

By Peter Nye

*As the nation considers ways to deal with global warming, electric co-ops stand out as leaders in offering solutions regarding “the other power supply”—energy efficiency*



PHOTOGRAPH BY MICHAEL MAURER

# ENERGIZING EFFICIENCY



For Ray Beavers, CEO of United Cooperative Services in Cleburne, Texas, hubbub about surging wholesale power prices and the ensuing cry for energy efficiency sounds like déjà vu. Since he began working for electric co-ops 30 years ago, he has witnessed a variety of energy-related crises. Now

his co-op, in a fast-growing area near Fort Worth, has embarked on an ambitious campaign to conduct free energy audits for all of its approximately 50,000 residential and business members.

“Our directors are totally supportive of our energy efficiency efforts,” Beavers explains. “Energy audits will make our members feel that someone from the co-op is

there, one-on-one, to help them. The results should demonstrate to everyone the need to use power wisely.”

To capitalize on new efficiencies gained from the installation of automated meter reading (AMR) units this spring, the co-op trained several meter readers to become energy auditors. Beavers plans to have 10 full-time employees performing energy audits on

a regular basis by the end of the year. These on-site visits will include not only walk-through audits but also a complete software analysis of potential savings that could be realized through recommended upgrades and/or retrofits. Each facility will be checked for adequate caulking and weatherstripping around windows and doors, insulation between walls and in attics, ductworks, condition of pipes, thermostat settings, air conditioning filters, lighting, and whether fireplace flues are closed when air conditioners run.

United Cooperative Services Area Manager Jake Brooks notes that when he talks to residents, civic clubs, and community organizations about energy efficiency, people initially react as if a sales pitch will follow.

"Then I tell them how to save money on their energy bills," he indicates. "Generally, folks are amazed that the co-op would send someone out to tell them how to use less of what we sell."

Collected energy audit information gets entered into a laptop using special software developed by Oklahoma State University, based on county-specific conditions. Auditors calculate how much energy consumption would be reduced for different recommendations, determine cost savings for each, and show consumer-members how soon they could recoup their investment. Beavers contends that audits can reduce monthly energy bills by 7 to 10 percent while easing pressure on the grid.

"When our customer service representatives receive high-bill complaints, they can look on a computer and check when the consumer last had an energy audit done," he remarks. "We can ask callers if they followed through on suggestions. Of course, if a member can't afford to pay his or her bill, we will see what we can do to help."

United Cooperative Services' energy audits can serve double duty, too. Using an infrared camera during a recent audit at the Golden Peanut Company shelling plant in Comyn, Engineering Technician II Brian Phipps assisted Brooks by detecting a hot spot in an electrical panel.

"You couldn't see it with the naked eye, but the infrared camera picked up a burned fuse for a 300-hp oscillating fan that pulled hulls off peanuts," Brooks recalls.

A portion of the plant was immediately shut down. "When the electrician pulled out the fuse, it crumbled in his hand," Brooks says. "The fuse was replaced in less than 10 minutes rather than the plant

experiencing a lengthy, unplanned outage."

Craig Smith of Golden Peanut Company, which provides peanuts for M&M's, Snickers, and PayDay candy bars, believes that discovering the problem early ensured safety for all 84 staff in the plant and prevented an unscheduled shutdown that would have resulted in lost production, missed customer shipments, a backup in cold storage, and \$20,000 in labor costs for each day (24-hour period) the plant sat idle.

