plaNYC

A GREENER, GREATER
NEW YORK

The City of New York
Mayor Michael R. Bloomberg

Energy

Provide cleaner, more reliable power for every New Yorker by upgrading our energy infrastructure

On July 17, 2006, the electric cables began to fail. As the lights started flickering off, the residents of western Queens began alerting Con Edison that a blackout had begun.

Over the next nine days, Con Edison recorded these calls to assess the scope of the outages—because there was no automated way to find out. Finally, their employees drove through the streets of western Queens and counted the number of buildings without lights to estimate how many customers had been affected.

Although we have the most reliable energy network in the United States, the recent Queens power outages betrayed the weaknesses in our aging grid. Less familiar, though, are the risks revealed over the rest of the summer.

Ten days after the blackout, a third multi-day heat wave gripped the city, with temperatures reaching as high as 102º. Although institutions and large companies began extinguishing lights, raising air conditioning temperatures, and shutting down elevators, there was no systematic way to slow the skyrocketing demand. Con Edison customer representatives, police officers and members of the City's Office of Emergency Management began knocking on doors across the city. The Real Estate Board of New York began emailing many of its 12,000 members. Newspapers, radio stations, and local news networks carried announcements. All urged New Yorkers to slow down their energy use. It wasn't enough.

On August 1-2, the city set two consecutive records for electricity demand, topping the previous record set a year earlier. To prevent a blackout, businesses began switching to backup diesel generators that spewed pollutants into the air. Our dirtiest and least efficient power plants were turned on, making our air quality unhealthy for people with heart or lung disease, the elderly, and children. And since these aging plants are more expensive to run, the city's electricity prices—already among the highest in the nation—soared by 500% that day.
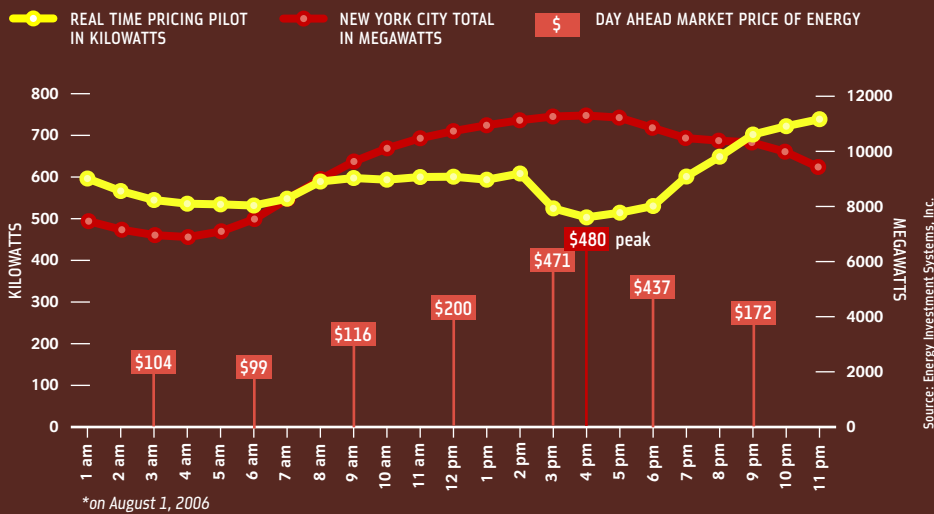
Every year, New Yorkers collectively spend approximately $13.4 billion on the energy that lights our buildings and powers our electronic devices, on our electrical delivery system, and on the fuel used for heating and hot water; the average residential energy bill is $145. But this consumption has additional costs. It is responsible for roughly 80% of our global-warming emissions and more than 40% of all locally generated air pollution.

Even on regular days, our supply is neither as clean nor as affordable as it should be. Our existing fleet of power plants averages around 30 years old, and uses mostly out-of-date technologies. These older plants use 30% to 60% more fuel and produce several times the air pollution of newer plants to generate the same amount of electricity.

But by 2012, even this supply will not be enough. We are continually setting new records for energy usage. As the summer of 2006 showed, our ability to reduce demand in a coordinated, efficient way is limited. And our delivery infrastructure is under increasing pressure.

