EXH. ARS-1T
DOCKET UE-220701
WITNESS: ALLISON R. SAINS

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

ALEXANDER AND ELENA ARGUNOV, THOMAS AND HEIDI JOHNSON, CHAD AND VICTORIA GROESBECK **Complainants,** **v.** **PUGET SOUND ENERGY,** **Respondent.**	**Docket UE-220701**

PREFILED RESPONSE TESTIMONY (NONCONFIDENTIAL) OF

ALLISON R. SAINS

ON BEHALF OF PUGET SOUND ENERGY

FEBRUARY 9, 2023

PUGET SOUND ENERGY

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I. INTRODUCTION

Q. Please state your name, business address, and position with Puget Sound Energy.

A. My name is Allison R. Sains, and my business address is Puget Sound Energy, P.O. Box 97034, Bellevue, Washington 98009-9734. I am employed by Puget Sound Energy ("PSE") as Advisor Application Configuration Analyst in the Meter Systems & Data Analytics group.

Q. Have you prepared an exhibit describing your education, relevant employment experience, and other professional qualifications?

A. Yes, I have. It is Exhibit ARS-2.

Q. What are your duties as Advisor Application Configuration Analyst for PSE?

A. I am responsible for requirements/system analysis, configuration, and testing of Landis+Gyr ("L+G") meter data management software. I served as a lead PSE resource on the Advance Metering Infrastructure ("AMI") project to replace two million gas and electric Automated Meter Reading ("AMR") meters. Among

other duties, I am responsible for integration, configuration, and testing of the meter data management system ("MDMS") with SAP for meter master data, read validation, and meter event management. I also provide ongoing support of meter data issues and service order issues. I have a strong working knowledge of SAP, having also worked as an SAP Senior Application Configuration Analyst during and prior to joining PSE.

Q. What topics are you covering in your testimony?

A. My testimony provides an overview of the L+G MDMS in response to allegations made in Ms. Argunov's testimony. I describe how the MDMS stores meter reads and provides them to SAP for billing. As discussed in more detail in my testimony, PSE has a robust MDMS that operates in accordance with industry standards.

II. PSE USES THE METER DATA MANAGEMENT SYSTEM IN ACCORDANCE WITH INDUSTRY STANDARDS TO STORE, VALIDATE AND MANAGE METER READS

A. The Meter Data Management System Receives Energy Usage from Customer Meters and Records and Communicates Reads to SAP For Billing

Q. Please provide a high-level overview of how energy usage is recorded, stored and billed.

A. As AMI meters are installed in the field, reads are captured and sent via the L+G network to the Command Center head end system. Electric residential meters

capture daily kWh delivered to the customer and a daily kilowatt ("kW") peak demand.[1] Daily reads are captured at midnight. Interval reads are captured by the meter at either 15-minute or 60-minute intervals. Command Center collects the data and sends to the MDMS on a scheduled basis, approximately every six hours. Once received into MDMS, the system completes validation, estimation and editing ("VEE") processing and stores the reads for each meter. For each billing cycle, SAP will request reads for specific meters and dates from MDMS. In response to that request, MDMS provides the information. SAP completes the billing processing by determining the energy consumption for the billing period (difference between two daily reads).

Q. Please describe the MDMS and how it is used by PSE.

A. PSE's MDMS system is provided by L+G. The system extracts read information from the head end read files and completes VEE processing. The system also stores information on event flags from the meters and generates required follow-up activity to SAP for field work/research. MDMS also sends data to downstream reporting systems for analytics and billing reads to SAP.

[1] Peak daily demand is the highest energy demand for that day (midnight to midnight).

Q. Please describe how AMI and AMR meters interact with the MDMS.

A. Both AMI and AMR read data is stored in the single MDMS system. AMI meters use an improved "mesh" network communication process, whereas the AMR meters use point to point communication. The mesh network allows meters to communicate with each other to pass read information along to the network resulting in improved read receipt by PSE systems. In addition, AMI meters are capable of two-way communication, which allows PSE to send commands to the meter and receive responses (remote connect/disconnect, meter pings, "on demand" reads etc.), whereas AMR meters do not have the two-way communication capability. The meters send data to their respective head end systems, which then communicate with MDMS.

