PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes equipment for electricity metering by Owner.

1.3 DEFINITIONS

A. KY Pulse: Term used by the metering industry to describe a method of measuring consumption of electricity that is based on a relay opening and closing in response to the rotation of the disk in the meter.

B. PC: Personal computer.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For electricity-metering equipment.
1. Dimensioned plans and sections or elevation layouts.
2. Wiring Diagrams: For power, signal, and control wiring. Identify terminals and wiring designations and color-codes to facilitate installation, operation, and maintenance. Indicate recommended types, wire sizes, and circuiting arrangements for field-installed wiring, and show circuit protection features.

C. Field quality-control reports.

D. Operation and Maintenance Data. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
1. Application and operating software documentation.
2. Software licenses.
3. Software service agreement.
4. Hard copies of manufacturer's operating specifications, design user's guides for software and hardware, and PDF files on CD-ROM of the hard-copy Submittal.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in CEC, by a qualified testing agency, and marked for intended location and application.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Receive, store, and handle modular meter center according to NECA 400.

1.7 PROJECT CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner unless permitted under the following conditions and then only after arranging to provide temporary electrical service according to requirements indicated:
   1. Notify the Owner no fewer than (7) days in advance of proposed interruption of electrical service.
   2. Do not proceed with interruption of electrical service without the Owner's written permission.

1.8 SOFTWARE SERVICE AGREEMENT

A. Technical Support: Beginning with project acceptance, provide software support for (2) years.

B. Upgrade Service: Update software to latest version at project acceptance. Install and program software upgrades that become available within (2) years from date of Substantial Completion. Upgrading software shall include operating system. Upgrade shall include new or revised licenses for use of software.
   1. Provide (30) days' notice to Owner to allow scheduling and access to system and to allow Owner to upgrade his computer equipment if necessary.

PART 2 - PRODUCTS

2.1 EQUIPMENT FOR ELECTRICITY METERING BY OWNER

A. Manufacturers: Subject to compliance with requirements, provide products by the following available manufacturer offering products that may be incorporated into the Work:

B. Subject to compliance with requirements, provide product indicated on Drawings by the following:
   1. Square D PowerLogic; a brand of Schneider Electric.

C. General Requirements for Owner's Meters:
   1. Comply with UL 1244.
   2. Meters used for billing shall have an accuracy of 0.5 percent of reading, complying with requirements in ANSI C12.20.
   3. Meters shall be certified by Title 4, California Code of Regulations, Article 2.2.
   4. Enclosure: NEMA 250, Type 1 minimum, with hasp for padlocking or sealing.
   5. Identification: Comply with requirements in Division 26 Section "Electrical Identification".
   6. Memory Backup: Self-contained to maintain memory throughout power outages of 72 hours, minimum.
   7. Sensors: Current-sensing type, with current or voltage output, selected for optimum range and accuracy for meters indicated for this application.
      a. Type: solid core.
   8. Current-Transformer Cabinet: Listed or recommended by metering equipment manufacturer for use with sensors indicated.

9. Building Automation System (BAS) Interface: One digital KY pulse to a user-definable increment of energy measurement. Match signal to BAS input and arrange to convey the instantaneous, integrated, demand level measured by meter to provide data for processing and possible programmed demand control action by destination system.

D. Kilowatt-hour Meter: Electronic three-phase meters, measuring electricity used.
1. Voltage and Phase Configuration: Meter shall be designed for use on circuits with voltage rating and phase configuration indicated for its application.
2. Display: LCD with characters not less than 0.25 inch high, indicating accumulative kilowatt-hours and current kilowatt load. Retain accumulated kilowatt-hour in a nonvolatile memory, until reset.
3. Display: Digital electromechanical counter, indicating accumulative kilowatt-hours.

E. Kilowatt-hour/Demand Meter: Electronic three-phase meters, measuring electricity use and demand. Demand shall be integrated over a 15-minute interval.
1. Voltage and Phase Configuration: Meter shall be designed for use on circuits with voltage rating and phase configuration indicated for its application.
2. Display: LCD with characters not less than 0.25 inch high, indicating accumulative kilowatt-hours, current time and date, current demand, historic peak demand, and time and date of historic peak demand. Retain accumulated kilowatt-hour and historic peak demand in a nonvolatile memory, until reset.

F. Data Transmission Cable: Transmit KY pulse data over Class 1 control-circuit conductors in raceway.

G. Software: PC based, a product of meter manufacturer, suitable for calculation of utility cost allocation and billing.
1. Utility Cost Allocation: Automatically import energy-usage records to allocate energy costs for the following:
a. At least (15) departments.
b. At least (30) tenants.
c. At least (5) processes.
d. At least (5) buildings.
2. Tenant or Activity Billing Software: Automatically import energy-usage records to automatically compute and prepare activity demand and energy-use statements based on metering of energy use and peak demand. Maintain separate directory for each tenant's historical billing information. Prepare summary reports in user-defined formats and time intervals.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with equipment installation requirements in NECA 1.

B. Install meters in accordance with Owner’s requirements and the manufacturer’s requirements. Install raceways and equipment according to Owner’s written

requirements. Provide empty conduits for metering leads and extend grounding connections as required by utility company.

C. Install modular meter center according to NECA 400 switchboard installation requirements.

3.2 IDENTIFICATION

A. Comply with requirements for identification specified in Division 26 Section "Electrical Identification".
   1. Series Combination Warning Label: Self-adhesive type, with text as required by CEC.
   2. Equipment Identification Labels: Adhesive film labels with clear protective overlay. For residential meters, provide an additional card holder suitable for weather-resistant card with occupant's name.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.
   1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:
   1. Connect a load of known kilowatt rating, 1.5kW minimum, to a circuit supplied by metered feeder.
   2. Turn off circuits supplied by metered feeder and secure them in off condition.
   3. Run test load continuously for eight hours minimum, or longer, to obtain a measurable meter indication. Use test-load placement and setting that ensures continuous, safe operation.
   4. Check and record meter reading at end of test period and compare with actual electricity used, based on test-load rating, duration of test, and sample measurements of supply voltage at test-load connection. Record test results.

C. Electricity metering will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

END OF SECTION