2.1.   Witness Rene F. Garcia states in SCG-17-R at RFG-5, lines 10-14:

> Prior to the installation of the AMI technology, gas consumption at premises with installed security devices was identified as part of the Billing exception processes by the Customer Information System (CIS). Billing analysts would be required to evaluate and schedule additional visits to the meter if deemed as required. With AMI, SoCalGas can now identify and investigate these possibly unsafe situations more quickly.

2.1.1.   Please confirm that the Customer Information System ("CIS") is used to prepare customer bills.

2.1.2.   Please confirm that the CIS contains information about customers that includes service address (location of meter), billing address, whether the customer is core or noncore, rate schedule(s) that apply to customer for billing purposes, and for core customers the identity of the provider of gas procurement services.

2.1.3.   Does the CIS include a unique meter number for each customer premises?

2.1.4.   Does the CIS include a unique MTU identifier for each customer premises?

2.1.5.   Please confirm that when the CIS prepares a bill for a customer, it first uploads hourly meter read data from the Meter Data Management System for the relevant billing period.

2.1.6.   Please confirm that data from the CIS is periodically uploaded to the Data Warehouse and state the frequency with which the CIS data is uploaded to the Data Warehouse.

Utility Response 2.1:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows.

Repsonse to 2.1.1.   Yes, this is correct.

Utility Response 2.1 Continued:

Response to 2.1.2.   Yes, this is correct.

Response to 2.1.3.   Each gas meter has a unique identifier (the Meter Badge number) associated with it and each MTU has a unique identifier (MTU serial number) associated with the MTU. However a customer premise, such as an apartment complex, may have multiple meters associated with it.

Resonse to 2.1.4.   See response to 2.1.3.

Response to 2.1.5.   The night prior to the billing generation, CIS will request the 3:00 AM read associated with every account from the MDMS that is to be billed within the next day's bill generation process.

Repsonse to 2.1.6.   A daily upload of the prior-day CIS data occurs for master data and transactional data (bills, payments, service orders, etc.) and a monthly upload occurs for revenue data.

2.2.   Witness Rene F. Garcia states in SCG-17-R at RFG-8, lines 3-9:

An MTU is a communications device that automatically and securely transmits hourly gas meter readings to our DCUs, which in turn transmit the gas meter readings to our back-office systems (e.g. MDMS and HE) and billing department, eliminating the need for manual meter reading.
While gas usage is still measured by the analog meter as it was prior to adding the AMI technology, the MTU is applied (retrofitted) to the meter to securely transmit hourly meter readings wirelessly through SoCalGas' data communications network.

2.2.1.   Please confirm that each meter transmission unit ("MTU") installed on a meter has a unique identifier.

2.2.2.   Please confirm that the drive shaft for the analog meter passes through the MTU assembly, which by means of a coupler and magnet on the meter drive shaft is able to count the number of clicks or index counts that the meter has advanced forward each hour relative to a baseline number identified for an anchor hour.

2.2.3.   Please confirm that four times each day the MTU transmits to the data collection unit ("DCU") packets of encrypted data containing the MTU unique identifier, an anchor "read" and eleven hourly index counts. The anchor read and five index counts were previously transmitted to the DCU and six index counts have not previously been transmitted to the DCU.

2.2.4.   Does each MTU have the same anchor hours, that is 6:00 a.m., 12:00 p.m., 6:00 p.m., and 12:00 a.m., or do some MTUs have anchor hours that differ from this, for example, 1:00 a.m., 7:00 a.m., 1:00 p.m., and 7:00 p.m., or 2:00 a.m., 8:00 a.m., 2:00 p.m., and 8:00 p.m.?

2.2.5.   Please confirm that the MTU randomly schedules the transmit time for the packet of encrypted data during a six-hour interval following the recording of the last index count that is included in the packet. For example, for a 6:00 p.m. data packet that includes a 6:00 a.m. anchor and 11 hourly index counts from 7:00 a.m. through 5:00 p.m., the data packet could be transmitted any time after 6:00 p.m. and before 12:00 a.m.

Utility Response 2.2:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows.

Utility Response 2.2 Continued:

Response to 2.2.1.   Yes, each MTU has a unique MTU serial number associated with it.

