Standard of Practice - Electrical Power Metering

NOTE: Significant revisions or additions to the previous standards are highlighted in italics.

GENERAL
Designers shall verify that all applicable portions of these standards are incorporated into the project’s design, drawings, specifications and final construction. Requests for variances from these standards shall be submitted in writing to the DCM Project Manager, using the KU Standards Variance Request Form found in Appendix A1.1, for review and written approval or rejection as indicated on the form.

OBJECTIVE OF STANDARD

- To acquaint Designers and other interested parties with the University’s provisions for metering electrical power usage at individual buildings on the main campus.
- To insure consistent specifications for, and installation of, electrical metering hardware and software within campus buildings.
- To extend the University’s capabilities for remotely monitoring the energy usage of all campus buildings.

BACKGROUND
The University electrical service provider is Westar. The utility delivers 12,470-Volt power to the Lawrence main campus at two distribution substations. Electrical metering for billing purposes is accomplished at these two master meter locations. All campus distribution conductors and building service entrance equipment on the load side of these substations are owned and maintained by the University. It is the University’s policy to meter individual building switchgear loads for administrative and management purposes.

To facilitate campus-wide electrical usage metering, a panel-mounted electronic digital power meter should be installed at all new switchgear installations.

Department of Student Housing (DSH) facilities are typically connected directly to the Westar power grid, and DSH is billed directly for all consumed power, through Westar’s metering systems. DSH facilities are not to be connected to power systems owned by the University, unless approved in writing by the Director of Facilities Services, on a case-by-case basis.

SPECIFICATIONS

The campus-standard for metering devices is the Square D PowerLogic meter, which shall be installed on each building service, to monitor and log data of value to University Facilities Services personnel. The Designer shall clearly indicate in the construction documents that the Electrical Contractor shall furnish and install the metering device.
Designers shall tie the meters into a network data acquisition system with sampling at 15 minute intervals, with data uploaded to an SQL database server. Verify current details and questions with the FS Electrical Shop supervisor and DCM’s engineering project manager.

- Square D PowerLogic (no substitutions allowed)
- Input Primary Voltage - 208 to 480 VAC rms.
- Maximum Primary Current - 2400 amps cont. per phase
- Accuracy - +/- 1.0% (ANSI C12.1)
- Data for Output.
- BI-1 - kWh, Consumption (Accumulator)
- AI-12 - kW, Demand phase B
- AI-13 - kW, Demand phase C
- AI-14 - Power Factor, phase A
- AI-15 - Power Factor, phase B
- AI-16 - Power Factor, phase C
- AI-17 - Voltage, phase A to phase B
- AI-18 - Voltage, phase B to phase C
- AI-19 - Voltage, phase A to phase C
- AI-20 - Voltage, phase A to Neutral
- AI-21 - Voltage, phase B to Neutral
- AI-22 - Voltage, phase C to Neutral
- AI-23 - Amps, Current phase A
- AI-24 - Amps, Current phase B
- AI-25 - Amps, Current phase C