

Submetering for Energy & Atmosphere Credits in CI, C&S, EB, and NC Applications

by Don Millstein

Recent industry studies show that “green buildings” are rapidly becoming a pervasive corporate trend, and that over 60% of people surveyed already agree that green buildings do, in fact, lower facility operating costs. In late 2006, the Building Owners and Managers Association (BOMA) and the U.S. Green Building Council (USGBC) signed a memorandum of intent to jointly “promote energy efficiency and environmentally responsible building operations and maintenance practices.” Add to this the EPACKT 2005 mandate that all 500,000 Federal buildings must be metered or submetered by 2012, and it becomes even more obvious that tightening budgets, rising power costs, and other operational issues have made energy resource management more important than ever for commercial building owners and operators.



Typical submetering applications

Unfortunately, the level of profiling needed by high-volume energy consumers is simply unobtainable using the standard utility meter found at the main electrical service entrance. That’s why more facilities are using submeters as first-level data-gathering tools to literally save thousands of dollars in reduced energy costs. First introduced in the early 1980s, submeters are metering devices with monitoring capabilities that are installed on the facility side of the master meter to provide any or all of the following:

- Usage analysis and peak demand identification;
- Time-of-use metering of electricity, gas, water, steam, BTUs and other energy sources;
- Cost allocation for tenant billing;
- Measurement, verification, and benchmarking for energy initiatives, including LEED Energy & Atmosphere (EA) and Water Efficiency (WE) credits;
- Load comparisons;
- Threshold alarming and notification;
- Multi-site load aggregation and real-time historical monitoring of energy consumption patterns for negotiating lower energy rates.



Fig. 1—Key advantage of electronic submeter is 0-2V split-core current sensor installed non-invasively around electrical feed being metered, which eliminates having to power down the load and makes for a quicker, safer and more profitable installation for the electrical contractor.



Fig. 2—Advanced submeters provide a scrolling LCD display of CO₂ emissions, kWh, and other sophisticated energy measurements that help gain green facility certification points under the LEED rating system.

How submeters facilitate today’s energy initiatives

At the enterprise level, submeters can help facilities monitor and control energy costs as participants in conservation programs like The Energy Policy Act of 2005 (EPA) according to the following guidelines:

- EPA Section 103—all Federal buildings must be metered by 2012;
- EPA Section 1251—net metering;
- EPA Section 1331—support for \$1.80 per square foot tax deduction for energy-efficient properties.

The U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) rating system offers a total of nine different rating certification categories. The left-hand column in Table 1 lists those areas that may be facilitated through use of submetering equipment, including the following Water Efficiency (WE) and Energy & Atmosphere (EA) credit categories:

LEED Certification Category	Credit	Certification Points	Applicable Guideline
Core & Shell	EA Credit 5.1	1	Measurement & Verification – Base Building
Core & Shell	EA Credit 5.2	1	Measurement & Verification – Tenant Submetering
Existing Buildings	WE Credit 1.2	1	Water Performance Measurement: Submetering
Existing Buildings	EA Credit 3.2	1	Building Operations & Maint.
Existing Buildings	EA Credit 3.3	1	Building Operations & Maint.
Existing Buildings	EA Credit 5.1 - 5.3	1-3	Performance Measurement: Enhanced Metering
Existing Buildings	EA Credit 6	1	Documenting Sustainable Building Cost
New Construction	EA Prerequisite 2	-	Minimum Energy Performance
New Construction	EA Credit 5	1	Measurement & Verification
Commercial Interiors	EA Credit 1	1	Optimize Energy Performance
Commercial Interiors	EA Credit 3	1-2	Energy Use, Measurement & Payment Accountability
Schools	EA Credit 5	1	Measurement & Verification
Healthcare	WE Credit 2	1	Potable Water Use Reduction: Measurement & Verification
Healthcare	EA Credit 1	2-10	Optimize Energy Performance
Healthcare	EA Credit 5	1	Measurement & Verification

Table 1—Submeters contribute directly towards points under several LEED green building certification categories

Bottom line

The sophisticated energy profiling needed by today's commercial, industrial, or multi-family facility is simply unobtainable using the standard utility meter found at the facility's main service entrance. Alternatively, advanced capability submeters now offer the functionality to help users obtain Energy & Atmosphere (EA) and Water Efficiency (WE) credits for LEED certification in Core & Shell, Existing Buildings, New Construction, Commercial Interiors, Schools, and Healthcare. As sustainable facility practices continue to gain traction, the need for more sophisticated or diversified energy monitoring capability will be met by advanced submetering and automatic meter reading (AMR) solutions that will satisfy the profiling needs of whatever next-generation energy monitoring platforms achieve market acceptance.



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