

## Top 5 Energy Culprits

According to Home Energy Checkup's Dale Dennis and Neil Kelly's Walt Harwood, energy audits usually unearth the following issues:

1. **Ductwork leakage.** Ducts work at higher pressure than rooms, so any leaks will result in more energy loss because there is more force where the holes are. It's not a difficult fix for a skilled contractor.
2. **Old homes are leaky.** Find out how much and where with high-tech air leakage (blower door) and visual (thermal imaging) test equipment. "I've seen air coming through can lights so strong, the can is as much outside the house as in," says Harwood.
3. **Foundation and attic insulation.** A lot of homes have R-19 in the attic. You want at least an R-30 or higher. Check the DOE's recommendations
4. **Updating appliances and fluorescent lighting.** To reduce electrical loads, any refrigerator older than 1993 should be replaced, and new appliances should be Energy Star-qualified. Incandescent bulbs should be switched out for fluorescents.
5. **Wall insulation.** Where you can, get more insulation into the walls. If the home was built before the 1960s, there may not be any insulation in the walls at all, in which case you can blow cellulose or foam into those spaces.

Harwood points out that many people look at big things first—such as windows—when it's the smaller things that add up to expensive energy losses. "We've had people with so many little leaks that when we added them up, they might as well have had a two-foot-square hole in their house."



This series of before-and-after photos, shows the fixes that Dale Dennis of Home Energy Checkup identified and repaired on a 1960s home. In the top set, a hole acted like a big chimney, allowing warm air to escape from the home in the winter and hot air to enter during the summer. In the middle set, Dennis fixed an enclosed crawlspace by making it conditioned. He insulated the walls with spray foam and installed a vapor barrier. The bottom set shows how Dennis sealed and insulated an attic.

## Energy Lassoed

Home performance audits show where expensive energy is escaping into the great outdoors, which can be a valuable service to your remodeling clients. **By Cati O'Keefe**

In the last few decades, your remodeling clients were probably more interested in their granite counters than the insulation behind their walls and the HVAC equipment in their basement.

Not anymore. The media's promotion of green responsibility and the specter of outrageous energy prices has spooked owners of tiny bungalows and mega-mansions alike into analyzing their home's energy consumption.

Enter the residential energy rater: a professional who can offer your clients a full energy audit of their existing house as well as a list of solutions that can help the house be as finely tuned as an Energy Star-rated new home.

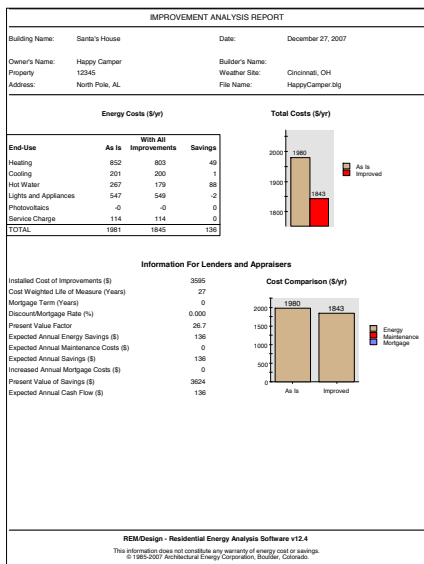
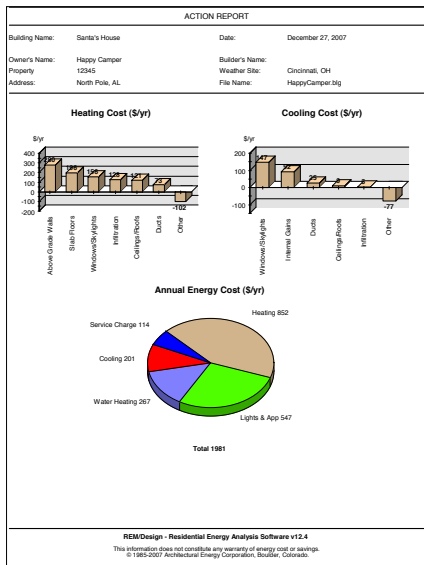
### Good Target

Dale Dennis, co-owner of Cincinnati-based Home Energy Checkup, calls remodeling a target-rich environment for energy audits because great strides in recent years have put even newly built homes behind the efficiency curve. Plus, the remodeling process is when many clients point out cold spots on the stairs or mention how the furnace seems to run mightily frequently. It's a great opportunity for an energy

audit. "Contractors are already there," says Tom Kelly, CEO of Portland, Ore.-based remodeler Neil Kelly. "They might as well do the ugly stuff while they're there." Kelly launched a home performance division in his \$27 million remodeling firm in 2006. The company currently does approximately \$850,000 annually in energy audit work for its remodeling clients.