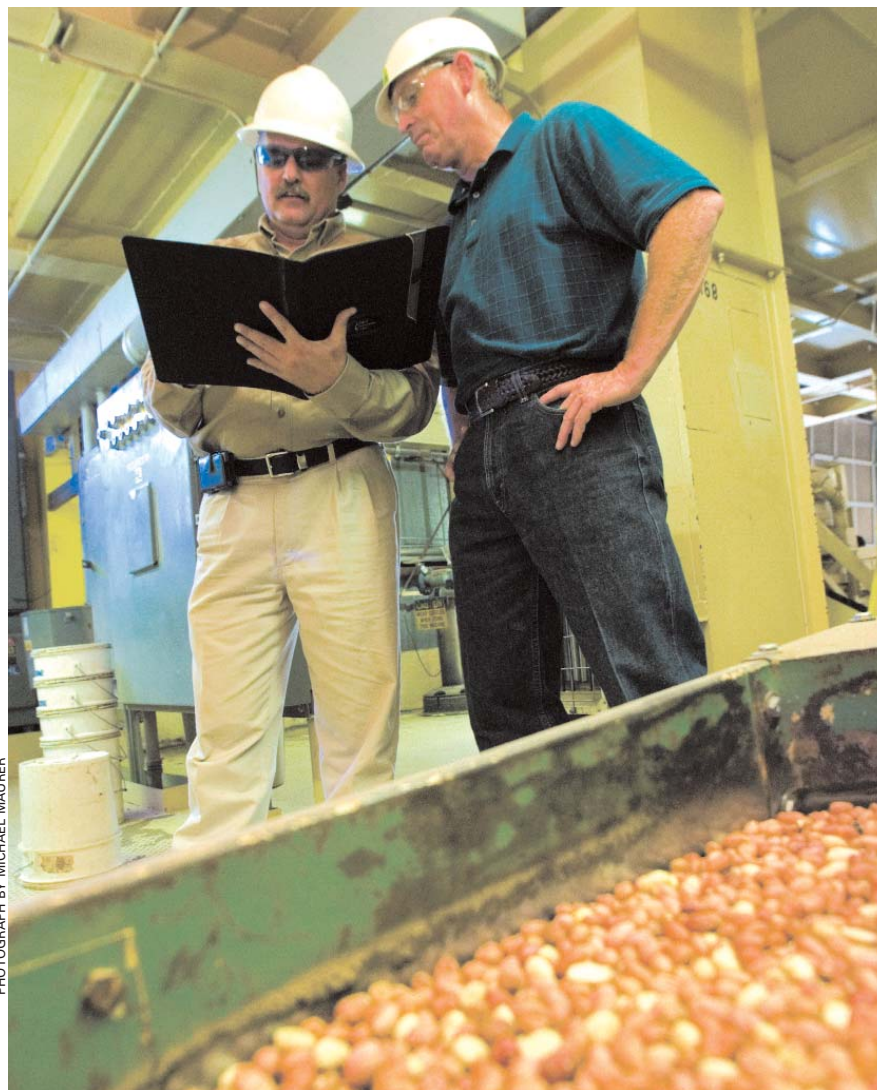
United Cooperative Services also promotes energy efficiency at monthly meetings, in print ads, and on billboards—especially one prominently displayed along I-35, a main highway in the Dallas-Fort Worth metroplex. The ad features Customer Service Representative Melinda Montgomery and Lineman Jason Byram, separated by the twisted spiral of a compact fluorescent lightbulb (CFL)—the poster child for energy efficiency. Text

informs motorists: "We all have the power to save energy and money!"

### Through the EPRI prism

According to a February 2007 study by the Electric Power Research Institute (EPRI), a Palo Alto, Calif.-based non-profit consortium whose members include electric co-ops, U.S. electric utilities could reduce emissions of carbon dioxide—a greenhouse gas blamed as the leading contributor to global warming—below 1990 levels within 23 years by taking aggressive steps in seven principal areas, including energy efficiency. The report "Electricity Technology in a Carbon-Constrained Future" projects the nation will add at least one-third more load—amounting to 1.57 trillion kWh—to the grid by 2030, half of which will be generated by coal. However, EPRI sees potential for a 9 percent reduction in

*Previous page: Ray Beavers, CEO of United Cooperative Services in Texas, poses by a billboard the co-op uses to promote energy efficiency in the Dallas-Fort Worth area. The co-op has made a commitment to conduct free energy audits for all of its nearly 50,000 consumers. Below: United Cooperative Services Area Manager Jake Brooks, left, reviews energy audit recommendations with Craig Smith of the Golden Peanut Company, a co-op member.*



PHOTOGRAPH BY MICHAEL MAURER

electric consumption—equivalent to the output of 50 large power plants—through efficiency measures.