Q. What is the role of L + G in this process?

A. L+G manages the meter communication network, hosts the head end system and provides the MDMS application software.

Q. What is the role of the Command Center?

A. The Command Center is the head end system that communicates directly with the AMI meters. In addition to capturing reads, it can send commands to the meters. When reads are received, the Command Center collects the data into files that can be loaded to the MDMS system. It also collects information about meter events/flags which are also sent to MDMS via daily files.

Q. What are the different types of files?

A. I will limit my discussion to electric meters, since there are no gas meters at issue in this case. Daily files for electric meters contain the midnight aligned reads, obtained each night at midnight and showing energy usage in kWh on a daily basis as well as daily peak demand reads in kW. Additionally, multiple files per day are received with the interval data. The interval data is captured every 15 minutes and received by MDMS four times per day. The interval data records usage in kWh for electric residential and commercial meters. There are also daily files of meter events.

Q. What types of meter events might be included in the daily files of meter events?

A. Events are generated by the AMI meters for outages (power up, power down), exceeding temperature thresholds, memory failures, clock/time errors, voltage issues, tampering etc. Some events are used for reporting only and others identify mechanical issues that require field personnel to check the meter.

B. Customers Can View Interval Load Data To Monitor Usage but Billing Is Based on Daily Reads at a Point in Time at the Beginning and End of the Billing Cycle

Q. Regarding the MDMS's ability to store and process interval load data, does PSE currently use the interval load data that is stored and processed by the MDMS for billing residential electric customers?

A. No. Only the daily midnight aligned point in time reads are used for billing purposes.

Q. What does PSE do with the interval data?

A. Interval data is provided to customers to help understand their daily energy consumption. It is also used for analytics including load research and forecasting. In the future, interval data will be used for time of use billing, measuring the impact of demand response programs and other energy initiatives. But this functionality is not currently in use.

Q. What energy consumption data does PSE use for billing residential customers?

A. For electric residential meters, the energy consumption is calculated by determining the difference between two daily kWh delivered point in time reads. Specifically, the kWh read at the beginning of the billing cycle is subtracted from the kWh read at the end of the cycle.

Q. You previously mentioned that daily reads stored in MDMS include daily peak demand in kW in addition to energy usage in kWh. Were the customers in this case billed based on daily peak demand (kW)?

A. No, MDMS stores daily peak demand in kW along with daily kWh usage, but daily kW demand was not used for billing the customers in this case. Please see the Prefiled Response Testimony of Kristina McClenahan, Exh. KM-1T, regarding the SAP billing for these customers.

Q. Is PSE following industry standard by billing residential customers using kWh reads?

A. Yes. This is consistent with publications from the U.S. Energy Information Administration, which states as follows:

> The amount of electricity that a power plant generates or an electric utility customer uses is typically measured in kilowatthours (kWh). One kWh is one kilowatt generated or consumed for one hour. For example, if you use a 40-Watt (0.04 kW) light bulb for five hours, you have used 200 Wh, or 0.2 kWh, of electrical energy.[2]

[2] US Energy Information Administration. https://www.eia.gov/energyexplained/electricity/measuring-electricity.php

Q. Are you aware of any requirement that mandates PSE use interval data for billing residential customers?

A. I am not aware of any such requirement.

Q. How is the billing process initiated for a residential meter?

A. Meters are grouped into 21 separate billing cycles spread throughout the month. Three days before a cycle is to be billed, SAP sends a request to MDMS for reads for the meters in the cycle. The request includes the meter number, unit of measure and date wanted read. For residential electric customers such as the customers in this case, the unit of measure is kWh delivered. MDMS provides the read information to SAP on the billing date. If a meter has validation flags (meter reset activity/dial going backwards) or if reads have exceeded the estimation threshold, MDMS will not send the read back to SAP. At this point, SAP will either complete billing using the read information provided or begin its estimation process.

