

Austin Energy

PRIMARY SERVICE REQUIREMENTS

For

RADIAL UNDERGROUND PRIMARY SERVICES 600 AMPS at 12.5KV

The point of service shall be the Austin Energy (AE) line side cable termination in the pad mounted outdoor PRIMARY METERING CABINET(s) (PMC) provided by the customer. Customers using this PMC may require an additional overcurrent protection device supplied by AE at the customer's expense.

The Customer shall provide, install, own, and maintain **ALL** equipment after the point of service including the Primary Metering Cabinet, load side primary cable, transformers, conduit, and pull boxes.

If at any time, damage or failure occurs on any part of the customer's distribution system, Austin Energy will not make any repairs.

The PMC shall meet all applicable codes, standards and specifications such as, but not limited to the following standards:

ANSI 57.12.28 IEEE Standard for Pad-Mounted Equipment-Enclosure Integrity
ANSI C37.71 and C37.73 IEEE Standards which specify test procedures and sequences, for the load interrupter switches, fault interrupters, and complete switchgear assembly.

The equipment covered by this shall consist of a single enclosure that includes three separate compartments; a line side compartment, a metering compartment, and a load side compartment. The PMC shall contain a 15KV air insulated gang operated load interrupter switch capable of interrupting 600 amps. The PMC shall also contain necessary metering accessories to form a single coordinated enclosed assembly with a common internally connected main 15KV bus and ground bus assembly.

Under no circumstances shall the Customer purchase any equipment until all particulars of this document have been satisfied and written notification is received from AE.

Customer will provide and install:

Primary Metering Cabinet(s) (PMC) shall include three separate padlockable compartments. The line side compartment shall contain a line side cable terminating point. The line side compartment shall have two per phase deadbreak

elbow connected components enclosed in an air insulated compartment. The PMC shall contain a three phase gang operated load interrupter switch which shall be non-removable and padlockable. The load interrupter switch shall be a 600 amp three pole S&C Mini-Rupter switch. The metering compartments shall contain insulated current and potential transformers (CT's and PT's). The load side compartment shall contain a load side terminating point. The design shall facilitate the placing of grounds on the line side during AE maintenance operations. The cabinet shall be grounded in accordance with National Electric Code. The line side and metering compartment shall be padlockable, equipped with a sealing hasp, and accessible for Austin Energy. The load side compartment is to be accessed by the customer. AE and Customer compartments shall be separated and on opposite sides of the PMC in a single cabinet design.

A dead front compartment with 600 amp two per phase deadbreak bushing terminations shall be utilized for AE line side cable terminations. Each bushing shall have a parking stand level with the bushing. Bushing spacing shall accommodate the use of feed through bushings for elbow type lighting arresters. Line side cable termination height shall be 36 inches minimum above finished concrete pad. Line side bushing shall be designed per applicable portions of IEEE, ANSI, and NEMA industry standards including IEEE 48 and IEEE 386.

To facilitate cable pulling and installation of cable terminating devices, provisions shall be made for full access for easy positioning and removal of cable pulling devices and access without interference from structural members.

The Customer shall install at a minimum two 5 inch conduit, with pull strings centered on the AE line side termination compartment for AE primary conductor. All underground conduits entering the PMC shall have bell ends 1 inch above the finished concrete slab.

All doors shall be capable of being opened to a 90-degree position and held in that position with sturdy, positive -latching door holders.

The Customer shall provide and install fused potential transformers (PT's) and current transformers (CT's) in accordance with AE specifications. The customer shall also furnish 1 spare set of fuses, to be stored in the metering compartment of the PMC.

- a) Potential Transformer for 12470Y/7200 service shall be 60:1 ratio 110 kV BIL, 0.3% meter accuracy: GE Style number 765X023011 or equivalent.
- b) CT's shall be meet ANSI C12.11 and C57.13, be 15KV rated, and have 0.3% metering accuracy with a rating factor of 3.0 at (55°C).The CT's shall be sized so that CT ratio is properly sized for the minimum and maximum load current as outlined by the following criteria. The CT shall be sized so that the min. load current is greater than or equal to 10 percent of the first value of the

CT ratio. The CT shall also be sized so that the max. load current is less than or equal to the product of the rating factor (RF) times the first value of the CT ratio. For example a 200:5 CT with a RF of 3 is suitable for a min. load current of 20 amps and max. load current of 600 amps.

The CT's and PT's shall be wired at the factory within the metering compartment to separate current and potential terminal blocks. The current terminal block shall be six terminal shorting type. The CT and PT terminal blocks shall be on the side of the cabinet located in a NEMA 3R rated padlockable junction box mounted on the right side exterior wall of the PMC facing the line compartment. All wiring shall be #10 AWG copper and terminated with insulated ring type compression terminators.

