

## Beyond Submetering

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Most of New York City's cooperatives are individually metered, which means that each resident receives a bill directly from the utility. Many others are master metered, distributing electric costs based on shares not on actual usage. Although boards of directors of these buildings recognize the benefits of electric submetering, they find submetering procedures -- from approval to initial cost outlays to administration -- to be daunting. Even those who accept the submetering challenge do so with trepidation.

*Submetering is well worth the effort.* It offers immediate savings to cooperative corporations, condominium associations and their residents. There are further advantages. Submetering is a prerequisite to the benefits of time-sensitive pricing and load curtailment incentives. Submetered buildings can also help address the very real threat of blackouts now and in the future. New York State has launched a series of activities aimed at achieving these goals.

### Blackouts

Most New York blackouts occur because of transmission or distribution problems with the electric grid. When generated electricity cannot reach consumers in one neighborhood, the crisis spreads to surrounding areas. Major blackouts on November 9, 1965, and July 13, 1977, resulted from transmission problems. The 1999 blackout in Washington Heights was caused by a glitch in the local distribution

system when a substation was overloaded. These issues have been vigorously addressed by Con Edison, who is solely responsible for getting power from generating facilities to consumers. Over the past two years, Con Ed has spent \$1 billion to tighten the distribution system. It performed flawlessly last summer.

The growth of the national economy and our "tapeworm" appetites for electricity at home continue to strain electric supplies. Experts fear that we will not have enough power to meet the needs of a heat wave in summer 2002. The New York Independent System Operator (ISO), which safeguards the reliability of the state's power supply, reports that the City avoided a blackout last summer by the skin of its teeth.<sup>1</sup> On August 9, 2001, the ISO imposed a 5 percent voltage reduction to stretch power supplies. If an additional 2 percent reduction had been required, the ISO would have been forced to enact rolling blackouts such as those seen in California in summer 2000. Rather than risk massive system failure, California reduced power in one section at a time. Although it seems fair to share equally in the power cuts, no one would want to spend his or her share stuck in a crowded elevator or subway car, with no lights, no air conditioning and temperatures hovering at 100 degrees.

Last year, Governor Pataki instructed the New York Power Authority to install 10 small power plants around the city. The plants yielded 400 megawatts of power, approximately half the generating capacity of a large baseline power plant.<sup>2</sup> This sufficed for the summer's mild heat wave,

but New Yorkers know that it wasn't all that hot -- at least not compared to the sweltering summer of 1999.

Some experts argue that the collapse of the World Trade Center will obviate the need for new electric supplies. In truth, the trade center accounted for only one tenth of 1 percent (0.001%) of summertime peak power needs. A series of three 90 degree days could easily wipe out this modest gain and place the system in jeopardy.

To help avoid a 2001 power emergency, the ISO targeted curtailment programs to large electric users and facilities with on-site emergency generators. Although large users responded positively to calls for curtailment, these efforts alone will not be enough to avert a power emergency in a really hot summer. The ISO realizes that smaller users, including apartment buildings that represent countless individual actions, would be a good secondary target for curtailment. And, of special import for cooperatives and condominiums, the ISO will pay for it, not only at the time of savings but in advance. In return, the building agrees to reduce electric use when the ISO foresees the threat of a blackout and calls a curtailment event.

### Electric Competition (Deregulation) and Prices

Another determining factor in today's electric environment is the emergence of a robust wholesale electric market. When New York State deregulated the electric industry to create a competitive market, it required utilities to sell off the majority of their power plants. Con Edison now purchases electricity on the wholesale market alongside new electric service company providers (ESCOs), including Con Ed Solutions, 1<sup>st</sup> Rochdale Cooperative Group, Keyspan, and AES NewEnergy, all of whom purchase large amounts of power for resale. The ISO administers the wholesale market, which operates through a daily electric auction. Sellers feed available supplies into the system and buyers bid in hour-by-hour needs for the next day. Hourly prices fluctuate widely based on supply and demand.