C. MDMS Uses an Estimation Process When it Does Not Receive a Read From a Meter

Q. What happens if PSE does not receive a read from a meter?

A. When daily reads are not received from a meter, the MDMS VEE process will complete an estimation using a select set of rules:

- One week old usage for the same meter, customer, location, day type (weekday vs. weekend/holiday)
- Two week old usage for same meter, customer, location, day type (weekday vs. weekend/holiday)
- Eight day old usage for same meter, customer, location, day type (weekday vs. weekend/holiday)
- One week old estimated usage for same meter, customer, location, day type (weekday vs. weekend/holiday)
- Current good read algorithm. The process determines energy consumption between two good reads and uses previous usage patterns to determine how to spread energy usage across the days that were missing reads.

Q. Does this estimation protocol apply to interval data?

A. No. None of the estimations use interval data in any way. Also, the interval data viewed by the customer does not use these estimations. Interval data has its own unique set of estimation routines.

Q. How long do the MDMS estimations continue?

A. MDMS is configured by PSE to estimate for six consecutive days. As of the seventh day, MDMS stops estimation and flags the day as ETO (Estimation Threshold Overflow). No usage is determined for that day.

Q. Is the MDMS estimation process distinct from the SAP estimation process for billing purposes?

A. Yes. SAP has a separate protocol for estimations for billing purposes. Please see the Prefiled Response Testimony of Kristina McClenahan for further discussion regarding the SAP estimation process.

D. Response to Certain Exhibits Sponsored by Ms. Argunov

Q. Please explain the MDMS reads shown on Exh. EACCH-6C.

A. It appears that the MDMS reads referenced in EACCH-6C are the daily reads captured in MDMS. The meter reports the cumulative read captured at midnight and once received, MDMS completes the VEE process which calculated the daily usage as the difference between the current daily read and the prior daily read.

Q. What concerns do you have with Exh. EACCH-6C?

A. I have several concerns. First, the Interval Load values that are used in this exhibit prepared by Ms. Argunov appear to take the highest 15-minute interval usage for the day (the Interval Max Value) and then multiply that number by four to get an hourly load value. This is not consistent with how PSE records or measures energy usage for these accounts.

In addition, Ms. Argunov states that the billing summary does not match Meter Read, MDMS and Interval Data. There are several reasons for that. First, I

noticed in the EACCH-6C that the date cutoffs are not quite correct. MDMS reports the read information as of the midnight capture date but that will actually represent usage from the prior day. The SAP statement adjusts for this and will report the June 14 midnight read as the June 13 usage, which is correct. The read information in EACCH-6C should be referencing the MDMS usage from date range of August 13, 2021 through June 14, 2022.

Also, during the network outage that occurred from December 2021 to January 2022, MDMS did not receive daily reads, so daily usage could not be calculated. During that time meters continued to capture read information accurately, but the communication to MDMS is not captured. There was valid usage during this time that will not be included when only using the MDMS daily usage values, but that usage will be included on the billing summary.

Q. Ms. Argunov seems to claim that there is a discrepancy between interval load versus billing usage. How do you respond?

A. As previously discussed, discrepancies between the daily interval-reads and the billing usage amount can occur when the meter is not able to communicate with the MDMS, as was the case during the network outage in December 2021 to January 2022. The meter usage, which is used for billing, is the accurate usage as captured by the meter.

Q. Regarding Exh. EACCH-7, in which PSE objected to providing all codes, formulas, mathematical rules and scripts generating "Meter Read Summary" that PSE uses for billing purpose, can you explain why PSE cannot provide all of the information requested?

A. The L+G MDMS application is proprietary and confidential. Programming logic including formulas, mathematical rules and scripts are obfuscated (made unreadable by the vendor).

Q. Ms. Argunov claims that "[t]he MDMS required special procedures for interval data processing and this is not something PSE can 'work around' and/or chose not to follow those mandatory steps." How do you respond to this statement?

A. I disagree with Ms. Argunov's implication that PSE is not following procedures for MDMS. PSE follows the L+G procedures in implementing and operating the MDMS. PSE's implementation of the L+G MDMS system includes validation, estimation and editing for all meter read data.

III. CONCLUSION

Q. Does that conclude your prefiled response testimony?

A. Yes, it does.