"You can bring an energy rater at the beginning of the project when you have remodeling plans," explains Dennis. "He or she can estimate what the utility bills will be and make equipment suggestions." Equipped with proprietary HERS (Home Energy Rating System) software, energy raters certified by RESNET (the accredited standards body for Energy Star and federal tax credits) can take the existing home and the proposed addition and create an energy model that recommends whether to use dual fuel versus gas heating or choose foam insulation.

The good news is that, in many cases, low-dollar fixes can be big energy savers. "Often the solutions are extra insulation and sealing ductwork," Dennis says. "It's not selling a high-dollar product." But even if pricey products are



The top sample, provided by Home Energy Checkup, was created with REM/Design software by Architectural Energy Corp. It gives a client a utility bill breakdown estimate. The example below it is an improvement analysis, showing the results after the home's walls and hot water heater were upgraded. (The upgrade cost shown is \$800, which is representative of the incremental cost of going from tank to tankless rather than the water heater's total replacement cost.) The report shows the estimated life of each item and information on yearly savings. PV (present value, or savings over life of improvement), and SP, which is simple payback. In this example, the tankless upgrade did cash flow, but the walls did not.

the solution, the energy model is so black-and-white in its analysis that owners are presented with a decision they can make based on pay-back estimates. "They will have hard numbers," explains Dennis. "Their home will have gone through a standard analysis process that is not smoke-and-mirrors, but data-driven."

Take windows. While many people assume that replacing older windows will be an energy-saving bonanza, it may not always make financial sense. In one home Dennis audited, changing the single-pane glass to double-insulated low-E argon-filled windows pushed the energy bill down slightly, from \$1,980 a year to \$1,813 a year. Worth switching? Probably not.

Then again, it might, depending on the market and sales comps for nearby homes. Dennis had one client who was told his new windows wouldn't pay for themselves for 80 years. But in the million-dollar-plus market in which he lived, \$25,000 worth of windows increased the value of his house, so he bought them.

### Beware 'Energy Audit Lite'

The issue of hard data has gotten a lot of attention recently as utilities have entered the education game. Many offer their own energy auditors to help homeowners reduce energy consumption. (It seems odd that utilities would want to reduce the use of a commodity they sell, but as Dennis explains it, the aim is demand-side management: Utilities want to reduce peak load usage because that's when they must buy energy elsewhere at a premium.)

Many contractors used by utilities spend only a few hours in a home, and armed with a checklist, they dispense advice about setting thermostats and weatherstripping, which, in Dennis' view, isn't adequate. He advises remodelers to instead choose a RESNET-certified rater. "They have been through training with national testing," he explains. "And they have equipment capability—infrared guns, blower doors, and duct blasters. Plus, RESNET requires us to carry professional liability insurance."

Walt Harwood, who heads up the home performance division of Neil Kelly, notes that same thing is happening in his market. "You've got guys going in and saying, 'Gee, you don't have much insulation, and your windows are foggy.' ... The difference between that and testing is there is no guessing when there is testing."

Neil Kelly's team is certified by BPI (another standards organization that is working with RESNET on a national standard for energy audits of existing homes) and handles the audits for its clients as well as the repairs. To get around any grumbling about how the party pointing out the problems is the same one making money fixing them, the company offers post-testing and is audited by a third party, the Conservation Services Group.

Dennis warns remodelers to also avoid home inspectors who bill themselves out as energy auditors because many states don't regulate or license home inspectors. And as Harwood points out, most home inspectors don't have the equipment RESNET requires, which can run about \$10,000, not including the cost of an infrared camera, which can run an additional \$10,000 to \$15,000.

The cost of a residential home rating, which can be passed to buyers, runs anywhere from \$300 to \$900 nationally. Home Energy Checkup charges about \$470, as does Neil Kelly.

### Spread the Green Word

Dennis is bemused by remodelers and builders who don't market their energy-efficient work. "Some builders are building an Energy Star home and not telling anyone about it," he says. But maybe that's because building professionals are suspicious about promised energy savings until they see proof. One sub working with Dennis watched him assemble a blower door test and asked, "Is that Energy Star stuff? It's great. I had a junk tract home and my energy bills were \$300 a month. In my new, bigger home, the bills are \$160."

More than once, Dennis has gone through a builder's model home and noted all the energy issues. Once the builder upgraded to Energy Star, his homeowners raved about the comfort and energy efficiency—all great fodder for referrals and marketing testimonials.

Harwood says other issues will join energy efficiency to keep home audits top-of-mind for consumers, even if builders aren't getting the word out themselves. "People are concerned about moisture, mold, backdrafting furnaces with carbon monoxide ... energy is only half of it," he says. "Home performance is a service whose time has come; it will grow whether Neil Kelly is involved with it or not." GB