

Load Study Guideline

The Load study of all electrical panels are important for the University of Florida Facilities Services for the longevity and stability of the electrical infrastructure. Providing the Load study information will ensure the electrical system does not fail and provide a better-balanced system. The information collected from these load studies will be added to a database for long term reporting and will be available to future projects effecting the electrical panel upon request.

The first step is to perform the initial investigation that will determine if a load study will be required and, if so, the duration of the study. The initial investigation consists of a **Voltage Check, Load Check, Single-Line diagram** and completion of **Panel Data Sheet**; see page 2 for additional details. These documents shall be uploaded to the Project Folder in BIM 360 and submitted for Plan Review by Facilities Services prior to first inspection.

Load Study requirements are based on the maximum phase value of **Expected Panel Capacity**. Expected Panel Capacity is equal to the **Expected Load** divided by **Panel Capacity**. Expected Load is the sum of the Current Load and Proposed Additional Load. If the Expected Load is 50% or less of the Expected Panel Capacity, no load study will be required. If the Expected Load is between 50% and 65%, of the Expected Panel Capacity a **3-Day Load Study** will be required. If the Expected Load is between 65% and 77% of the Expected Panel Capacity, a **30-Day Metered Load Study** will be required. If Expected Load is over 77% please consult Facilities Services. See page 2 for the load study requirements.

Any identified issues with the panel, including lose or disconnected wires, shall be documented and forwarded to Facilities Services prior to start of work. If **Voltage Check** identifies any phase is more than X% less than the other phases notify Facilities Services. If **Load Check** identifies an Unbalanced Load on the panel all effort should be made when adding new load to balance panel load.

The 3-Day & 30-Day Metered Load Study summary is to be documented on the Panel Data Sheet. The completed **Panel Data Sheet, Photo Documentation**, and the **Load Study Log** shall be uploaded to the Project Folder in BIM 360 and submitted for Plan Review by Facilities Services prior to first inspection. **Updated Panel Schedule** shall be completed using provided Panel Schedule Template. Prior to final inspection, Updated Panel Schedule must be uploaded to the Project Folder in BIM 360 and hard copy posted in the panel.

Definitions

3-Day: Entails measuring the amperage of each phase of the panel, 4 times per day (8am, 11am, 2pm, & 4pm) for 3 days (Monday – Friday). The amperage will be recorded on the provided template noting the day and time for each reading.

30-day Load Study: Entails measure of the amperage on each phase of the panel for 30 consecutive days, excluding holidays.

Expected Load: Max reported amperage plus new amperage to be added.

Expected Panel Utilization: Percentage found by Total Expected Load divided by Total Panel Capacity.

Load Check: Instantaneous amp reading of each phase including neutral.

Load Study Log: The raw load study data information collected.

Panel Capacity: Size of Main Circuit Breaker or Feeder Circuit Capacity, whichever is smaller.

Panel Data Sheet: Form provided by facilities Services documenting the attributes of the electrical panel.

Photo Documentation: A photo of the Name Plate of the panel if present, photo of the breakers and a photo of the existing panel schedule.

Single Line Diagram: A Sketch or Blueprint of the electrical system that includes, at minimum, overload protection of the incoming power source and the correct power distribution path from the incoming power source to each downstream load - including the ratings and sizes of each piece of electrical equipment, their current conductors, and their protective devices.

Updated Panel Schedule: Identifies the service area for each circuit within the panel along with Project Number and date of when the circuit was last updated.

Voltage Check: Take voltage reading of each phase to phase and phase to neutral. The purpose is to identify *existing infrastructure issues* that may be causing under voltage.

- Neutral to A-PHASE
- Neutral to B-PHASE
- Neutral to C-PHASE
- A-PHASE to C-PHASE
- A-PHASE to B-PHASE
- C-PHASE to B-PHASE

Load Study Example

Panel M11BE - Main Breaker – 50 amps

A Phase 26 amp [26 amp (Current Load) / 50 amp (Total Capacity) = **52% (Expected Panel Utilization)**]

B Phase 18 amp [18 amp (Current Load) / 50 amp (Total Capacity) = **36% (Expected Panel Utilization)**]

C Phase 20 amp [20 amp (Current Load) / 50 amp (Total Capacity) = **40% (Expected Panel Utilization)**]

Expected Panel Utilization	Load Study Required
50% & Below	None
51%-65%	3-Day Study
65%-77%	30-Day Study
77%-100%	Consult F.S.