The most critical component of

electric demand in New York City is air conditioning. Prices skyrocket on hot days, especially in mid-afternoon and early evening hours of the work week. There is, however, no direct connection between the wholesale and retail markets. Con Edison's rate structure does not easily accommodate fluctuating prices of the wholesale market. Rather than charge consumers more during peak hours, they distribute higher energy costs evenly throughout the monthly billing period. We contend that this does not benefit consumers. Although residential consumers are insulated from high prices during the day, they pay more at night when wholesale prices are lower. Without actual price signals, consumers have little incentive to reduce usage when it counts most.

The ISO is concerned about the disparity between the wholesale and retail  
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<sup>1</sup> The NYISO was established in 1999 to facilitate the restructuring of New York State's electric industry. It is charged to administer New York's wholesale electric energy markets, maintain the reliability of the State's bulk power system and operates its electric transmission system. The NYISO's report, *Power Alert: New York's Energy Crossroads* (March 2001), has provided facts and information for this article.

<sup>2</sup> Baseline plants are primary generating plants that are in continual operation. Older and less efficient plants may be put on line at times of greatest demand.

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markets. If power were more expensive when scarce, it would encourage consumers to shift their usage to off-peak periods. This would help alleviate the strain on New York's power supply system; it could also put money in our pockets. Federation of New York Housing Cooperatives and Condominiums president Greg Carlson suggests that city residents can make simple adjustments at home by turning off lights when they leave a room, turning off nonessential appliances and operating appliances at off-peak hours. You could easily run your dishwasher after 11:00 PM. Of course, you would be a lot more likely to alter your habits if it cost more to wash dishes at 5:00 PM than at 11:00 PM. The ISO believes that if consumers can buy power at its immediate and fluctuating market price, what the industry terms "real time pricing (RTP)," we could stretch supplies and minimize blackouts.

We contend that reducing usage during peaks, when prices are highest, could help lower costs on the wholesale market. According to the ISO, a 1 percent reduction in power usage during peaks would effect a 10 percent reduction in costs during the same period. When a system is strained to capacity, the industry must operate its least efficient generating plants to meet demand. The least efficient plants are the most expensive to operate. Energy buyers and consumers must pay for the privilege of having power available at the peaks. Regulatory attorney Peter Funk observes succinctly: "Markets are indifferent to issues of affordability."<sup>3</sup>

### Interval Metering

What do these principles have to do with submetering? Only a submetered building can purchase its own power, install meters that measure usage in time increments and bill accordingly. Con Edison does not install individual apartment meters with the capacity to measure use in time intervals. The submetering configuration authorizes the building to act as a mini-utility, with rate-making authority to charge residents different prices at different times. Although demand charges prevent cooperatives from purchasing electricity strictly on the hourly market, we are working with the New York Public Service Commission (PSC), the ISO and the New York Energy Research and Development Authority (NYSERDA) to effect necessary changes.<sup>4</sup>

A cooperative can enhance opportunities for residents to save by billing based on time of use. New York City residents use 40 percent more electricity today than 20 years ago. Much of this usage is

discretionary and could take place at other times. If electric charges corresponded to actual prices in the wholesale market, residents could consider the cost when scheduling activities, such as dishwashing, ironing clothes and automatic oven cleaning.

Submetered apartment buildings may reap benefits, however, before they can fully participate in an RTP market. This calls for reducing the "demand" charge that is assessed on all master-metered buildings in the Con Ed territory. To ensure that utilities have at the ready all the power that consumers conceivably need or want, they charge considerably more for the half-hour of greatest usage within a month. (It would certainly be disconcerting if we hit a light switch and nothing happened.) An unfortunate property of electricity is that it is difficult, expensive and inefficient to store. Batteries must be charged with more electricity than they can emit. Power plants and onsite facilities must generate electricity continuously for distribution through electric lines. The cost of demand is high simply because power must be available whether you need it or not.

