

# 7 Important reasons for measurement and verification



Significant opportunities exist for you to realize energy cost reductions in your plant or facility... assuming you have state-of-the-art products in place to assure accurate energy use measurement and verification. The first step, however, is to fully understand these seven key reasons for measuring and verifying energy usage.

## 1 Verification of the utility suppliers accuracy and integrity

Metering at the point of coupling with the power provider is critical for all electrical power users. Applying a revenue class meter at the incoming line allows the user to confirm the accuracy of the utility meter and bill. Additionally, a revenue class meter can document the type, magnitude, and direction of power quality related events. Many are caused by the power provider, who in a de-regulated environment should be held accountable for the quality of supplied power. Where multiple utility meters feed one site, utility verification at each of the metering points allows users to compare multiple bills with an aggregate bill that includes a "coincidental" peak demand charge. In many cases, this can result in considerable cost reductions that can be negotiated with the power provider.

## 2 Identification of energy-consuming loads

The next step in any successful energy management program is the identification of the loads within a facility that consume the most energy. This will allow users to begin prioritizing energy reduction efforts including shedding non-critical loads, shifting loads to an off-peak rate period, and targeting inefficient operations for further action. Sub metering at this level should encompass all medium voltage feeders and most large capacity low voltage assemblies, including both main devices and feeder breakers.

## 3 Contribute to LEED certification

Recognizing that the use of on-site renewable energy requires a means to measure the percentage of building energy requirements, meters and software can provide the backbone of load control, measurement and monitoring for on-site power sources. By monitoring energy consumption, identifying energy savings opportunities and power quality issues with meter and sub meters, your facility can earn up to 5 points towards LEED certification under Energy and Atmosphere Credit 2, On-Site Renewable Energy; Credit 3, Enhanced Commissioning; Credit 5, Measurement & Verification. The LEED Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED promotes a whole-building approach to sustainability by rec-

ognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality.

## 4 Documentation of energy reduction efforts

By installing sub metering devices throughout the distribution system, users will be able to benchmark the effectiveness of energy reduction efforts. Such practices include both load management and the installation of high efficiency products. Verification of the implemented programs provides feedback as to the magnitude of success of each effort in addition to documenting all monetary savings. This is the critical step in rationalizing all energy related expenditures.

## 5 Providing activity-based costing to departments, processes, and products

The financial management of any operation is the key to the profitability of an entire organization. With energy costs being such a large percentage of total operational costs, it is essential that the impact of energy costs be fully documented. Accurately allocating energy costs to departments creates accountability and the incentive to take ownership of energy management efforts. Additionally, understanding energy costs as they relate to specific processes of products provides management with an additional tool to use in making production decisions...so the "true" cost of the given prod-

uct or process can be realized. Sub metering at this level would include "point-of-use" metering, typically at the panelboard and motor control center level.

## 6 Establishment of a facility's historical baseline

Documenting historical consumption patterns of a facility over time is a valuable undertaking. In a de-regulated utility industry, most customers will have a choice from multiple power providers, each offering different rate packages. These offerings will take many forms including variations of block (lump quantity), time-of-use, and real-time pricing programs. Without detailed and documented knowledge of both present and historical consumption patterns, users will be unable to select the right program or provider to maximize their rate savings potential. Documenting historical baselines also provides users with the added ability to aggregate multiple sites to further strengthen their negotiating power.

## 7 Development of utility rate comparison procedure

Sub metering and documentation can provide additional tools to use in selecting the ideal utility rate structure. By possessing historical consumption data and combining it with software tools that enable utility rates to be emulated, users can compare various rate structures with true historical data to accurately choose the most cost-effective offering available.



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