

GREEN OVATIONS

Innovations in Green Technologies

NYPSC Approves New Smart Meters in Residential Buildings

By Gord Echlin



In 2014 New Yorkers spent \$21.9 billion on electricity. Not surprisingly, state and municipal governments continue their efforts to raise citizens' awareness of electricity consumption, promote conservation efforts, and reduce overall demand.

Earlier this year New York City's Local Law 88 (LL88) came into effect and the energy industry is watching closely to see what the impact will be. Local Law 88 requires all commercial buildings larger than 50,000 square feet to install submeters by January 1, 2015. LL88 is part of the larger Greener, Greater Buildings Plan (GGBP) initiative, which targets energy efficiency in large existing buildings in New York City. New York City is one of the first cities in the United States to require submetering.

On the residential side of the equation, the New York Public Service Commission (NYPSC) has instituted strict requirements to govern residential electrical submetering in the state. The rules affect how submeterers (building owners, property management companies, or third-party energy resellers) bill for electricity use and provide protection to residents. Several requirements relate to the process a submeterer must follow prior to providing submetered electricity, while others apply to the submetering technology itself.

What is submetering

Many commercial and residential buildings in New York use a single 'master meter.' Electricity comes into a building through a meter at bulk rate prices and landlords bill tenants for electricity based on flat fees or formulas derived from how much of the building they occupy. Occupants pay for electricity as part of a monthly bill, but energy use is not itemized. Paying a set price for energy use no matter how much is consumed is a disincentive for energy conservation and punishes those who do make the effort to use less.

Countless stories exist about tenants leaving lights, air conditioners or machinery on all day – even when space is unoccupied. They pay no extra fee for this luxury so have no

real incentive to change their behavior. An equal number of anecdotes exist, however, that show significant drops in energy consumption and large cost savings when submeters are installed and tenants are empowered to monitor their energy use.

A property using submeters still has electricity metered by the utility through a master meter, but each designated area's consumption is measured through individual property-owned submeters. Submeters allow for the granular measurement of energy use, right down to the individual circuit level. By installing submeters, building owners and managers can pinpoint energy use, identify failing equipment, and allocate cost fairly.

The benefits of submetering are numerous; tenants pay only for the electricity they use, can account for their own consumption, conserve energy, and lower their bills, while property owners can identify failing equipment, monitor building processes to increase energy efficiency, increase property value, and experience an overall reduction in energy costs.

A growing wave of regulation

There is a growing wave of regulation throughout the United States focused on the metering of electrical consumption. One after another, cities and states are establishing ever-tightening directives in an effort to reduce energy use and align electricity payment with consumption.

If money changes hands (as with government incentive programs or tenant billing for example) certified meters become a legislated requirement in many of these jurisdictions. Regulatory bodies (including the NYPSC) are using the tried and tested American National Standards Institute (ANSI) C12.20 standard as the target to meet for accuracy and performance, and are requiring third-party laboratory certification to prove that installed meters attain these standards.

ANSI C12.20 performance testing is rigorous and covers many aspects of meter operation, including accuracy, accuracy maintenance over time and across variations in current and voltage, meter ruggedness, relative humidity operating and non-operating performance, electromagnetic interference, and immunity and electrical surges.

Demand for submetering on the rise

Given that the cost of virtually all generation fuels (oil, nuclear, coal) has risen dramatically in the past decade, it should come as no surprise that electricity costs will continue to head in the same direction. And in addition to rising cost, more complex pricing structures will be introduced.

Almost all North American jurisdictions have implemented or are in the process of implementing new energy pricing structures based on Time of Use (TOU) pricing. Customers pay a different rate for electricity based on when they consume it – off-peak, mid-peak, or on-peak – with higher pricing implemented during the highest demand periods. Generally referred to as ‘smart metering,’ submeters now need to account for and encourage tenants to reduce overall energy use as well as when they should reduce it.

Tenants too are getting smarter. Many have realized that they are subsidizing the tenant down the hall and want to pay only for the electricity they use. Additionally, an increasing number of companies are developing ‘green policies’ to reduce carbon emissions, but have no way of tracking their energy use when billed on a per-square-foot basis.

The times they are a changing

Submeters have been around for a long time but to date very few have found their way into legacy multi-tenant buildings. There are three good reasons for this. First, energy costs historically were not an important issue. Second, installing submeters and associated electrical wiring was expensive. And third, tenants are constantly moving. In an average office building, for example, 35 percent of the walls move in a given year, making it very difficult to maintain accurate allocation information.

The good news is that these hurdles are now much easier to overcome. Increasing energy costs and technological innovation have overcome these barriers to tenant metering. Compact submetering systems can leverage a buildings existing wiring to accurately allocated energy costs. These systems are often the size of a clipboard, require no floor space and, most importantly, no rewiring.

Because metering sensors can clip into existing electrical panels and report their information automatically, building managers can simply update billing information online when a new tenant space is created or new loads need to be measured.

The Impact

When tenants pay directly for their energy use, overall building consumption drops on average by 20 percent – with many tenants experience between 30 percent and 60 percent decreases in their energy bills. That’s an impressive savings that’s comparable to installing an entire building automation system or changing all the windows in an office tower – at a fraction of the cost. Put another way, for every 5 buildings that are submetered, an entirely new building can be powered from the savings alone.

Moving forward

Putting the responsibility of energy costs directly in the hands of those that have the power to control it (tenants, building managers, and other stakeholders) encourages everyone to behave in an efficient manner.

With today’s modern IP-based submetering systems, individual tenant metering can be completed at low cost, reducing a building’s energy use and increasing its long-term value. Modern submetering systems promise to turn properties into Intelligent Buildings – bridging the energy information gap by easily connecting with building automation systems and IT-based financial and energy management systems, and making consumption data visible to all stakeholders. Individual tenants are empowered to monitor and reduce their energy consumption and building operators and managers have the information they need to make smart operational decisions.

About the Author

Gord Echlin has been Vice President of Sales and Marketing for Triacta Power Solutions, a division of EnerCare Connections Inc., since 2010. Gord has over 30 years of experience in the Information and Communications Technology, Semiconductor, and Clean Technology industries. He has held a wide spectrum of senior business and technical roles, and was President and CEO of Netistix Technologies Corporation. Prior to founding Netistix, Gord was Assistant Vice President of the Corporate Business Group at Newbridge Networks.