

Before the big program, you need to see how the small one works. That's the purpose of Baltimore Gas & Electric's (BGE's) new smart energy pricing pilot program—to measure how customers manage electricity use in direct response to price signals. "We're testing different pricing structures and levels as well as different technologies," says Cheryl Hindes, load analysis director for BGE, which implemented the pilot this past summer. "The results will allow us to design an effective full-scale program."

That larger program will help the utility offset the expected growth in summer peak demand in its territory over the next decade.



The Challenges

First, BGE installed advanced interval metering for approximately 1,050 residential customers, so the utility could communicate prices directly.

Next, BGE had to determine which pricing structures to test. Based on feedback from its customers, as well as the results of other pricing pilots around the country, the utility chose two—dynamic peak pricing (DPP) and a peak-time rebate (PTR). Under both programs

- the peak hours are 2:00-7:00 pm on weekdays;
- BGE can call up to 12 critical peak days over the four-month summer period, meaning that critical peak prices are in effect for a total of 60 hours (2 percent of all hours) during the summer; and
- the utility sends out a notice—by email, telephone, or text message—by 6:00 pm the day before a critical peak pricing day.

BGE BEATS THE HEAT

By Lisa V. Wood,
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DPP's critical peak price is \$1.30 per kilowatt-hour; \$0.14/kwh (the current flat rate) for the rest of the summer peak hours (13 percent of all summer hours); and \$0.09/kwh for the remaining (off-peak) hours.

Under one version of PTR, the flat rate of \$0.14/kwh is in effect all summer, but customers receive a rebate of \$1.16/kwh for energy shifted during the 60 critical hours. Under the second version, the rebate is \$1.75/kwh.

Customer focus groups led the utility to test two systems that automatically respond to the day-ahead price notification—the energy orb (a spherical device in the home that changes color and pulsates when the price is about to change) and a device that automatically cycles the air conditioner when the price changes. (The AC is the household system that tends to draw the most energy on hot days.)

"We used the energy orb because our focus-group customers were excited about it," said Wayne Harbaugh, BGE's vice president of pricing and regulatory services. "Plus, we wanted to test a technology that provided information but did not automate the response."

Approximately 27 percent of the customers in the pilot received the energy orb only; about 39 percent had both the orb and the cycling switch; the remaining 34 percent had no technology.

The Take-Aways

As of mid-August, BGE had called seven critical peak pricing events. The average temperature on these days ranged from 86 degrees to 94 degrees; and the hourly wholesale price—what BGE paid in order to serve its entire customer base—ranged from \$0.10/kwh to \$0.55/kwh. A recent Brattle Group review of similar pricing experiments showed a shift in usage of 10-25 percent during critical peak pricing hours—BGE's preliminary results are at the upper end of this range.

In general, although all the data are not in yet, BGE found that those receiving the higher price signals responded to a slightly greater extent than those with the lower PTR rate. The most impressive finding, however, was that customers responded to technology: Those who had both the orb and the AC cycling switch responded to the pricing signal at a rate about 35 percent more than those with no technology and 15-20 percent more than those with the orb only.

As of this writing, the summer hadn't ended. "But so far, we are extremely happy with the results and the customer interest in this program," says Hindes. "The bottom line is that such efficient pricing programs allow us to serve our customers more cost effectively." ♦



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