

**BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION****Docket UE-220701  
Puget Sound Energy  
Argunov, et al. v. Puget Sound Energy****COYOTE CREEK HOMEOWNERS DATA REQUEST NO. 003:**

Please provide All Programmed Settings, Calculations (formulas, rules etc.), and other technical codes with short and informative descriptions all meters with respect to Thomas and Heidi Johnson, PSE account number 220028367005 and 220024547758

**Response:**

Below is the requested information for Puget Sound Energy ("PSE") account information:

| PSE Acct     | Meter Number | PSE MID | Fm | CLASS | Meter Description  | Program Code | Register Data Enabled in SAP <sup>1</sup> |
|--------------|--------------|---------|----|-------|--------------------|--------------|---|
| 220028367005 | X157749635   | 9999756 | 2S | CL200 | AMI, FOCUS AXRe/SD | 501          | +kWh energy delivered                     |
| 220024547758 | X165444844   | 9999756 | 2S | CL200 | AMI, FOCUS AXRe/SD | 501          | +kWh energy delivered                     |

Program Code 501 is a setting to deliver data from the meter to the headend system (Landis+Gyr Command Center™ system) for the following quantities:

- +kWh energy delivered
- -kWh energy received
- KW power demand
- A phase voltage minimum, average, and maximum, data collected nightly.

Data is displayed on the meter LCD screen for manual reading for these items:

- 888 Segment check
- DIS Service disconnect switch (opened or closed)

<sup>1</sup> Register Data Enabled in PSE's Billing system, SAP

- 001 +kWh energy delivered register (also called 'present read')
- 002 -kWh energy received register (also called 'present read')

For this residential meter, there are a total of two energy registers, and one demand register, which could be enabled in SAP, if they were required. At present, only the '+kWh energy delivered' register is enabled.

- The '-kWh energy received' register is not enabled in SAP.
- **The KW demand register is not enabled in SAP.**
- **The meter's voltage measurements are not enabled in SAP.**

Only the SAP enabled '+kWh energy delivered' register would have data from this meter sent to the billing system.

The following is a summary of the Chapter 3, 'Meter Theory of Operation' from the ("Landis+Gyr") L+G Endpoint user Guide, pg. 22 & 23, 98-2411 Rev AB. For the purpose of this response, the formula used is summarized here.

The meter has a measurement processor and analog to digital convertor, which multiplies voltage and current samples, and integrates these over a sample period to compute watts every 250 ms. A real time clock runs off an internal precision crystal to provide accurate time for the measurement processor.

$$WATT_i = \frac{1}{kT} \int_{\tau}^{\tau+kT} I_i V_i dt$$

**Figure 3 - 2. Watt Calculation**

In General:

Following is the energy and power formula for reference for FOCUS AX/AXe meters (*voltage* times *current* per each phase summed together) including this meter:

Calculations for a single-phase Form 2S Focus AXe meter

**Energy (kWh) = Power (kW) x time (hours), = [V x (I1+I2)] x time, where**  
V is the voltage between leg 1 and leg 2 of a single-phase service, also called 'A phase' voltage for a single-phase service.

I1 & I2 are the two current legs summed together for single-phase service. A single-phase meter form like the 2S in this case implement the above equation.

Attachment A to PSE's Response to Coyote Creek Homeowners Data Request No. 003 is a PDF copy of the Program 511 Configuration File for meter number X165444844. See Attachment A to PSE's Response to Coyote Creek Homeowners Data Request No. 002 for the configuration file for meter number X157749635.

### Abbreviations

AMI – advanced meter infrastructure

AMR – automated meter reading

AXRe – L+G Focus model revenue meter<sup>2</sup>

CL – class, meter rating in amps

Fm – meter form factor

ms - milliseconds

MDMS – PSE's meter data management system

MID – material identification code

NCM – non-communicating meter (also called 'Opt Out meter' without radio capability)

SAP - PSE's customer information enterprise system

SCH – rate schedule or tariff

SD – disconnect switch (internal part of the mete

<sup>2</sup> L+G Focus model revenue meters meet or exceed these metering standards:

ANSI C12.1 for electric meters.

ANSI C12.10 for physical aspects of watt hour meters.

ANSI C12.19 Utility industry end device data tables.

ANSI C12.20 for electricity meters, 0.2 and 0.5 accuracy classes.