The Not-So-Hidden Benefits of Submetering Buildings

Energy management, as I've written often, is a rapidly growing practice among large and leading companies. Although it's still a small slice of the whole pie, the savings they're seeing have the effect of pulling more firms into the market.

It's starting to look like the next frontier is energy submetering -- using IP-connected sensors and meters to fine-tune your energy management data. A still-smaller slice of the corporate pie is currently using submetering in their facilities and portfolios, but as more and more companies find energy savings opportunities based on submetering their facilities, interest in the technology continues to grow.

Using this new visibility to current consumption, much of these savings are achieved through simple no-cost, behavior changes, such as turning off unneeded equipment. Submetering highlights that fact that these systems were running when they need not be.

Retailers, banks, groceries, and companies with multiple warehouses, buildings or stores require a submetering strategy to achieve additional energy savings beyond the traditional upgrades of lighting, motors, chillers and other systems.

What is Submetering?

Submeters are physical metering devices that monitor electricity, gas, water, steam and other utilities. Utilities sell services and use utility grade meters to gather this information. Submeters mirror this data collection for companies that install them. Common applications monitor electricity usage and data are sent, typically every 15 minutes, to energy management software (sometimes through the building management system) for analysis. Using the analytic capability of the software, external consultants, vendors, on-staff personnel, or some combination identify savings opportunities.

A number of different companies such as Diehl, E-Mon and Rockwell Automation manufacture physical sensors, submeters and power monitors, and over a hundred companies sell energy management software.

A typical approach is to add a single submeter for each building or to the utility main meter. (A best practice is to use two submeters per building, one for electricity and one for HVAC, but this is not always cost-justified.) More comprehensive submetering strategies deploy multiple submeters in a building and even hundreds for a large, complex manufacturing operation.

What are the Benefits of Submetering?

Traditional utility bill analysis uses information that is simply too dated (bills arrive 30 to 45 days after usage) and too aggregated (bills are for an entire month, not 15 minute interval). Submetering addresses this information gap, providing real-time, granular visibility of energy use that can be used to affect operations.

There are a number of benefits for submetering your buildings, chief among them:

Identification of unnecessary equipment running at night, off shift, or during the weekend;

Ability to get information back to operators and facility managers the same day and to provide operators with feedback the next day about implemented changes;

Comparison and benchmarking of usage across similar facilities (stores, warehouses, or buildings) and over time;

Detection of utility bill errors by comparing submeter usage with the actual utility bill; and

Better management of electricity usage when a facility faces demand limited or peak usage pricing from the utility