

1.0 **GENERAL**

1.1 **Related UBC Guidelines**

- .1 Section 26 16 00 Metering
- .2 Section 25 05 00 Building Management System (BMS) Design Guidelines
- .3 Section 01 92 00 Monitoring Based Commissioning

1.2 **Coordination Requirements**

- .1 UBC Facilities Electrical (Vancouver)
- .2 UBC Energy and Water Services BMS (Vancouver)
- .3 UBC Facility Management (Okanagan)

1.3 **Description**

- .1 This section details the minimum requirements for the electrical sub meters. Refer to Division 25 05 00 Section 4.6 for additional BMS specific requirements. Any meters required for Service Main and revenue applications shall meet the requirements outlined in Section 26 16 00 Metering.

2.0 **MATERIAL AND DESIGN REQUIREMENTS**

2.1 **General**

- .1 The BMS vendor shall provide an approved electrical sub meter assembly as required for the building design. The electrical sub meters shall be integrated into the appropriate BMS system and also into the UBC Sky Spark system.
- .2 All electrical sub meters shall meet all required local and national certification requirements.
- .3 BACnet network requirements:
 - .1 BACnet IP requirements
 - .1 BACnet IP is the only acceptable communication protocol.
 - .2 UDP port configuration is required (47800 – 47820)
 - .3 Devices must comply will all other BMS requirements.
 - .2 Meters shall be ANSI X12.20-2015 class0.2 revenue grade meters.
- .4 All electrical sub meters shall comply with section 8.4.3 (electrical energy monitoring) of the most current ASHRAE 90.1 standard, and any other code requirements.
- .5 Meter shall support multiple 3-phase metering inputs for monitoring multiple distributions. Allow for a minimum of 1 spare 3-phase input for future use.
- .6 Commercial Rental Unit (CRU) shall meet the requirements outlined in Section 26 16 00 Metering.
- .7 Approved Manufacturers: Setra or approved equivalent.
- .8 Metering is required at the following locations:

- .1 Service Entrance Distribution
 - .1 Service Main (Vancouver uses PM8240 meter as per 26 16 00).
 - .2 All feeders for downstream distributions.
- .2 Life Safety (Emergency Power) Distribution
 - .1 Main only.
 - .2 Additional as required for LEED (mech/lighting)
- .3 Standby Distribution
 - .1 Main.
 - .2 All feeders for downstream distributions.
 - .3 Additional as required for LEED (mech/SHW/lighting/plug loads)
- .4 Mechanical Distribution
 - .1 Main.
 - .2 All feeders for downstream distributions.
 - .3 Additional as required for LEED (mech/SHW/lighting/plug loads)
- .5 Lighting Distribution
 - .1 All feeders for downstream distributions.
 - .2 Additional as required for LEED
- .6 Power Distribution:
 - .1 Mains. (if not covered by 1.)
 - .2 All feeders for downstream distributions.

2.2 Controls trade responsibilities

- .1 Electrical sub meters shall be provided and integrated by the controls trade.
 - .1 All network integration shall comply with all other TG requirements outlined in this document.
 - .2 All wire from the demark enclosure shall be provided by controls trade.
 - .3 BMS must provide direction to the electrical trade for current transducers to meet the requirements for the BMS provided sub meter.
- .2 Refer to Standard drawing E4-5c and E4-5d for division of responsibilities between trades.

2.3 Electrical trade responsibilities

- .1 Demark enclosure shall be provided by the electrical trade including:
 - .1 Circuit breakers (as required).
 - .2 Enclosure for demark point.
 - .3 Current transducers, as required to connect to the BMS provided sub meter (coordinate with the BMS trade). Rogowski coils shall be utilized.
- .2 Refer to Standard drawing E4-5c and E4-5d for division of responsibilities between trades.

2.4 Standard Drawing

- .1 Refer to the following Standard Drawings:

- .1 E4-5c. Setra Networked Multi-Circuit Power meter 208 or 600V Wiring Connection Diagram – 4 Wire System. This drawing outlines the installation requirements for 208V or 600V 4 wire submetering applications.
- .2 E4-5d. Setra Networked Multi-Circuit Power meter 600V Wiring Connection Diagram – 3 Wire System. This drawing outlines the installation requirements for 600V 3 wire submetering applications.

*****END OF SECTION*****