To help residences, businesses, and industries use electricity more wisely, EPRI recently established The Living Laboratory in Knoxville, Tenn. Researchers at the facility render independent assessments of new gadgets and technologies—like “smart grid” devices that automatically respond to price or emergency demand-reduction signals—to help utilities get the “biggest bang” out of every kilowatt-hour produced.

“The laboratory provides a controlled environment to evaluate products and processes before we put them in the field for more tests,” explains Tom Reddoch, EPRI manager of energy utilization, who directs the lab. “Energy efficiency has two primary aspects—energy consumption and power demand. If you reduce energy consumption, then you reduce your carbon dioxide footprint. If you reduce demand, then you avoid having to create more power.”

### Leaders of the pack

Energy efficiency efforts are nothing new for electric co-ops. Since the Arab oil embargo of the 1970s, nearly all rural electric systems have conducted ongoing consumer education campaigns to build awareness about saving energy.

“Unlike investor-owned utilities, not-for-profit, consumer-owned electric co-ops aren’t structurally motivated to sell more kilowatt-hours,” observes John Holt, NRECA senior principal for generation & fuel. “Co-ops, to produce a reliable supply of electricity at a competitive price, strive to maximize use of existing resources and infrastructure. Efficiency has always been a natural extension of our business model.”

But power supply and political pressures are forcing co-op boards and management to take a fresh look at existing efficiency programs and consider new ones. During the next decade, the nation’s generation and transmission (G&T) co-ops will need to add up to one-third more baseload generation to meet a projected 2.6 percent increase in load growth, plus install pollution-control equip-

ment at existing plants. The price tag attached to “putting iron in the ground,” coupled with the likely imposition of climate change and greenhouse gas regulations, increases pressure for action on the efficiency side.

“Efficiency measures can help co-ops head off the need for new generation and curb greenhouse gas emissions,” Holt points out. “The biggest payoff will come from consumers switching to more energy-efficient geothermal heat pumps, lighting, and appliances, combined with improved power plant efficiencies and expansion of load management programs that reduce electricity purchases during expensive demand peaks [see sidebar].”

Beavers mentions that the Electric Reliability Council of Texas, operator of the electric grid for much of the Lone Star State, has warned of a power shortage in two years and controlled blackouts unless additional generation comes on-line.

“We have a moral obligation to work with our membership to mitigate energy consumption and provide options,” he emphasizes. “Since 2004, conservation has been one of our annual board objectives.”

## ‘The Cleanest Megawatt’

Believing that efficiency starts at home, electric co-ops have led the nation in reducing power consumption—and keeping the lid on wholesale generation costs—by controlling when electricity gets used. Spearheading this effort are programs known by various names—load management, demand-side response, or peak load shifting/shaving—that interrupt electric service to water heaters, air conditioners, furnaces, and other specialized equipment in the homes of volunteer consumer-members for brief periods, typically just a few hours. This control generally takes place during times of peak demand—the electric utility industry’s equivalent of rush-hour traffic—when power costs skyrocket.

“Few realize how well electric co-ops have done with demand management,” contends Ed Torrero, executive director of NRECA’s Cooperative Research Network. “Roughly 37 percent of all co-op systems can direct-control appliances, chiefly water heaters and air conditioners, while another 40 percent offer contract incentives for large commercial and industrial [C&I] consumers to turn off energy-intensive appliances or equipment.”