The demand charge may represent a third of an average electric bill and in the summer often climbs to half. Leveling peaks is a tried and true formula to reduce electric costs in commercial and institutional settings and manufacturing plants. Unfortunately, conventional building-wide meters do not identify the peak half-hour of usage within the month. New metering and billing technologies, however, have emerged to arm cooperatives with the knowledge they need to begin smoothing out the peaks.

It is not necessary for meter readers to troop around the building. Automatic meter reading technologies send information to a central location for processing, analysis and billing. Submetered consumers are provided with sophisticated information about how much and when they use electricity. This gives new meaning to the phrase, "information is power."

Submetered cooperatives are then able to bill shareholders at slightly higher rates during the building

peak, to encourage a shift in electric-powered activities and lower demand costs for the entire building. People who continue to concentrate usage during peaks could be charged more, while wise energy users are rewarded.

### Load Controls and ISO Curtailment Incentives

Technologies are on the market that can automatically adjust air conditioner thermostats and disable electric-intensive equipment. A few utilities across the country have implemented these in single family homes. Gulf Power of Pensacola, Florida, has developed a very sophisticated program that uses Comverge Technologies products. Closer to home, the Long Island Power Authority has offered an automatic thermostat control program for Nassau and Suffolk County homeowners. Con Ed has launched pilot demonstration programs, most recently in Staten Island and Westchester County. Only Gulf Power combines variable rates with an automatic load control system. Gulf's Pensacola model is quite comprehensive and has been approved by the Florida Public Service Commission for inclusion in the utility tariff for Gulf's service areas. In this nationally recognized program, homeowners pre-select the trigger point on the thermostat and the equipment to be affected in response to higher rates and power emergencies. Gulf maintains a four-rate system: low, medium, high and critical. The extremely expensive critical rate is only put into effect, for no more than an hour at a time, when the utility anticipates a power emergency. The Florida Public Service Commission has

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limited critical rates to no more than 87 hours annually, or 1 percent a year. When critical rates go into effect, participating homeowners may opt to institute automatic curtailment measures. A flashing light on the thermostat notifies Pensacola residents when a critical period is approaching and in effect. Curtailment measures go into effect automatically, however, homeowners may bypass curtailment if they chose. Consumer control is the most important factor in the program's acceptance.

We are working with Gulf and Converge to demonstrate the application of these concepts to multifamily buildings.<sup>5</sup> At issue is the degree of flexibility or elasticity of consumers to shift usage in response to price signals, a concern to NYSERDA and the PSC. We contend that elasticity depends on the cost/benefit ratio and degree of difficulty or inconvenience of the action. We will survey residents of participating buildings to determine their receptivity to the concepts of variable pricing and load curtailment.

Given that the city narrowly averted rolling blackouts last summer, the ISO knows that residential consumers must be part of a comprehensive solution. It is not feasible for the Albany-based

agency to administer a hands-on curtailment effort for individual apartments, however, most master metered buildings are large enough to qualify for ISO incentive programs aimed at large users. The ISO understands that a kilowatt hour saved in one location can be used in another and is willing to pay consumers to reduce usage when supplies are scarce.

To not confuse this with conventional electric conservation through which consumers save by cutting their usage. Rather, curtailment initiatives pay consumers to free up power supplies to offset shortages in the electric grid. By not using power during a threatened emergency, shareholders contribute to the available power supply in the same manner as power generated in plants. Incentive payments reflect wholesale market prices and can be extremely high when supplies are scarce.

The ISO allows utility companies, new electric providers and private companies to package large users in blocks, monitor their curtailment of kilowatt hours and facilitate cash disbursements. Referred to as curtailment service providers, the companies may aggregate buildings to assure that electric loads comply with ISO programmatic thresholds.

The benefits of building-wide curtailment can be significant, but they are only available if building-wide and individual apartment meters are capable of interval data collection. Incentives can only be awarded if the reductions can be measured.