Response to 2.2.2.   Yes, this is correct.

Response to 2.2.3.   Yes, this is correct. Note, the current anchor read was not transmitted in the previous transmission; that hour's data, in the previous transmission, was hour 6's incremental index count.

Response to 2.2.4.   All modules will be on one of six data transmittal schedules:
- S1: 12:00 a.m., 6:00 a.m., 12:00 p.m., 6:00 p.m.
- S2: 1:00 a.m., 7:00 a.m., 1:00 p.m., 7:00 p.m.
- S3: 2:00 a.m., 8:00 a.m., 2:00 p.m., 8:00 p.m.
- S4: 3:00 a.m., 9:00 a.m., 3:00 p.m., 9:00 p.m.
- S5: 4:00 a.m., 10:00 a.m., 4:00 p.m., 10:00 p.m.
- S6: 5:00 a.m., 11:00 a.m., 5:00 p.m., 11:00 p.m.

All communication modules will be assigned a schedule shortly after the module is provisioned and communicating to the network.

Response to 2.2.5.   Yes, this is correct.

2.3.   Witness Rene F. Garcia states in Exhibit SCG-17-R at RFG-8, lines 12-19:

The AMI communication network will include nearly 4,600 DCUs by TY 2019 across the SoCalGas service territory. The DCUs receive the meter reading data from the MTUs installed on each meter. The data is encrypted and transmitted wirelessly across a licensed frequency from the MTU to the DCU. The specific DCU locations, referred to as design points, take into account the location of the approximately six million meters, the topography of the surrounding area, and the influence of the built environment on the transmission of the radio signal. DCUs can be placed within a 500-foot radius of a design point. Most MTUs will communicate with at least three DCUs.

2.3.1.   Please confirm that the DCUs transmit data from the MTUs at least every 15 minutes although some DCUs may transmit data more frequently than every 15 minutes.

2.3.2.   Please confirm that the DCUs transmit the encrypted data packets from the MTUs to the Head End ("HE") system using Verizon and AT&T cellular systems and, in some cases, ethernet connections.

2.3.3.   Please confirm that it takes approximately 15 minutes for data from an MTU to be transmitted through the DCUs to the HE.

Utility Response 2.3:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows.

Response to 2.3.1.   Yes, this is correct.

Response to 2.3.2.   Yes, this is correct.

Response to 2.3.3.   Yes, this is correct.

2.4.   Witness Rene F. Garcia states in Exhibit SCG-17-R at RFG-8 to RFG-9, lines 28-5:

The third component of the infrastructure includes the AMI Information Technology (IT)systems, including the Head End (HE) and the Meter Data Management System (MDMS). Meter reading data from the MTU is communicated to the DCUs and then transmitted to these systems.

and also states in Exhibit SCG-17-R at RFG-20, lines 6-8:

The HE software collects and processes meter data and pressure alarms and other data needed to help AMI support groups operate and manage the AMI network.

2.4.1.   Please confirm that the HE collects the meter data for all nearly 5.9 million meters that have been added to the AMI system from the DCU and decrypts the data, identifies duplicate data collected from more than one DCU, and verifies the validity of the data by identifying any inconsistencies in the duplicate data and confirming the MTU identifier.

2.4.2.   Please confirm that the HE also identifies any problems or failures that might occur with the individual DCUs.

2.4.3.   Please confirm that the HE converts the hourly index counts transmitted from the MTUs into hourly readings of cubic feet of gas consumed.

2.4.4.   Please confirm that it takes approximately 15 minutes to process and validate hourly meter reads received in the HE and transmit it to the MDMS system although data from the HE is held in staging tables until uploaded into the MDMS system.

2.4.5.   Please confirm that the processed and validated hourly meter reads received from the HE and held in the staging tables are uploaded to the Meter Data Management System ("MDMS") four times per day at 05:00 a.m., 11:00 a.m., 3:00 p.m., and 11:00 p.m.

2.4.6.   Please confirm that approximately 40 percent of the meters have had 100 percent of their data for the previous metering day uploaded to the MDMS system at 05:00 a.m.

2.4.7.   Please confirm that approximately 90 percent of the meters have had 100 percent of their data for the previous metering day uploaded to the MDMS system at 11:00 a.m.