Torrero comments that load management essentially works like a “power plant in reverse,” helping to boost electric system efficiency, cut expensive demand charges co-ops must pay for purchased power, and reduce the need for new power plants. In fact, during 2005,

local electric co-ops working with their wholesale power suppliers reduced demand by 2,200 MW (comparable to a commercial nuclear power plant), saving \$50 million in fuel costs and offsetting more than 2,000 tons of carbon dioxide emissions.

Vince Kaminski, manager of planning at Allegheny Electric Cooperative, a generation and transmission (G&T) co-op in Harrisburg, Pa., notes that the G&T’s Coordinated Load Management System (CLMS) has saved co-op consumers in Pennsylvania and New Jersey about \$82 million in power costs over the past 20 years.

“CLMS remains as beneficial today as when it was launched in 1986,” Kaminski explains. “It boasts esti-



PREA

imated demand-side reduction capabilities of 50 megawatts, about 8 percent of our peak load in winter and about half of it in summer. Close to 97 percent of the 47,000-plus load control receivers on the system are installed on electric water heaters, with the remainder controlling dual-fuel home heating systems, or electric thermal storage units, air

## Good story to tell

**N**RECA Market Research Services studies find that 49 percent of all electric co-ops provide financial incentives—such as low- or no-interest loans for household improvements, leases on equipment, and ownership or maintenance of standby generators to reduce power use when consumption spikes—to spur investment in energy efficiency. More than 40 percent offer efficiency and weatherization services, including selling and installing high-efficiency lighting systems, electric water heaters, geothermal and air-source heat pumps, insulation, and Energy Star appliances, while roughly half include interactive energy use calculators on their Web sites.

Most co-ops are taking advantage of recent technology advancements, too: 72 percent are upgrading power lines, 56 percent are replacing older transformers, 50 percent use advanced technology to control voltage fluctuations, and 40 percent have deployed advanced metering devices. In fact, the Federal Energy Regulatory Commission (FERC) has reported that “market penetration of advanced metering [13 percent] is *biggest* among rural electric cooperatives.” More than 70 percent of

co-ops also employ some type of AMR system.

Increasingly, co-ops are pushing energy efficiency by encouraging consumers to change out traditional incandescent lightbulbs with CFLs—which, on average, use less than one-fifth the amount of electricity, last up to 10 times longer, and can save more than \$30 in electricity costs throughout their lifetime. Because lighting accounts for about 9 percent of U.S. household power consumption and about 20 percent of the nation’s electricity use, replacing just one incandescent bulb with a comparable CFL in every American household would save enough electricity to power more than 2.5 million homes for a year and offset the same amount of greenhouse gas emissions as taking nearly 800,000 cars off the road, according to the U.S. Department of Energy.

Yampa Valley Electric Association, in Steamboat Springs, Colo., has launched a reduction-in-emissions and conservation program that provides free CFLs.

“When a member brings in a coupon [clipped from the co-op’s newsletter] to one of our offices, we ask them to identify the top five incandescent bulbs they use, give them

one CFL equivalent, and offer to sell them four more at wholesale,” relates Jim Chappell, Yampa Valley Electric manager of customer accounts. “We expect 60 percent of our 18,000 residents to participate. That’s 10,800 CFLs. We budgeted \$26,000 for the giveaways. The rest of the bulbs we sell at cost.”

Central Iowa Power Cooperative (CIPCO), a G&T in Cedar Rapids, Iowa, offers its 12 member distribution co-ops and one municipal electric system a variety of incentives and rebates for Energy Star-rated products, including heat pumps, appliances, and CFLs. This year, CIPCO introduced a residential lighting incentive that will supply about 7,700 CFLs. The bulbs are expected to save some 2.8 million kWh of electricity and reduce carbon dioxide emissions by more than 3.9 million pounds annually.

