

CITY OF AUSTIN ELECTRIC
UTILITY DEPARTMENT
PURCHASE SPECIFICATION
FOR
PRIMARY METERING
CABINET,DISTRIBUTION,URD,3PH,600A,15KV,PADMOUNT

DATE	PREPARED BY	ISSUANCE/REVISION	APPROVAL PROCESS SUPV./MANAGER
08/15/19	Brantley Gosey	Issuance	

<i>REASON FOR REVISION</i>	<i>AFFECTED PARAGRAPHS</i>

This specification, until rescinded, shall apply to each future purchase and contract for the commodity described herein. Retain for future reference.

1.0 TABLE OF CONTENTS

1.0	TABLE OF CONTENTS	2
2.0	SCOPE AND CLASSIFICATION	3
3.0	SPECIFICATIONS	3
4.0	FUNCTIONAL REQUIREMENTS.....	3
5.0	PHYSICAL REQUIREMENTS.....	7
6.0	NAMEPLATES, DIAGRAMS, AND LABELS	9
7.0	QUALITY ASSURANCE AND TESTING.....	9
8.0	OTHER REQUIREMENTS	10

2.0 SCOPE AND CLASSIFICATION

- 2.1 The City of Austin Electric Utility Department, hereinafter referred to as Austin Energy (AE), requires a qualified manufacturer to provide a Primary Metering Cabinet (PMC) for revenue metering of the transformer load, located between the totalizing cubicle and feeder cubicles. The service shall be metered at 12.47 kV, 3 phase, 4 wire wye.
- 2.2 The manufacturer of this PMC shall have a minimum of 5 years of experience in the manufacture of Pad-mounted Metering Cabinets.

3.0 SPECIFICATIONS

- 3.1 The pad-mounted PMC shall conform to or exceed the applicable requirements of ANSI, IEEE, IEC, NESC, and NEC including, but not limited to, the following standards and codes, latest revision:
 - 3.1.1 IEEE C57.12.28 – Standard for Pad-Mounted Equipment – Enclosure Integrity
 - 3.1.2 ANSI Z535 – Standard for Design, Evaluation, and Use of Safety Signs, Colors, and Symbols
 - 3.1.3 AWS D1.1 – Steel Structural Welding Code
 - 3.1.4 IEC 62052-11 - Standard for Electricity Metering Equipment (AC)

4.0 FUNCTIONAL REQUIREMENTS

4.1 Primary Metering Cabinet

- 4.1.1 One (1) Primary Metering Cabinet (PMC) for revenue metering of the transformer load, located between the totalizing cubicle and feeder cubicles, shall be included. The service shall be metered at 12.47 kV, 3 phase, 4 wire wye. The PMC shall contain the following:

4.1.1.1 The fused Potential Transformer (PT's) for 12470Y/7200 service shall be 60:1 ratio, 110 kV BIL, 0.3% meter accuracy: GE Style number 765X123011 JVM5-AC or Complex Metering Engineer-approved equivalent. The manufacturer shall also furnish 1 spare set of fuses, to be stored in the metering compartment.

4.1.1.2 Three (3) metering accuracy class CT's, shall meet ANSI C12.11 and C57.13.6, be 15 kV rated and have 0.15% metering high-accuracy with a rating factor of 3.0 at (55^o C), General Electric Bus Style, or Complex Metering Engineer-approved equivalent. 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 minimum 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 maximum 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 an RF of 3 is suitable for a minimum load current of 20 amps and maximum load current of 600 amps. The CT's shall be ABB style #E-923A427G01 KON-11ER, 200:5 ratio or Complex Metering Engineer-approved equivalent.

4.1.1.3 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 pad-lockable junction box mounted on the right-side exterior wall of 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 /white

Current (BØ)	3	Black
Current Return (BØ)	4	Black/white
Current(CØ)	5	Green
Current Return (CØ)	6	Green/white

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

4.1.1.4 The manufacturer shall mount a meter enclosure with 10 pole test switch in a separate compartment of the PMC pad for secondary metering. The meter shall be installed 48" minimum to 72" maximum to the center of the meter above finished concrete grade. A 2-inch conduit shall be installed for the installation of fiber for AE communications. 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 enclosure. 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
Voltage (AØ)	Orange	1	Orange

Voltage (BØ)	Yellow	2	Yellow
Voltage (CØ)	Blue	3	Blue
Current (AØ)	Red	4	Red
Current Return (AØ)	White	5	Red
	Black	6	Black
Current (BØ)	White	7	Black
Current Return (BØ)			
Current (CØ)	Green	8	Green
Current Return (CØ)	White	9	Green
Voltage Return	White	10	White

4.1.1.5 The Manufacturer shall provide two (2) ION 8650 meters with Interval Data Recorders. The first ION 8650 will be used for primary revenue metering the incoming feed; the second ION 8650 meter will be used for backup metering. Both meters shall be series connected to the CT's circuit.