The wiring shall conform to the AE standard color code as per listed below:

Phase Identification Current	Terminal Block Position (Left to Right)	Wire Color Code
Current (AØ)	1	Red
Current Return (AØ)	2	Red
Current (BØ)	3	Black
Current Return (BØ)	4	Black
Current(CØ)	5	Green
Current Return (CØ)	6	Green

The Potential Transformer terminal block shall be a four terminal type. The wiring shall conform to AE standard color code as listed below:

Phase identification Voltage	Terminal Block Position (Left to Right)	Wire Color Code
Voltage (AØ)	1	Orange
Voltage (BØ)	2	Yellow
Voltage (CØ)	3	Blue
Voltage Return (Ground/Neutral)	4	White

A clearance of at least five (5) feet must be maintained on each side of the PMC. Additionally a clearance of ten (10) feet must be maintained in front of any switch.

The customer shall mount a 13 Terminal Meter socket with 10 pole test switch on a separate stand installed on a pad adjacent to the PMC pad similar to Appendix C-Exhibits Figure 1-11a and 1-11c, located in Austin Energy's Design Criteria Manual, for secondary metering installed in the secondary compartments of padmounted transformers. The meter shall be installed 48" minimum to 72" maximum to the center of the meter above finished concrete grade. A 1.5 inch

conduit shall be provided for the CT and PT wiring from the junction box mounted on the PMC to the meter socket. AE shall wire the Test switch as per AE color code below:

Phase Arrangements Test switch	Switch Handle Color Code	Switch Pole No. (Left to Right)	Wiring Color Code To Switch And Socket
Current (AØ)	Red	1	Red
Current Return(AØ)	White	2	Red
Voltage(AØ)	Orange	3	Orange
Current(BØ)	Black	4	Black
Current Return(BØ)	White	5	Black
Voltage(BØ)	Black & White	6	Yellow
Current(CØ)	Green	7	Green
Current Return(CØ)	White	8	Green
Voltage(CØ)	Blue	9	Blue
Voltage Return (Ground/Neutral)	White	10	White

Should the Customer request the Interval Data recorder meter, a telephone service shall be provided to the meter socket for AE’s use. This service shall be coordinated with AE Key Accounts and AE Metering.

Should the Customer request Pulse Output meter, a contract must be entered into and a fee paid. This service shall be coordinated with AE Key Accounts and AE Metering.

The Customer will provide and install all PMC concrete foundations, primary conduits and pull boxes from the Austin Energy riser pole or switchgear to the Primary Metering Cabinet. Austin Energy inspectors must accept (this duct structure) in accordance with the City of Austin Utilities Criteria Manual and Austin Energy furnished plans. It shall be the Customers responsibility to ensure the conduit and PMC are properly aligned for correct cable termination.

The Customer shall submit two (2) copies of detailed shop drawings to AE’s Customer Service planning for approval. The drawings shall include:

- a) A detailed one-line diagram of the circuit configuration of the PMC, showing the switch location.**
- b) A detailed drawing on the AE line termination configuration.**
- c) A detailed drawing on the metering compartment and load side termination compartment.**
- d) PT and CT mounting and wiring configuration with manufacturer technical data sheets.**
- e) Professional Engineer licensed in the State of Texas approved 1-line diagram of the PMC and electrical distribution system.**
- f) Nameplate rating label.**

g) Manufacturer certified test reports shall be provided to AE Design and Metering for PT'S and CT's prior to energizing the PMC.

The AE approval may take up to (20) working days. The AE construction drawings will not be released to the customer prior to the approval by AE of the shop drawings.

Austin Energy will provide, maintain, and install:

- The 12.5KV primary cable to the Primary Metering Cabinet from the Austin Energy riser pole or switchgear.
- The Austin Energy primary cable terminations at the Primary Metering Cabinet.
- Austin Energy shall be responsible for maintaining AE meters. AE is not responsible for the PMC cabinet or switches in the PMC, metering equipment (CT's & PT's) and the Primary Metering Socket and Test Switch.

Austin Energy will provide the following information to aid in the customer's design of the customer owned distribution system:

- a) Primary service voltage with maximum and minimum +/- 10% variation from nominal is acceptable.
- b) Maximum possible fault currents available at the point of supply.
- c) Coordinating information relating to proposed protective equipment to be located on that portion of the Austin Energy distribution system so that the customer may specify the proper protective equipment for the customer owned distribution system. The overcurrent setting will be specified to the customer when the PMC is approved.
- d) Location of metering equipment.

Suggested Equipment Austin Energy suggests that the Customer consider a PMC as listed below or Equivalent:

- Elliot Industries Inc.'s catalogue number EPMRG-PMS -15-322P-E6-MR-VT/CT-D2011223, Drawing Number 2011-223-1R0, 2011-223-2R0, and 2011-223-3R0