

**SECTION 260913
ELECTRICAL POWER MONITORING****PART 1 GENERAL****1.01 SUMMARY**

A. Section Includes

1. This section includes requirements for electrical metering systems.

1.02 REFERENCES

A. The following is a list of Standards that may be referenced in the Section.

1. NEMA Standard PB 2 Dead front Distribution Switchboards.
2. Underwriters' Laboratories (UL) Standard No. UL 916 Energy Management Systems.
3. Underwriters' Laboratories (UL) Standard No. UL 2808 Energy Monitoring Current Transformers.
4. Underwriters' Laboratories (UL) Standard No. UL 61010-1 Test and Measurement Equipment.
5. IEC 62052-11, 62053-22 Test and Measurement Equipment.
6. ANSI C12.1, C12.20/0.5
7. ANSI/IEEE 802.3
8. National Electrical Code (NEC).

1.03 SUBMITTALS

A. Contractor shall submit all the product data in each section at the same time. Piecemeal submittals will be rejected as incomplete.

1. The product data shall be submitted in PDF format. Each PDF shall only contain products from a single specification section, products in a different specification section shall be in a separate PDF.
2. A submittal is required for each product specified. Each individual product submittal shall have the corresponding Reference Keynote Number (example - 260913.C01) typewritten in the upper right-hand corner of the submittal. The submittals within each PDF shall be in the same sequential order as they are listed in the specification Section. Submittals not containing the Reference Keynote Number will be rejected as incomplete.
3. No typical submittals will be accepted. Each submittal shall be project specific and clearly identify specifically which components or parts are being submitted for approval. Any product submittals, such as a catalog sheet, which do not clearly identify which components or parts are being submitted for approval, will be rejected as incomplete.

B. Product Data

1. Pursuant to Section 013300.
2. Manufacturer's data including material of construction, equipment weight, and related information for each item specified in PART 2 PRODUCTS.

C. Shop Drawings

1. Bill of material including a complete listing of all hardware, software, training, software configuration, and start-up services.

2. Equipment shop drawings showing elevation and plan views, compartment arrangement, conduit entry/exit locations, dimensions, weight, and metering layouts.
3. Single line diagrams and point to point compartment wiring diagrams for metering. Show wire and terminal numbers.
4. Product data sheets and catalog numbers for hardware.
5. Detailed points list for each device, sensor or other system listing each data point to be monitored by the EPMS.
6. Provide data register to third parties for external monitoring of the EPMS system.

1.04 QUALITY ASSURANCE

- A. The equipment furnished under this Section shall be the product of a manufacturer who has produced this same type of equipment for a period of at least 10 consecutive years.

1.05 DELIVERY, STORAGE, HANDLING

- A. Equipment Handling
 1. Equipment shall be handled and stored in accordance with manufacturer's instructions. One (1) copy of these instructions shall be included with the equipment at time of shipment.

1.06 SYSTEM DESCRIPTION

- A. New revenue metering system used for tenant billing. The meters will form a 2-way mesh network and communicate wirelessly. The meters will not require hardwired communications to function.
- B. The CONTRACTOR and Manufacturer shall provide a complete and fully functional system.

1.07 WARRANTY

- A. Provide manufacturer's standard 5-Year warranty.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. The basis of design is the Leviton VerifEye System.
- B. Basis of design software shall be the VeifEye Building Manager Online.

2.02 PRODUCTS

- A. **Mini Meter (260913.M01)**
 1. Shall be revenue grade submeter measuring kWh for tenant billing.
 2. Shall be rated for 120/208/240V 1PH/3W, 200A.
 3. Shall be indoor flush mount type.
 4. Shall contain integral AMR transceiver capable of communicating with other meters and wireless repeaters to form a 2-way mesh network.
 5. UL listed for energy usage monitoring.
 6. Meter shall be pulse type meter.
 7. Battery operated, two (2) Double AA Alkaline batteries.
 8. Radio transmitter operates at 902 to 928 MHz up to 10 miles open field range.
 9. Kit includes submeter, enclosure, wireless transceiver, and CTs.
 10. Leviton MDTFW-2SC, or approved equal.

B. Wireless Repeater (260913.R01).

1. Shall natively extend range of wireless submetering systems.
2. Radio transmitter operates at 902 to 928 MHz up to 10 miles open field range.
3. 120 VAC power supply input, 5 VDC, 800 mA.
4. Leviton T95RX-000, or approved equal.

C. Data Access Point (260913.D01).

1. Integral radio receiver operating at 902-928 MHz up to 0.75 miles open range.
2. Shall be capable of up to 1000 meter points.
3. 120 VAC power supply input, 5 VDC, 1A.
4. Shall connect to LAN via 10/100 Ethernet connection.
5. Leviton T25DX-102, or approved equal.

2.03 SOFTWARE LICENSES

- A. Provide BMO tenant-billing **energy management base module** software Annual licenses for up to total number of data points (meters).
- B. Each annual license shall be capable of up to 50 data points per license.
- C. ~~Tenant-Billing module shall allow metering of each unit and automatic creation of invoices by meter/unit for ease of billing.~~ **BMO Base Module allows end users to view data and generate usage reports for meters.**
- D. ~~Leviton BMOTB-050~~ **BMOBM-050**, or approved equal.

PART 3 EXECUTION**3.01 INSTALLATION**

- A. All identification labeling shall be in compliance with Section 260553 Electrical and Control Identification.
- B. Installation shall be in accordance with the manufacturers' instructions.
- C. Field wiring shall be grouped by circuit and tie wrapped. Terminations shall not be stressed.
- D. CONTRACTOR shall install all metering current transformers and current transformer wiring as shown on the Drawings.

3.02 FIELD QUALITY CONTROL

- A. Test and verify installation in conformance with Section 260573.
- B. In addition, make the following minimum tests and checks before energizing the equipment:
 1. Megger terminals and buses at two times rated voltage, phase to phase and phase to ground after disconnecting devices sensitive to megger voltage.
 2. Remove all current transformer shunts after completing secondary circuit.
 3. Check all mechanical interlocks for proper operation.
 4. Vacuum clean all interior equipment.
 5. Adjust and test all circuit breakers and relays in accordance with Section 260573.

3.03 MANUFACTURER'S SERVICES

- A. The CONTRACTOR shall support the Manufacturer's on site services, including but not limited to, energizing and de-energizing equipment, lockout/tagout, opening and providing access to enclosures, equipment, and junction boxes, voltage and current measurements, and all other work required for the authorized representative of the Manufacturer to complete their services.
- B. An authorized representative of the Manufacturer shall observe, test, and commission all hardware and ensure that the 2-way mesh network is fully functional.
- C. An authorized representative of the Manufacturer shall provide all software start-up, configuration, and programming. The representative shall ensure that the accounts for all of the tenants have been created and are capable of metering power consumption so the Owner may bill the tenants for consumption.
- D. An authorized representative of the Manufacturer shall provide on-site testing, start-up, calibration, commissioning, and OWNER training.
- E. The authorized representative shall provide a minimum of one day (8 person hours) for start-up, testing and training.
- F. Provide digital copies (via thumb drive or electronic file transfer) of the training material to the OWNER.

3.04 CLEANING

- A. Thoroughly clean the interior of the metering enclosure of all debris, dirt, and scrap wire prior to energizing.
- B. Use touch-up paint to cover any marks, blemishes, or other damages that occurred during installation.

END OF SECTION