#### **Adjusting to Load Curtailment**

The term curtailment is ubiquitous in today's state and city energy communities. Yet despite the proliferation of curtailment programs, meetings and conferences, it has not entered the everyday vocabulary or experiences of

city residents. Few of us in this communications and technology capital consider blackouts be a remote possibility. Equally far-fetched is the notion that we, as individuals, can do anything about it.

Experts in the energy field know that the threat is real. They recognize that when the system is strained, very little is needed to trigger rolling blackouts. It's appropriate to mention the straw that broke the camel's back. Our apartments and apartment buildings comprise many straws with the potential to cripple our electric system. Fortunately, we now have the tools to take preventative actions.

Most people would look with incredulity on a proposal to shut off air conditioning on the hottest day of the year. Yet if the entire electric grid were at risk, it seems a minor inconvenience to turn off the air conditioner when you leave the room. Some people leave their air conditioners on when they are out. Timers are readily available to switch the air-conditioner on in time for the resident's return. Unless people are aware that a power emergency looms, however, they will not take these simple actions to avoid it.

We believe that the cooperative community can fuse public spirit and ingenuity to harness discretion and avert blackouts. Cooperative leaders have formed the Cooperative Coalition to Prevent Blackouts (CCPB) and are working with EIS to jump start this campaign. The campaign opens by educating consumers about the need for load curtailment. It proposes to demonstrate the benefits of variable pricing and load controls in cooperatives and condominiums and document and disseminate the findings throughout the multifamily building community. Finally, we will promote government actions and incentives that support a user-friendly institutional and regulatory environment to promote advanced submetering applications and the initiatives they make possible.

#### **Show Us the Money**

New Yorkers know someone is serious when they are willing to pay for it. Today the ISO is prepared to pay for curtailment — and they're willing to pay in advance.

These programs are primarily available to large customers, including master-metered buildings. The ISO Web site ([www.nyiso.com](http://www.nyiso.com)) provides names of authorized curtailment service providers who can determine if your building is a viable candidate for curtailment incentives.

The foremost way for multifamily buildings to take advantage of curtailment incentives and variable pricing structures is the implementation of interval metering and automatic load-controlling equipment. NYSERDA shares this vision and is, like the ISO, is willing to "put its money where its mouth is." NYSERDA's Comprehensive Energy Management program will pay 50-75 percent of the cost of advanced metering technologies and defray \$3,000-5,000 of study, research and planning costs.

In July 2001, Mayor Rudy Giuliani signed a bill into law that permits buildings a real estate tax abatement to convert apartments from direct-metered electric service to submeters. The City Council unanimously approved the bill, which enjoyed the support of all of the City's cooperative organizations. Cooperatives are eligible for lower property taxes, which can help amortize the expense of an advanced meter installation. Another big chunk of the cost can be offset by the NYSERDA rebates. When savings are compared with net costs, the programs assure a prudent investment. Buildings that implement an advanced submetering program and pursue appropriate incentives will find that payback arrives "faster than a New York minute." Ω

<sup>3</sup> A partner at Gould and Wilkie, Mr. Funk is a founder of the Cooperative Coalition to Prevent Blackouts. He is president of his own Manhattan cooperative, which is working to demonstrate the concepts discussed here.

<sup>4</sup>EIS is studying service options through Con Ed's RTP tariff and variable rate structures from ESCOs, as we seek to reconcile conflicts between the demand charge and an RTP rate structure. Viewing electric use as elastic, we propose to implement an array of price signals, ISO incentives and the use of automatic load controls and internal variable rates to promote curtailment.

In March 2002 Gulf Power's Brian White and Converge's Joseph Leceese conducted a test demonstration of their system at 601 West 136<sup>th</sup> Street, a Manhattan cooperative in which Mr. Montblanc resides and is a director. Cooperative leaders, including Mr. Carlson and Maryann Rothman joined NYSERDA and PSC officials for presentations of the Gulf/Converge concepts and technologies.