

## Heat-seeking mission

Home energy audit, whether professional or do-it-yourself, saves money by pinpointing waste

Sunday, November 23, 2008 3:36 AM

BY **TIM FERAN**

### THE COLUMBUS DISPATCH

With the weather grown colder and the economy grown harsher, the push is on for homeowners to keep winter's expected higher heating costs from putting a major chill on checkbooks.

And the challenge is big: Columbia Gas of Ohio, for instance, expects that a typical customer's bill in November will be \$97.15, up from \$88.21 last November -- a 10 percent increase. And that's for starters. As temperatures go down, down, down in the deepest months of winter, heating bills will go up, up, up.

To fight those high winter heating bills while still remaining snug, homeowners of all income ranges have plenty of options.

One is Ground Level Solutions, a nonprofit company whose mission is to "foster the wise and prudent use of energy resources among moderate and low-income individuals and families."

Ground Level Solutions provides home weatherization for, among others, the Home Weatherization Assistance Program, an energy-efficiency program funded by the U.S. Department of Energy; and Warm Choice, a program sponsored by Columbia Gas.

For households that qualify for the programs, Ground Level provides safety testing and inspection, repairs or replacement of heating systems, and additional insulation in attics, walls and basements.

Those who qualify -- income must be at or below \$30,000 for a family of four -- can call Ground Level Solutions at 1-800-537-8210, or in Franklin County, 614-861-0068, and in Morrow and Richland counties, 419-774-0457.

More than 304,000 homes have been weatherized in Ohio since the federally funded Home



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**Open drapes and blinds on south-facing windows during sunny winter days to help warm a house. Close them at night.**

Weatherization Assistance Program began in 1977, and many more households are expected to take advantage of it this year.

"Everything I'm hearing is it is going to be a cold winter. A lot of people can benefit from a service like this," said Dave Davenport, deputy director at Ground Level Solutions.

"We have no waiting list. So pretty much anyone who qualifies can get us out to look at their home and have the service done within the month."

Those in higher income brackets can apply the same ideas to their homes, too.

The benefits of making improvements are worth the effort, both for the individual and for society at large. According to a study by Oak Ridge National Laboratory, for every \$1 of weatherization, the benefit in savings to the individual home is \$1.65 and the benefit to society is \$2.72.

The U.S. Department of Energy recommends starting off by getting an energy audit -- either do-it-yourself or by a professional -- to pinpoint the best ways of saving utility dollars.

With a simple walk-through, anyone can spot problems, keep a list of inspected areas and prioritize needed upgrades.

"It takes an hour, an hour and a half, typically to do a survey" that will cost a little less than \$200, said Rick Harrington of Patch Independent Home Inspections. Harrington typically uses an infrared camera in a survey, which is less expensive than a full energy audit that includes checking appliances, fans and other items.

"What I've been finding recently is that the biggest return on investment (that) homeowners can make is to have a correctly insulated attic and crawl space," Harrington said.

"A million-dollar house I did recently, I directed my infrared camera to the ceiling, and I could see that the whole laundry room didn't have a bit of insulation. They kept having to paint the room because of the condensation," because of the difference between inside heat and outside cold air on the wall.

Here are some tips for conducting your own energy audit.

### **Identify air leaks**

Check to see whether air flows through electrical outlets and switch plates; under baseboards; or around window frames, doors, fireplace dampers, attic hatches and wall- or window-mounted air conditioners.

Also look for gaps around pipes and wires coming into the house, foundation seals and mail slots.

Use incense sticks or a damp hand to locate leaks. Moving air will cause smoke from an incense stick to waver; a damp hand will feel any drafts.

To plug those leaks, insert filler material or caulk into the holes. The U.S. Department of Energy says

that most experts agree that caulking and weatherstripping will pay for themselves in energy savings within one year.

*Safety note:* When sealing any home, always be aware of the danger of indoor air pollution and combustion- appliance backdrafts -- the situation when an exhaust fan pulls gases back into a home. Contact utility companies, energy professionals or ventilation contractors if you have any concerns.

### **Improve insulation**

Inspect the attic, walls and basement for proper insulation.