2.4.8.   Please confirm that all meters have had 100 percent of their data for the previous metering day uploaded to the MDMS system as of 3:00 p.m.

Utility Response 2.4:
SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows.

Response to 2.4.1.   Yes, this is correct.

Response to 2.4.2.   The Head End (HE) system identifies problems or failures that might occur with the individual DCUs.

Response to 2.4.3.   For an individual MTU's transmission, the HE only stores the anchor reads and the 11 incremental changes. The HE does not store MTU reads or hourly usage data (the subtraction of one hour's meter read from the next). The MDMS stores MTU reads (converted from the 11 incremental deltas) and hourly usage. When the interface process loads HE data into the MDMS, that process transforms the data from incremental deltas (stored in the HE) to MTU reads and hourly usage.

Response to 2.4.4.   Once data is in the HE, every 15 minutes the data is copied to staging tables. Four times daily (per the schedule outlined in Question 2.4.5), the data in these staging tables are validated and loaded into the MDMS.

Response to 2.4.5.   Yes, this is correct.

Response to 2.4.6.   Yes, this is correct for those MTU's that have successfully transmitted their data.

Response to 2.4.7.   Yes, this is correct for those MTU's that have successfully transmitted their data.

Response to 2.4.8.   Yes, this is correct for those MTU's that have successfully transmitted their data.

2.5.   Witness Rene F. Garcia states in Exhibit SCG-17-R at RFG-20, lines 8-9:

The MDMS software is the system of record for AMI meter reads, gas usage, and MTU tamper alerts.

2.5.1.   Please confirm that the MDMS system holds the hourly meter reads in terms of cubic feet of gas usage for all meters that are included in the AMI system, currently estimated as nearly 5.9 million meters.

2.5.2.   Please confirm that the MDMS provides the hourly meter gas usage reads to the CIS system when this data is requested for use in preparing customer bills.

2.5.3.   Please confirm that the MDMS provides the hourly meter gas usage reads to other systems, for example, MDMS provides data to MyAccount when this data is requested by customers online.

2.5.4.   Please confirm that once a day at 5:00 p.m. the MDMS system uploads to the Data Warehouse a complete set of hourly meter reads for the previous Gas Measurement Day for all of the nearly 5.9 million meters that are included in the AMI system.

Utility Response 2.5:

SoCalGas objects to this request under Rule 10.1 of the Commission's Rules of Practice and Procedure to the extent it seeks the production of information that is neither relevant to the subject matter involved in the pending proceeding nor is likely reasonably calculated to lead to the discovery of admissible evidence. Subject to and without waiving the foregoing objection, SoCalGas responds as follows.

Repsonse to 2.5.1.   Yes, the MDMS is the system of record for MTU reads and hourly usage data.

Repsonse to 2.5.2.   Yes, when requested, the MDMS will provide the 3:00 AM meter read (or MTU read) for those meters being billed. Even though the MDMS stores hourly usage, it is CIS that performs the consumption calculation for billing purposes.

Repsonse to 2.5.3.   Yes, when requested, the MDMS will provide the requested customer's usage to MyAccount.

Utility Response 2.5 Continued:

Repsonse to 2.5.4.   Daily, the Data Warehouse initiates several load processes that transfers hourly reads and usage data (in cubic feet, not therms) to the Data Warehouse. This process is complete by 5:00 PM.

2.6.   Regarding the response to SCGC-01, Q.1.4.1, which states "Existing data set holds advanced meter interval data only for meters with AMI modules installed. Data is not available for customers who have opted out of AMI or for customer meters that have yet to be converted to AMI."

    2.6.1.   Does the existing data set holding the "big data volumes generated from Advanced Meter (AM) interval data" referred to in Witness Christopher Olmsted states in Workpaper SCG-26-CWP at page 193 of 871 contain data from all core customer meters that are currently included in the AMI system?

    2.6.2.   Given the statement of witness Rene F. Garcia in Exhibit SCG-17-R at RFG-20, lines 8-9: "As of June, 2017, nearly 5.9 million meters have been retrofitted with an MTU," would the existing data set hold AMI data for nearly 5.9 million customer meters?