In conjunction with adding a 750-MW state-of-the-art coal-fired unit at its 1,300-MW Seminole Generating Station along the St. Johns River in northeastern Florida, Tampa, Fla.-based G&T Seminole Electric Cooperative, as part of a collaborative process with the Sierra Club, agreed to buy about \$200,000 worth of CFLs (approximately 120,000 bulbs)



***Allegheny Electric Coordinated Load Management System technicians Jim Line, Mark Bublinec, and Matt Shaud, left to right, monitor electricity demand and weather conditions 24 hours a day from a master center located at the G&T’s headquarters facility in Pennsylvania.***

conditioning, and other kinds of miscellaneous loads.”

Out of a CLMS master center located at Allegheny Electric headquarters, technicians monitor electricity demand and weather conditions. “Based on weather and daily load forecasts, the coordinating system sends out a control strategy,” Kaminski says. “We do the operations and control of CLMS

on behalf of our 14 member distribution co-ops, which enroll consumers.”

The success of CLMS comes from co-op consumers being made “partners” in efforts to control electric rates. “Retail electricity prices are partially based on how much power each of our member co-ops requires during the five hottest, most humid days each summer,” Kaminski

adds. “Those hours typically occur in July and August late in the afternoon. To make consumers aware of the need to cut back electricity use during afternoons, when demand peaks may occur, many of our member co-ops conduct advertising and media alert campaigns encouraging folks to take additional steps, such as not running major appliances, during those periods.”

Load management has also paid big political dividends for Pennsylvania electric co-ops: they were allowed to comply with the Commonwealth’s Alternative Energy Portfolio Standards (AEPS) law through their ongoing CLMS commitments.

“AEPS requires investor-owned utilities to add increasing amounts of green

power into their generation mixes, up to 18 percent by 2020,” Kaminski relates. “If co-ops had been forced to meet those AEPS mandates, we estimate our consumers would have been saddled with millions of dollars in additional costs per year. Fortunately, the state legislature took into account both the strong renewable energy commitment made by electric co-ops throughout many decades in the form of CLMS and our [21-MW] Raystown Hydroelectric Project. After all, the cleanest megawatt is the one that doesn’t have to be produced at all. CLMS helps achieve that goal.”

The demand-side management program operated by Central Electric Power Cooperative, a G&T in Columbia, S.C., serving 15 distribu-

■ CLOSING THE REALITY GAP ON CLIMATE CHANGE

for its 10 member distribution co-ops to allocate to 1.6 million residential and businesses consumers in 46 counties. Meanwhile, Tri-State Generation and Transmission Association, a Westminster, Colo., G&T, purchased 44,000 CFLs—1,000 for each of its 44 distribution members—to hand out to consumer-members. Tri-State G&T pledged to rebate \$1 per bulb for any additional ones co-ops purchase.

Electric co-ops have also made a dramatic contribution to efficient electric system operation through the MultiSpeak Initiative, a collaboration between NRECA and more than 35 electric utility software companies and consultants that defines what data can be exchanged among commonly used applications and establishes standard messaging formats.

“MultiSpeak allows meters, consumer databases, and utility plant data to ‘talk’ to one another, helping boost service reliability and reducing waste,” declares Gary McNaughton, vice president of Cornice Engineering and MultiSpeak project coordinator.

**Saving Fort Knox**

A massive energy-efficiency project performed by Nolin Rural Electric Cooperative Corporation in Elizabethtown, Ky., rescued Fort Knox, the 109,000-acre military complex best known as home of the U.S. bullion depository. Under provi-