Up top, check the attic hatch to see whether it is at least as heavily insulated as the attic, is weatherstripped and closes tightly. In the attic, determine whether openings for items such as pipes, ductwork and chimneys are sealed.

Seal any gaps with an expanding foam caulk or other permanent sealant. Also, check to see whether there is a vapor barrier such as tar paper or a plastic sheet under the attic insulation.

In walls, only a thermographic inspection using an infrared camera can determine whether an entire wall is insulated.

A quick check can be done, however, by removing the cover plate from an electrical outlet -- after turning off the power, of course -- and gently probing the wall cavity with a thin, long stick. Slight resistance to the probing will indicate whether there is insulation in the wall cavity.

If the basement is unheated, determine whether there is insulation under the living area flooring. An R-value of 25 is the recommended minimum level of insulation.

Insulation at the top of the foundation wall and first-floor perimeter should have an R-value of 19 or greater. If the basement is heated, the foundation walls should be insulated to at least R-19. The water heater, hot water pipes and furnace ducts should all be insulated.

*Safety note:* Harrington cautions that homeowners planning to add more insulation should be wary of "older houses in Columbus that have old knob and tube wiring. Do *not* cover the knob and tube with insulation," he said. "If you think you have that kind of wiring, see a professional to have it removed."

### **Upgrade equipment**

Check filters on a forced-air furnace and replace as needed and have a professional check and clean the equipment once a year.

Typically, furnace filters should be replaced once a month during the winter.

Check ductwork for dirt streaks, especially near seams -- an indication of air leaks that should be sealed with a duct mastic.

Ironically, duct tape doesn't create a good seal on ductwork.

Insulate any ducts or pipes that travel through unheated spaces using a minimum R-value of 6.

If the heating unit is more than 15 years old, consider replacing the system with a newer energy-efficient unit that will greatly reduce energy consumption.

### **Install efficient bulbs**

Energy for lighting accounts for about 10 percent of a home electric bill, so examine the wattage of light bulbs in the house and see whether 60- or 75-watt bulbs can replace 100-watt bulbs.

Also, consider compact fluorescent bulbs for areas where lights are on for hours at a time.

### **Program the thermostat**

Invest in a programmable thermostat or, if one already is in place, use it effectively by lowering the home's temperature when the house is empty.

Such programming shifts can reduce heating or cooling costs by 20 percent to 30 percent annually, according to Energy Star, the government-backed program that helps businesses and individuals increase energy-efficiency.

"Another thing homeowners can do is put a humidifier on their furnace," Harrington said.

"You'll quit getting shocked, and the inside temperature will feel warmer because moisture in the air holds the heat."

### **Cut airflow out windows**

According to the U.S. Department of Energy, improperly insulated windows can account for 10 percent to 25 percent of heating and cooling costs. That's because, during the winter, inside heat goes to the cold glass and radiates outside. For houses with expansive window areas, that heat loss adds up quickly.

To prevent such rapid heat loss, several choices are available. Among them: Install new Energy Star-labeled windows; hang drapes or honeycomb shades to act as a barrier; or place low-cost plastic sheets designed to be placed directly over windows.

Drapes don't have to be closed all the time. In fact, on sunny winter days, drapes on windows that face the south can be opened so the sun can help heat the house.

### **Limit fan, dryer use**

Turn off kitchen, bath and other ventilating fans within 20 minutes after you're done cooking or bathing to retain heated air.

Even running the clothes dryer at the right time of day can cut down on heat loss.

"A dryer pulls out 200 basketballs of air a minute," Harrington said. "So in wintertime, you should dry your clothes in the hottest point of the day (in outside temperature), and in the summer, you should dry in the coolest point."

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### **Energy auditors**

Professional energy audits can go into great detail, especially if they include a blower-door test. Most will include a thermographic scan using an infrared camera.

Typically, energy raters inspect attic and sidewall insulation; inspect the furnace, air conditioning and ductwork; and compile a list of recommendations with rough estimates of costs, savings and paybacks.

Some energy raters in central Ohio:

- Cornerstone Energy Conservation Services, 614-351-1439
- Energy Designed Homes, 614-432-4663
- Integrated Energy Solutions, 614-876-9500
- Patch Independent Home Inspection, 614-565-4962
- Westoff Services, 614-774-6057

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