



Advanced Energy Metering

Overview

A majority of buildings do not employ energy metering beyond the mandatory utility company meters. Knowing how much energy your building uses and where it is being used is essential to any strategy to reduce energy usage. If you have a leaky pipe you must first locate the hole before you can repair the leak. Similarly, before you can determine where an energy reduction effort will be most effective, it is important to determine how your building uses energy. California Title 24, ASHRAE 90.1 – 2013/2016, and the LEED BD+C and ID+C ratings systems all have provisions for advanced energy metering.

California Title 24

The California Energy Code currently does not require that the meters actually be installed but rather requires that provisions for future meters be provided. The code also requires that the loads within the building be separated, by type, onto individual circuit groups. Receptacles and lighting, for example, cannot occupy the same circuit. By separating load types, circuit level energy meters can be added so the different load types within the building can be metered. The upside to this method is that the initial cost is fairly minimal and if the building owner wants to add metering in the future it will be relatively easy to install.

ASHRAE 90.1 – 2013/2016

This 2013/2016 version of ASHRAE 90.1 implemented a provision to add energy metering by load type to tenant spaces larger than 10,000 square feet and buildings larger than 25,000 square feet. Unlike Title 24, to satisfy the requirements of this code, the metering equipment must actually be installed. Total load, exterior lighting, interior Lighting, HVAC loads, and receptacle loads are required to be separately metered under ASHRAE 90.1-2013/2016.

LEED Rating Systems

The current LEED rating systems require building level (BD+C) or tenant level (ID+C) energy metering as a prerequisite, which is typically required by the utility company anyway. Both rating systems also offer credit points for

employing advanced energy metering; however, unlike either of the previously discussed codes the load types that are metered are determined on a case-by-case basis. The guidelines for this determination are that, at a minimum, any energy use that accounts for 10% or more of the building load must be separately metered. Typically, this means that lighting, HVAC loads, and plug loads will be metered separately; however, the heavy energy users may vary depending on the project type.

Where to Implement

While the summary above shows examples of where energy meters must be installed, what about the vast majority of situations where advanced energy metering is not required? Energy meters can be viewed as analogous to a fitness tracker. Just as a fitness tracker does not directly improve one's level of fitness, an energy meter will not directly lower the energy usage of your building. What advanced energy metering will do is tell you where your "leaks" are and how well you are doing relative to your energy reduction goals.

Energy usage is something that is easy to forget if it isn't staring you right in the face. Having access to energy usage data for your building, will make the building occupants more cognizant of their actions and how their actions can influence energy use while simultaneously providing data to management to influence decisions. While adding energy meters to the building does increase the initial cost, for a business that takes into account the triple-bottom-line (People, Profit, and Planet), an advanced energy metering system is an invaluable source of information that should not be overlooked.

About Tyler



Tyler Hopson, P.E., has been involved in the design of electrical systems, power distribution, lighting and IT systems for many types of commercial, residential, and industrial projects, including mixed-use developments, retail stores, malls, restaurants, offices, hospitality for over 8 years with Schnackel Engineers.