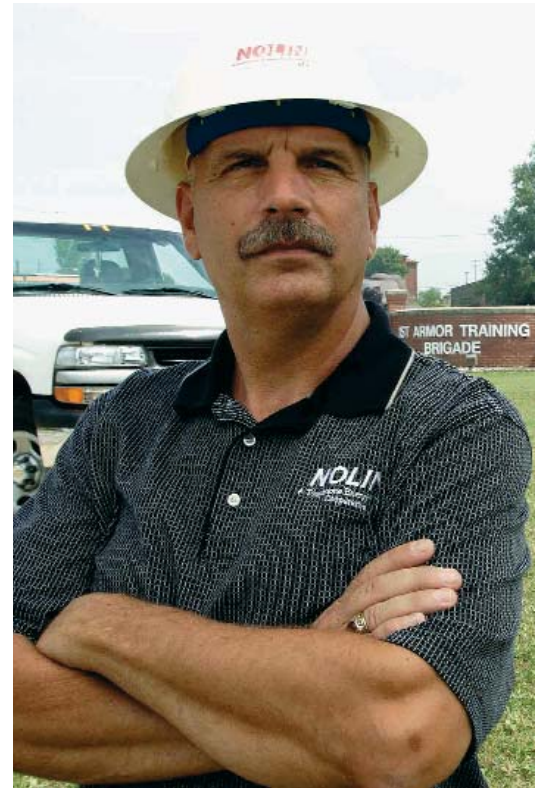
sions of the federal Energy Policy Act of 1992, Fort Knox had to shrink energy consumption for powering outdated heating, cooling, and lighting systems 35 percent by 2010 or face decommissioning.

“There are 3,000 buildings on the base, including a hospital, fire stations, a water-treatment plant, barracks, mess halls, and training centers,” explains Vince Heuser, Nolin RECC vice president of system operations & engineering. “The base makes up the sixth largest community in Kentucky. About 23,000 active-duty military, civil servants, and contractors live or work there.”

Closing the base threatened to wreak economic hardship across the center of the Bluegrass State. Nolin RECC, which had long serviced power lines on the base in addition to maintaining 2,800 miles of lines spanning nine counties, won a bid against an investor-owned utility in 1996 to help Fort Knox reduce energy use.

Patsy Whitehead, Nolin RECC communications coordinator, notes the majority of buildings dated to World War II. “The barracks were experiencing severe indoor air-quality issues, a high rate of respiratory illnesses, and poor comfort conditions,” she reflects.

Heuser dubs the project one of the biggest challenges of his career. “We began with a \$6,000 lighting project. Everything that followed got bigger, up to \$10 million for replacing a central steam-heating system, equivalent to the length of six city blocks, with indi-



vidual geothermal units. Combined, it makes up the largest geothermal system I know of in the country and, perhaps, the world.”

Other energy-saving technologies involve a Trane Tracer Summit Building Automation System, solar panels, smart metering, and peak-shaving generators.

To finance the upgrades, Nolin RECC negotiated a line of credit from the National Rural Utilities Cooperative Finance Corpora-

**‘The Cleanest Megawatt’** *continued*

tion co-ops, “has more than 100,000 load control switches on water heaters and another 20,000 on air conditioners,” remarks David Logeman, Central Electric Power director of power supply.

One Central Electric Power member system, Palmetto Electric Cooperative in Hardeeville, S.C., offers an H2O Select Water Heater Program with 33,000 water heaters—representing about half of the co-op’s total consumers—under load control. The program features rebates of \$350 for water heaters installed in new construction

and \$250 for replacing old models, a 10-year contract, and free repair service available around the clock.

“Load control saves us approximately \$1 million a year in power costs,” stresses Jimmy Baker, Palmetto Electric vice president of marketing & public relations.

Seminole Electric Cooperative, a G&T in Tampa, Fla., has trimmed peak demand through a variety of strategies. Under its load management program, member distribution co-ops turn off electric water heaters, air conditioners,

space heaters, and swimming-pool pumps for short periods at the homes of consumer volunteers. And under the G&T’s distributed generation program, distribution co-ops work with commercial consumers to install on-site generators for reliability purposes that are also available to meet system peaking requirements. These efforts have helped Seminole Electric avoid building about 240 MW of generating capacity, estimates Lane Mahaffey, corporate planning director.

In the Upper Midwest,

Great River Energy in Elk River, Minn., a G&T serving 28 distribution co-ops and more than 600,000 consumers in the North Star State and Wisconsin, sees demand jump from an annual average of about 1,400 MW most of the year to 2,600 MW in July and August, points out Gary Connett, director of environmental stewardship & member services.