4.1.1.6 Fiber shall be provided to each meter for AE's use. This service shall be coordinated with the AE Complex Metering Operation.

5.0 PHYSICAL REQUIREMENTS

5.1 Provide Primary Metering Cabinet and matching enclosure suitable for installation on a concrete pad determined by Austin Energy Distribution Standards.

5.2 Components

5.2.1.1 All components and controls shall be located in a grounded, steel enclosed compartment and shall be arranged to allow complete accessibility for testing and/or maintenance.

5.2.1.2 Low voltage wiring, except for short lengths such as at terminal blocks and the secondary of sensing devices, shall be shielded by grounded raceways where necessary for isolation.

5.2.1.3 The enclosure should be no more than 60" deep.

5.2.1.4 The enclosure shall have a channel covering (to cover the conduit entrances) beneath the enclosure extending to the base of the enclosure

5.3 Enclosure

5.3.1 Coating

5.3.1.1 The inside surface of the PMC enclosure roof shall have a coating of "no-drip" compound to prevent condensation.

5.3.1.2 Coal-tar epoxy coating, or any tar-based coating, shall not be accepted.

5.3.2 Construction

- 5.3.2.1 The PMC enclosure shall be in accordance with ANSI C57.12.28.
- 5.3.2.2 The roof of the PMC shall be crowned for proper water drainage.
- 5.3.2.3 Stainless steel lifting eyes shall be provided and be capable of supporting the weight of the enclosure.
- 5.3.2.4 The enclosure shall have removable front and back panels for access to the operating and termination compartments. Each roof section shall have a retainer to hold it in the open position.
- 5.3.2.5 The base shall have 90-degree flanges, turned inward and welded at the corners, for bolting to a concrete pad. This flange shall have a closed-cell material applied to the entire underside bottom flange. The material shall be abrasion-resistant and isolate the bottom flange from the concrete foundation to help protect against corrosion.
- 5.3.2.6 Cable guides shall be provided, to assist in cable training and provide additional protection against damage from excessive cable or foundation movement.

5.3.3 Exterior Doors

5.3.3.1 No automatic latching doors will be permitted. The doors shall be manually latched to prevent the possibility of the door closing and trapping any loose clothing or human extremities in the latched door.

5.3.3.2 All doors shall have provisions for padlocking.

5.3.3.3 The doors shall have positive locking action, such that the doors cannot be locked until all latches are securely engaged.

5.3.3.4 All doors shall provide unrestricted access for operation of the equipment. Door retainers shall be provided to secure the door in the open position and to prevent any inadvertent closing into the enclosure.

5.3.3.5 Once secured, the doors shall be opened only by unlocking the padlock and unlatching the latching mechanism with a penta-head socket wrench or tool.

5.4 Ground Connection Pads

5.4.1 Ground connection pads shall be provided in each compartment.

5.4.2 Easily accessible ground bus bar made of 3/8" copper shall run the entire width of both door openings.

6.0 NAMEPLATES, DIAGRAMS, AND LABELS

6.1 The information on the stainless steel nameplate, rating label, and connection diagram shall remain legible throughout the operational life of the Primary Metering Cabinet.

6.2 A stainless steel nameplate shall be provided showing all data as specified, as well as the Austin Energy Purchase Order Number.

6.3 Stainless steel three-line diagrams shall also be provided for operator reference.

6.4 Warning Labels

6.4.1 Alerting signs shall be in accordance with ANSI Z535, NESC, NEMA, and NEC.

7.0 QUALITY ASSURANCE AND TESTING

7.1 Quality Assurance

7.1.1 PMC Drawings: Two hardcopy sets, as well as soft copies of final as-built drawings, shall be provided with each PMC.

7.2 Testing

7.2.1 Austin Energy reserves the right to visit the manufacturing facility and observe the PMC undergoing construction and testing. This visit shall be at no charge to Austin Energy. Advance notice of at least two weeks shall be given to Austin Energy before the start of testing.

7.2.2 All electronic devices shall be design tested as per IEEE C37.90.1.

7.2.3 Three (3) copies of certified test reports shall be furnished to Distribution Standards Engineering prior to shipment.

7.2.4 The manufacturer shall be completely and solely responsible for the performance of the basic components as well as the complete integrated assembly as rated.

8.0 OTHER REQUIREMENTS

8.1 The manufacturer shall provide a one-time, on-site, free training session(s) on the operation, maintenance and all control systems of products new to Austin Energy within 4 weeks of delivery.

8.2 The manufacturer shall notify Austin Energy of any software or firmware upgrades and provide updates to Austin Energy free of charge for the life of the product

8.3 The manufacturer shall provide (1) each of any cables, adapters, software, etc. needed for any and all devices included.

8.4 The Primary Metering Cabinet shall be an Elliot EPMRG-PMS-15-322P-E6-MR-VT/CT-D2011223 or Austin Energy Distribution Standards approved equal.