By 2030, population and economic growth will strain the city's energy network further. If current trends continue, energy demand could grow substantially. By 2015 alone, the city's annual electricity and heating bill, excluding delivery costs, will increase by $3 billion, translating into energy bills that are annually $300 to $400 higher for the average New York household. As we consume more energy, our environmental impact will increase accordingly. By 2015, we will be pumping an additional 4.6 million metric tons of CO_2 into the atmosphere. *(See chart on page 103: New York City Price of Electricity)*

New York City skyline

Real-Time Pricing Impact on Electricity Consumption*

- REAL TIME PRICING PILOT IN KILOWATTS
- NEW YORK CITY TOTAL IN MEGAWATTS
- $ DAY AHEAD MARKET PRICE OF ENERGY

$104 $99 $116 $200 $471 $480 peak $437 $172

KILOWATTS — 800, 700, 600, 500, 400, 300, 200, 100, 0

MEGAWATTS — 12000, 10000, 8000, 6000, 4000, 2000, 0

1 am 2 am 3 am 4 am 5 am 6 am 7 am 8 am 9 am 10 am 11 am 12 pm 1 pm 2 pm 3 pm 4 pm 5 pm 6 pm 7 pm 8 pm 9 pm 10 pm 11 pm

*on August 1, 2006

Source: Energy Investment Systems, Inc.

limit the use of the more expensive and often least efficient plants. The following initiatives could enable 25% of our peak demand to be shaved from the electric load.

We will seek to expand participation in peak load management programs through smart meters

In peak load management programs, customers agree to reduce their electricity load on the hottest days—either by using less electricity or by using alternative sources of generation. Participants are paid for enrollment and/or for responding during a peak event. Already, the customers enrolled can collectively reduce the city's peak load by appoximately 500 MW—or 4% of the peak electric demand in the city.

We can measure their impact because participants have installed a more sophisticated metering system that allows buildings to track their own energy use—and sometimes the energy consumption of individual tenants—in real-time. But these meters can be costly: a standard meter costs around $30, while smart meters range from $100 to $600.

Although enrollment has increased by 7% over each of the past three years, full participation is not realized due to the high cost of smart meters and the fact that entrance is mostly limited to the largest electricity consumers, such as large commercial and industrial buildings.

To overcome these challenges and allow for wider enrollment in the peak load management programs, the City will urge the PSC to approve Con Edison's plan to install smart meters in every building by 2014.

The City will work with NYPA and Con Edison on installing smart meters in all City-owned buildings before 2014. This could result in a 4% decrease in City government's peak energy usage, while reducing overall energy consumption by 5%. We will also challenge all other institutional, State, and Federal agencies located in the city to participate in peak load programs and increase their overall impact.

We will support expansion of real-time pricing across the city

Currently, consumers are able to make informed choices about when to use their cell phones; in peak times, they know that minutes will cost more than off-peak hours and can adjust their behavior accordingly. Although energy prices fluctuate just as much over the course of a day, this information is almost entirely unavailable to the vast majority of New Yorkers. *(See chart above: Real-Time Pricing Impact on Electricity Consumption; see case study: Real-Time Pricing in New York)*

If customers were able to see the costs of electricity at different times, they could make more educated decisions about when and how they use electricity throughout the day. This is known as Real-Time Pricing (RTP).

Although the State initiated a residential RTP pilot program between 2004 and early 2006, it has not provided incentives for any additional pilots since 2005.

The City will advocate for new incentives to expand RTP pilots in the city and encourage residential participation, with the goal of enrolling 50% of small businesses and residents by 2015. In addition, the City will push the PSC to mandate that 100% of medium and large non-residential customers enter RTP programs over the same time frame.

Real-Time Pricing in New York

Ellen Funk loads the dishwasher after dinner, and then she waits until 7 am the next day to turn it on.

"Running the dishwasher after dinner costs five times as much as turning it on in the morning," Funk said. "Why wouldn't I wait?"

Funk is a resident of 322 Central Park West, the first of four buildings across New York City to volunteer for a real time pricing program. Real-time pricing uses sophisticated metering—which 322 CPW installed in 2002—to track the energy usage of building residents. Most homes have meters that are read monthly, but Funk knows how much her electricity costs her every hour.

"I think everyone will buy power this way in the next ten years," said Lewis Kwit, President of Energy Investment Systems (EIS), who manages the building's energy-conserving initiative.

Monthly bills inform 322 CPW residents of their daily usage trends, and color-coated seasonal bulletins tell them what to expect at various hours in the coming months. Peak rates—often found in the hours when everyone gets home from work—represent about 25% of a building's total bill. The more residents conserve energy use during peak hours, the more money they save.

According to research done at Carnegie Mellon University and reported by *The New York Times*, American consumers would save nearly $23 billion a year if they shifted just 7% of their usage during peak hours to less expensive times—the equivalent of the whole nation getting a free month of power every year. Several real time pricing pilots are happening throughout the country, including projects in Illinois, Florida, and California.

The program at 322 CPW not only helps residents save money, it also allows them to conserve energy when utility companies need it most. This could mean the difference between a brownout and a sufficient energy supply.

"When New York expects a power emergency, our buildings are notified," said Kwit. "And they respond."

Last summer, there were five blackout alerts in New York. During the heat-wave in July 2006, when parts of Queens went dark for days, 322 Central Park West cut their energy use by 42% and sold the unused capacity for $3,000.

"The people in our building feel really good about the program," said Funk. "It's been a big success."