

Code Change Opportunity – Plug Load Data Collection

Background: The current set of demand factors in the NEC have remained unchanged for decades. The conservative prescriptive plug load allowances mandated by the code tend to result in systems that are grossly oversized; a recent study commissioned by Partners Healthcare System Inc. estimates that the calculated loads are about 12 times larger than the actual loads. This set of demand factors does create a “safety factor” and “spare capacity”, but in a way that is excessive and code-required, rather than a way that is chosen by the facility as an investment in what is right for them.

This means that generators and fuel tanks tend to be greatly oversized, creating operational challenges for ASHE members, in addition to the needless first cost. We are in a time of constrained economic resources, and it should not be the effect of the codes that systems are grossly oversized, or even to mandate spare capacity. Rather, a “code-minimum” should, in fact, be a minimum. It is time to take a much closer look at the calculations we use to size our healthcare electrical systems, with an eye to eliminating wasteful over-sizing.

Opportunity: For the first time, we have new technologies that allow for better and more affordable collection of actual load data, relative to calculated loads. Kaiser Permanente, Partners Healthcare, and the University of Michigan have all conducted studies pointing to the ability to better tailor healthcare demand factors for electrical systems.

But, we need enough data to be able to show convincingly that the NEC Demand Factors can safely be changed. To revise these demand factors, we need to substantiate our recommendations for more reasonable area loading allowances with real-world data and careful thought. ASHE is working to collect sufficient data from enough hospitals to be able to establish evidence-based demand factors for a code-minimum set of requirements.

How you can help: We need data. Note that the plug load data is unlikely to vary with seasonality, unlike lighting (due to changes in length of day) or cooling. So, collecting about a week’s worth of data for each particular point will be enough to tell the story. We are looking for the following kinds of data:

1. Actual consumption (minimum seven days) of a piece of medical equipment relative to its nameplate (one of our demand factor approaches will use a diversity factor based on number of pieces of equipment on a panel, similar to motors or elevators or kitchen/laundry loads).
2. Actual consumption (minimum seven days, peak w/sf) of all plug loads for each branch (normal, critical, equipment, and life safety) of the electrical system serving a certain department (one of our demand factor approaches will use a w/sf per department for plug loads). Where this type of data is furnished the area (in square feet) of the surveyed area should be included along with description of the type of area (e.g. ICU, inpatient room, emergency department, etc)
3. The data must segregate electrical plug load (cord connected) in the patient care environment. Inclusion of additional load types (such as lighting) will skew the calculated loads.
 - a. Bonus #1: Provide the calculated load for the same group of loads (one of our demand factor approaches will use total connected load versus demand load, similar to the current lighting or receptacle demand factors).

All data needs to be collected before the end of 2017.

Questions? Contact Shannon Bunsen at sbunsen@mazzetti.com.