Austin Energy

PRIMARY SERVICE REQUIREMENTS

For

RADIAL UNDERGROUND PRIMARY SERVICES
900 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) provided by the customer.

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 equipment shall contain a15KV SF6 insulated gang operated load interrupter switchgear on the line side with necessary metering accessories to form a single coordinated enclosed assembly with a common internally connected main 15KV bus and ground bus assembly, as shown in attachment 1.

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 the elbow connected components enclosed in an SF6 insulated, welded-steel tank, with a three position (open, close, and ground) three phase gang operated load interrupter switch and a

three pole fault interrupter which is initiated by a programmable overcurrent control. The number of line side switches and interrupters will be specified by AE design. The metering compartment shall contain through-bus air bushings to connect the metering compartment to the adjacent line side and load side compartments. The metering compartments shall also contain insulated current and potential transformers (CT's and PT's). The load side compartment shall contain a load side terminating point. The customer may purchase a PMC which includes a load side compartment with as many components (switches, interrupters, or relays) as needed to fulfill their needs, and in their choice of insulating medium. Any switches or fault interrupter installed on the load side compartments must be 3 phase gang operated operation. The load interrupter switches in the PMC shall provide viewing windows to allow visual verification of the switch blade positions. 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 compartment shall have a terminating section and an operating section that are on opposites sides of the enclosure. The line side and metering compartment shall be padlockable and accessible for Austin Energy. The load side compartment is to be accessed by the customer.

The line side compartment shall be accessible through the top of the enclosure through hinged roof lift up sections on both sides for convenient access to the operating and terminating sections. Each roof lift up section shall have a retainer to hold it in the open position, overlap the side panels, and have provisions for padlocking. The line compartment shall also contain a removable side panel to provide access to the elbows and cables and is also secured by the overlapping padlockable top.

Dead front 600 or 900 amp, as specified by AE Design, 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 double stacked T-body terminations. Line side cable termination height shall be 40 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.

On the AE line side termination compartment, the Customer shall install at a minimum two 5 inch conduits, with pull strings, centered in front of the line side terminations and set back 12" from the tank.

All underground conduits entering the PMC shall have bell ends 1 inch above the finished concrete slab.

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 an indoor type CT, 15KV rated, with 0.3% metering accuracy, and a rating factor of 1.0 at (55°C) with 1000:5 CT ratio. The CT shall be a bar type CT with tin plated copper bars molded into the cast resin insulation with one hole and one slot at each end.

The CT's and PT's shall be wired at the factory within the metering compartment to separate current and potential terminal blocks. The CT and PT terminal blocks shall be on the side of the cabinet located opposite the hinged side of the door. All wiring shall be #10 AWG copper and terminated with insulated ring type compression terminators.

The current terminal block shall be six terminal shorting type. 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 termination or operation section.

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 1/4-inch conduit shall be provided for the CT and PT wiring from 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 (A∅)	Red	1	Red
Current Return(A∅)	White	2	Red
Voltage(A∅)	Orange	3	Orange
Current(B∅)	Black	4	Black
Current Return(B∅)	White	5	Black
Voltage(B∅)	Black & White	6	Yellow
Current(C∅)	Green	7	Green
Current Return(C∅)	White	8	Green
Voltage(C∅)	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 locations of switches and fault interrupters.
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.**
h) **Manufacturer, model number, and data sheets on the overcurrent relays.**

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 programming the overcurrent settings in the overcurrent relay(s) on AE's line side compartment.

- Austin Energy shall be responsible for maintaining AE meters and metering equipment (CT's & PT's). AE is not responsible for the PMC cabinet or switches in the PMC.

- 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:

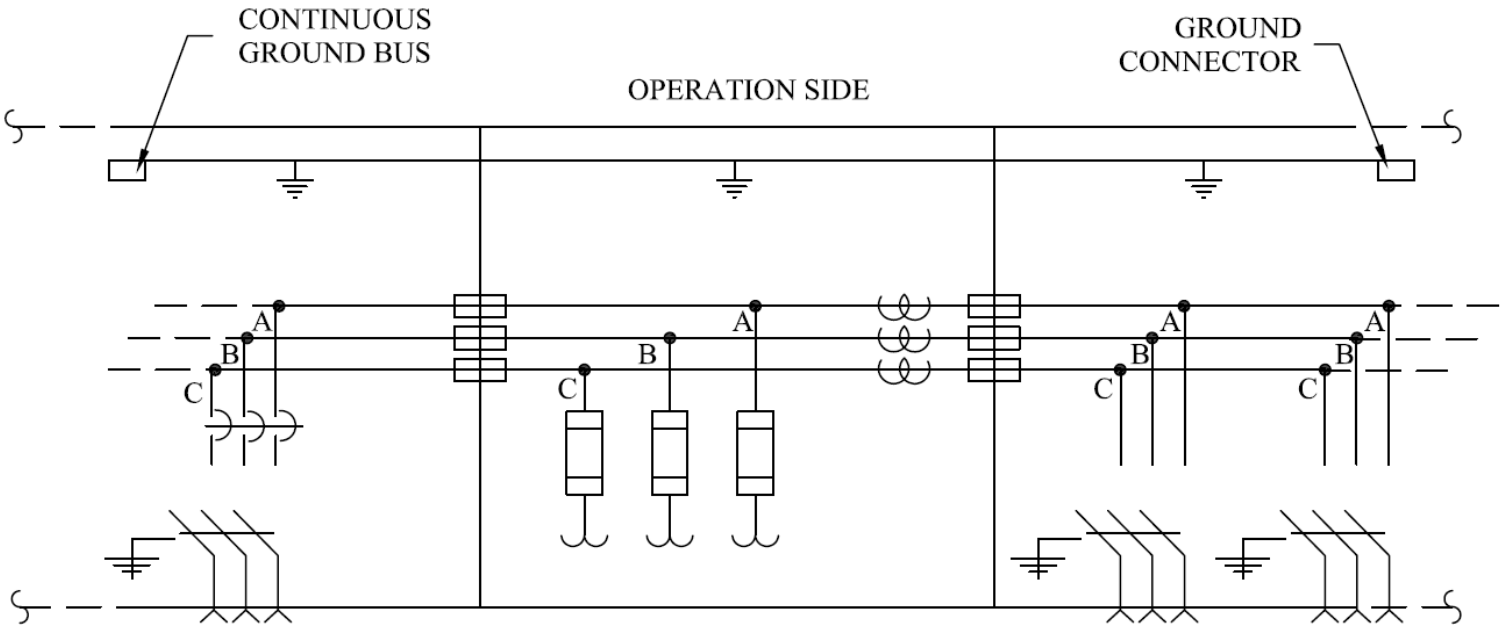
a) Primary service voltage with maximum and minimum +/- 10% variation from nominal is acceptable.
b) Maximum possible fault currents available at the point of supply.
c) Coordinating information relating to proposed protective equipment to be located on that portion of the Austin Energy distribution 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:

- S&C Electric Company's System VI Vista Switchgear

ATTACHMENT 1

CONNECTION DIAGRAM



Line Side Compartment
Accessed by AE;
Owned and Maintained
by Customer

Note: Line Side Compartment shall contain the number of terminating points and ampacity of terminating points as specified by AE Design.

Metering Compartment
Accessed by AE;
Owned and Maintained
by Customer

Load Side Compartment
Accessed, Owned, and
Maintained by Customer

Note: Load Side Compartment shall contain the number of terminating points, ampacity of terminating points, and protection as required by the Customer.