Utility Response 2.6:

Response to Q.2.6.1: Yes

Response to Q.2.6.2: Yes

2.7.   Regarding the response to SCGC-01, Q.1.4.3, which states "the AM database is uploaded once per day at 5:00 PM with data from the previous calendar day."

    2.7.1.   Is the AM database uploaded to the "Data Warehouse" once per day at 5:00 p.m.?

    2.7.2.   If the answer to the previous question is "no," please state what database to which the AM database is uploaded.

    2.7.3.   Is the AM database available to be queried within the Data Warehouseas part of the ICDA programs??

    2.7.4.   If the answer to the previous question is "no," please identify the databases and the location(s) of those the data bases which will be queried by the ICDA programs.

Utility Response 2.7:

Response to Q 2.7.1: Please see the response to Question 2.5.4.

Response to Q 2.7.2: See response to 2.7.1.

Response to Q2.7.3: Yes.

Response to Q 2.7.4: See response to 2.7.3.

2.8.   The response to SCGC-01, Q.1.4.5, states: "The data base containing the AM interval data does not contain information related to the identity of the entity that procures gas on behalf of our customers."

2.8.1.   Does the CIS database contain information identifying the entity that procures gas on behalf of core customers?

2.8.2.   If the answer to the previous question is "no," please identify the database that contains information identifying the entity that procures gas on behalf of core customers?

2.8.3.   Has the CIS database been uploaded to the Data Warehouse?

2.8.4.   If the answer to the previous question is "yes," please state how frequently the CIS database is uploaded to the Data Warehouse?

2.8.5.   Can the CIS database be queried simultaneously with the AM interval data within the Data Warehouse database/programming environment?

Utility Response 2.8:

Response to Q 2.8.1: Yes.

Response to Q.2.8.2: See response to 2.8.1.

Response to Q. 2.8.3: Yes, but only particular categories of data needed for analytics is uploaded from the CIS database Not all data from CIS is in the Data Warehouse.

Response to Q. 2.8.4: A daily upload of the prior day CIS data occurs for master data and transactional data (bills, payments, service orders, etc.) and a monthly upload occurs for revenue data.

Response to Q.2.8.5: No, CIS does not contain AM interval data. Data Warehouse was created for the purposes of analytics.

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2.9.   Witness Christopher Olmsted states in Workpaper SCG-26-CWP at page 193 of 871 regarding ICDA:

Upon implementation of this integrated data solution business units in scope will have the following opportunities to realize the following benefits:
•Improved analytics around inaccurate bills, process billing, exceptions/resolutions (failed edits) with the opportunity to reduce the number of monthly billing exceptions
•Increase in paperless billing rate

2.9.1.   Is the CIS currently used to prepare customer bills?

2.9.2.   If the answer to the previous question is "no," please state what system is used to prepare customer bills.

2.9.3.   If the ICDA is to improve the billing systems as described in the above quote would the ICDA utilize information from the CIS that is uploaded into the Data Warehouse?

2.9.4.   How frequently would the CIS data be uploaded to the Data Warehouse in order to enable the ICDA to improve the billing systems?

2.9.5.   If the ICDA would not utilize information from the CIS that is uploaded into the Data Warehouse, please describe what databases that the ICDA would access to improve billing functions without utilizing information from the CIS and state what programming environment the ICDA would use to complete its improvement of the billing functions.

Utility Response 2.9:

Response to Q.2.9.1: Yes.

Response to Q 2.9.2: See response to Question 2.9.1.

Response to Q.2.9.3: SoCalGas objects to this request on the grounds that it misconstrues the testimony in Exhibit SCG-19-R at MHB-73 to MHB-74. Subject to and without waving this objection, SoCalGas responds as follows: The testimony says ICDA will improve the "analytics around inaccurate bills, process billing, exceptions/resolutions (failed edits) with the opportunity to reduce the number of monthly billing exceptions," not the billing system itself.

Response to Q.2.9.4: SoCalGas objects to this request on the grounds that it misconstrues the testimony in Exhibit SCG-19-R at MHB-73 to MHB-74. Subject to and without waving this objection, SoCalGas responds as follows: See response to Question 2.8.4.

Response to Q.2.9.5: See response to Q.2.9.3 above.