirements, c) the time required to
4 complete such a project or d) the cost estimates for the work.

5 While these functional requirements may be feasible, without a thorough analysis of
6 these ideas within the context of current system operations, it is not currently possible to
7 accurately determine the complete scope, timeline, and cost of implementing these proposed
8 functional requirements. A much broader, full and comprehensive list of all core procurement
9 groups functional requirements are necessary for an accurate technical design if the Commission
10 determines that the core procurement groups core balancing process must be modified.

11 **V. THE COST ESTIMATES PROVIDED BY INTERVENORS ARE SPECULATIVE**
12 **AND INCOMPLETE**

13 Several intervenors have provided cost estimates for the products and services they
14 believe necessary for core procurement groups to balance to actual demand, which are not
15 supported to the extent necessary for the Commission to determine an appropriate budget for
16 SoCalGas to implement the desired modifications.²⁴ As described in the previous sections, the
17 intervenors do not have a complete understanding of SoCalGas' internal operations and
18 functional requirements, do not take into account their proposal's potential impacts on
19 SoCalGas' system as a whole, and do not have a full and comprehensive understanding of all
20 core procurement groups functional requirements. None of the intervenors sponsoring testimony
21 in this proceeding have indicated that they possess the necessary experience or expertise to
22 design a comprehensive system and estimate the software development costs necessary to

²⁴ Direct Testimony of Catherine E. Yap at 49, 54; Exh. EDF-02 (Intervenor Testimony of Greg Lander) at 16-17.

1 support balancing to actual demand. The cost estimates provided are speculative and should not
2 be relied upon by the Commission.

3 **VI. RECOMMENDED APPROACH FOR A SOLUTION**

4 If the Commission determines that it is necessary to modify the current balancing regime
5 for core balancing agents, the Commission should not look to the testimony of SCGC or EDF for
6 guidance regarding the use of existing SoCalGas systems or technical implementation details.

7 Based on my concerns outlined in the sections above, and as can be seen from the AMI
8 proceeding and installation process, the AMI system is complex, interconnected, and symbiotic.
9 Changes to one particular function can impact a myriad of other procedures and functions and
10 impact system software and hardware as well. Moreover, even with this system complexity,
11 even intervenor testimony proposes vastly different approaches and methods to obtain arguably
12 the same technical goal. It is my opinion that rather than piecemealing several competing
13 approaches and methods that are not founded with a comprehensive understanding of the context
14 of the AMI system, that the Commission determine what the necessary requirements are for
15 incorporating AMI into the core balancing process and provide SoCalGas with authority to
16 conduct a study of options to implement the solution. This will provide a consistent,
17 comprehensive approach to modifications of the AMI system to meet any new system
18 requirements.

19 An accurate technical design, business plan and cost analysis cannot be developed until
20 all functional requirements are determined.

21 This concludes my rebuttal testimony.