“Load management is an incredible asset,” he says. “While spot energy prices typically make up a very small percent of our total energy-purchasing



PHOTOGRAPH BY ED THOMPSON

**Vince Heuser, vice president of system operations & engineering for Nolin RECC in Kentucky, considers the massive energy-efficiency project the co-op undertook at Fort Knox as one of the biggest challenges he's ever faced.**

finished, "base officials estimate they are saving \$9.1 million a year," Heuser asserts.

### Banking on it

**M**aquoketa Valley Electric Cooperative in Anamosa, Iowa, has introduced a series of efficiency programs that help members lower electric bills, including partnering with local banks on home improvement loans used for energy efficiency improvements. The co-op defers a significant part of the interest.

"We started last year with a pilot program involving two banks," says Patty Manuel, Maquoketa Valley REC director of member support. "We told our consumer-members they needed to follow Energy Star standards, such as installing high-efficiency replacement windows, improving ceiling or wall insulation to meet Energy Star levels, and replacing appliances older than 10 years with new Energy Star models."

Participants filled out cooperative applications that included bids for projects up to \$10,000, then submitted loan applications to the banks. "We don't get involved in loan

applications," insists Manuel. "When the bank gets ready to close on the loan, they tell us what our cost is and we write them a check."

This year, Maquoketa Valley REC opened up the loan program to more than 10 banks. "We wanted to allow members to work with their own bank to encourage more program participation," Manuel adds.

### Power of human connections

**T**o help electric co-op consumers figure out how much they can save by switching from traditional incandescent lightbulbs to CFLs, Touchstone Energy® Cooperatives—the brand alliance of the nation's electric co-ops—has introduced an online savings calculator powered by Flash Media. The calculator lets folks insert the number of incandescent bulbs they would replace with CFLs. With a click on "calculate," they quickly see how much money can be saved. For example, changing out 15 incandescent bulbs with CFLs saves \$66 a year and \$598 throughout the bulbs' lifetime. Each co-op can now add their own rate for a more accurate savings calculation.

The program, based on a bulb being used three hours a day and consuming 0.088 kWh, assumes that a 60-W incandescent bulb with 750 hours of life will be replaced with a 14-W CFL equivalent boasting 10,000 hours of life.

"Touchstone Energy member co-ops can link directly to the lightbulb energy saver cal-

tion in Herndon, Va. Energy savings that have so far trimmed consumption by 43 percent—and counting—are used to retire debt.

"We are approaching \$130 million in contracts for different kinds of energy efficiencies," Heuser claims. "They range from high-efficiency lighting in offices, window replacements, insulated roofing, and high-ceiling bays for servicing armored tanks."

With some 80 percent of the upgrades

expenses, they far and away eclipse any other cost on a per kilowatt-hour basis. Load management helps trim our winter peak by 12 percent and our summer peak by 13 percent."

Last summer, as Minnesotans sweltered through a heat wave, wholesale energy prices skyrocketed tenfold, Connett mentions. "We survived because, back in the 1980s, we set a goal to reduce demand and signed up members for our cycled air conditioning program. Today we have more than 270,000 devices directly under control,

including 140,000 central air conditioners out of 340,000."

Great River Energy provides member co-ops a \$100 rebate for every consumer who joins the cycled air conditioning program and up to a \$350 rebate per high-efficiency air conditioner installed through its Quality Installation program. Last year, the G&T distributed a total of \$4.2 million in energy-efficiency rebates and incentives.

