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Measuring tools evoke negawatts

by Mark Anderson - 3.27.07

Kill A Watt meter helps customers measure energy use.

Consumers are increasingly seeing the value in green buildings, more fuel-efficient vehicles and efficient lighting products. Yet electricity remains frustratingly invisible. Even as methods for measuring electricity usage come to market, selling consumers on the prospect of cutting down on kilowatts is likely to be an uphill battle wherever prices are low.

It's a problem that's sent many Northwest electric utilities leaders repeatedly going back to the drawing board to redraft conservation programs (see "Current Power Broker: J. LaMont Keen," *nwcurrent*, March 2007). But as demands for utilities to extend their conservation efforts increase, recent innovations in energy-measuring equipment could make an impact on the region's power supply.

According to the Intergovernmental Panel on Climate Change, California's per-capita energy consumption has remained constant since 1974, while per-person use across the country has jumped 50 percent. It's no surprise California's electricity cost nearly 13 cents per kilowatt hour last year, considerably north of the nine-cent national average; or that some of the nation's biggest per-capita guzzlers — Wyoming, Kentucky and Alabama — had prices ranging from five to seven cents.

"It's all about human behavior," says Fred Gordon, director of planning and evaluation at Energy Trust of Oregon, a Portland nonprofit. "We see new energy measurement products every few months. But homeowners are managers with too many things to manage. And a lot of the other choices seem a lot more exciting than managing your energy bill."

Nevertheless, the U.S. Department of Energy says that if every American home replaced one incandescent bulb with a compact fluorescent, leftover electricity would light an extra 2.5 million homes for a year (see "Current Thinking: What the CFL?," *nwcurrent*, Feb. 2006). But how much juice does an air conditioner drink? Is it a big deal to leave computers on overnight? Does time of day matter when running dishwashers? For those seeking answers, options are expanding.

Handheld meters, such as the Watts Up? and the Kill A Watt, cost less than $30. Connect these gizmos to a wall socket; then plug in a lamp, blow dryer or microwave oven to get a real-time analysis of kilowatt consumption.

"First-quarter 2007 sales should outstrip all last year," says Tom Lynch, director of sales and marketing for P3 International—the Kill A Watt meter's New York-based manufacturer. "It's not that we're great salespeople. It's the right product at the right time."

Lynch says P3 is tweaking a pair of coming-soon devices. The Kill A Watt EZ allows programming of rates and dates for forecasting and other sophisticated tricks. The company plans to introduce a power-strip version, which would provide the lowdown on entire entertainment or computer systems.

Those who prefer to turn the job over to experts can find a growing number who specialize in on-site evaluations. In Portland, energy-consulting firm Imagine Energy formulates kilowatt-saving strategies during three- to four-hour walkthroughs with a $400 price tag. The company counts architects, builders and homeowners among its clients.

"It's kind of like getting a checkup from the doctor," says company co-founder Jonathan Cohen. "We're looking for smoking guns — the really big users. We leave a roadmap for the homeowner to make their house perform as it should."

On the more extravagant side is the Building Dashboard, a Web-based tool developed by Lucid Design Group that provides a wide-ranging set of real-time data primarily for commercial buildings, public spaces and schools.

"The idea is that if we can make the information easily accessible to a non-technical audience, we can influence the way they think of the use of energy," says John Petersen, chairman of the environmental studies program at Oberlin College, near Cleveland. "We monitor buildings as if they're ecosystems."

Petersen's former students formed Lucid Design Group, and with grants from the U.S. Environmental Protection Agency, the Ohio Foundation of Independent Colleges and the U.S. Department of Energy, installed a Building Dashboard at Oberlin last fall. A contest pitted dorms against each other as collegians accessed the dashboard on their computers and monitored specific personal consumption and other data, including solar panel output.

"In lobbies, you'll run into big plasma screens that go through a sequence of information," Petersen says. "We're discovering that there's a real market demand for this kind of technology."

Even so, Energy Trust's Gordon adds a note of caution.

"In the commercial building sector, you can have more information than you have the ability to use," he says. "And there are a million places where the knowledge chain can fall apart."

Soon "smart meters" will gauge consumption much more frequently than the once-a-month meter man of today. In January, Canada's Blue Line Innovations won a trade association award for its PowerCost Monitor, which homeowners attach to their outdoor electrical meters. The wireless device sends raw data to a display panel inside the house.

Utilities are also diving in. The nation's largest seller, Southern California Edison, is spearheading the corporate smart-meter movement with plans for 5,000 meters in a pilot program this summer, followed with 5 million more by 2012. Consumers may soon be paying a premium for electricity during times of peak demand — and utilities may be providing us with new adventures in billing.

"The entire smart-metering thing is quite controversial," Gordon says. "I'm not saying it's good, not saying it's bad. I'm saying it's going to take a while to find out."

In the end, though, experts seem to agree that it largely comes down to "negawatts" – the "penny saved is a penny earned" concept introduced by environmental pioneer Amory Lovins in the 1980s.

"There really is something to be said for negawatts," says Dave Kvamme, spokesperson for PacifiCorp, a Portland-based utility that sells electricity in six western states. "A power plant you don't have to build is the most cost-effective resource you can have."

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The Building Dashboard displays a building's energy consumption in real-time.

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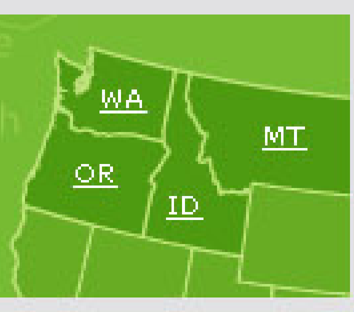

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