Dairyland Power Cooperative, a G&T headquartered in La Crosse, Wis., that serves 25 distribution co-ops in Wisconsin, Iowa, Minnesota, and

Illinois, reduces load up to 160 MW in winter and 70 MW in summer (and saved a total of \$10.5 million in power costs in 2006) through demand-side management, reports Ed West, Dairyland Power director of telecommunications & control. The 160-MW total, comparable to a small power plant, stems from controls on roughly 75,000 residential electric water heaters, 15,000 air conditioners, 8,000 residential heat-storage systems, 275 C&I generators, 180 agricultural grain dryers, and 100 C&I accounts on interruptible rates.

"We 'operate' our load-management system hundreds of times per year to avoid purchasing market energy or providing operating reserves," West explains. "And we're constantly upgrading our equipment. The ability to develop an extremely accurate load estimate is important. Our Web site provides updates on all load management developments, allowing our co-ops to know what is happening without picking up the telephone."

*Freelancer Samuel Western contributed to this report.*

culator from touchstoneenergy.coop,” mentions Ann Maggard, Touchstone Energy director of communications & brand education. “Additional animated applications that will calculate potential savings through electric water heaters and HVAC systems, as well programs designed for kids, will be introduced later this year as part of Touchstone Energy’s residential energy management portfolio.”

Maggard adds that Touchstone Energy offers educational guides to help homeowners and small businesses root out energy waste and has established recommended efficiency standards for both new and existing homes. In addition, other energy efficiency programs available from Touchstone Energy include a Small Commercial Energy Auditing Workshop, a Residential Energy Auditing Workshop, an online home energy audit, and new Customer Service Representative Energy Efficiency Workshops designed to educate and improve member satisfaction.

### Efficiency works

Since the early 1970s, U.S. energy consumption has climbed by 33 percent, but thanks to efficiency measures taken and technological advancements made during that period, the nation now uses half as much energy per dollar of economic activity.

“To run today’s economy without the energy efficiency improvements that have taken place since 1973, we would need 43 percent more energy supplies than we currently use—more energy than we currently generate from any single fuel source like nuclear, gas, coal, or renewables,” Jim Kerr, president of the National Association of Regulatory Utility Commissioners and member of the North Carolina Utilities Commission, testified in April before the U.S. Senate Energy & Natural Resources Committee.

Beavers stresses that when TXU Energy, the giant Dallas-based investor-owned utility, announced plans early this year to build 11 new coal-burning plants to generate about 7,000 MW to meet expected growth, environmentalists expressed outrage. Under pressure from “green groups” on Wall Street, a \$45 billion buyout of the utility by private equity interests came with a huge caveat: TXU Energy had to scuttle eight of the proposed power plants and make up the generation difference through demand-response programs.

“If consumers around Texas shifted 10 percent of their electricity use to off-peak hours, that would save 7,000 MW,” he sug-

gests. “That’s enough power to make up for the 11 new plants—without spending one penny in capital investment, building any transmission lines, or emitting any greenhouse gases.”

“Energy efficiency remains key to how electric co-ops will keep electricity affordable in the face of rising energy prices,” concludes NRECA CEO Glenn English. “Whether it’s fostering the construction of more energy-efficient buildings, promoting the development and use of more energy-efficiency appliances, accelerating the development and use of advanced electric meters, or helping to commercialize fuel-efficient, plug-in hybrid electric vehicles, co-ops will put their energy and business expertise to work in developing innovative member programs that help get the most out of every kilowatt.” ■

*This article represents the first in a series on how electric co-ops are looking out for their consumers and working to control power costs in an environmentally responsible fashion. Aimed at “closing the reality gap” on public understanding about climate change, the series examines ways electric co-ops are addressing seven Electric Power Research Institute recommendations that will allow the electric utility industry to slow, halt, and eventually decrease carbon dioxide emissions to 1990 levels by 2030 while still meeting demand for affordable, reliable electricity. The seven recommendations (some of which are still on the drawing board) are boosting energy efficiency, improving the operating efficiency of coal-fired power plants, investing in renewable energy, expanding nuclear power capacity, capturing and storing carbon produced at coal-fired power plants, adding distributed generation resources, and marketing plug-in hybrid vehicles.*