

# The Home Energy Audit Gets an Upgrade

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Steve Ruark for The New York Times

**EXTRA EYES** Brigid Butler of Baltimore watches as Atticus Doman of TerraLogos Green Home Services checks for air leaks in her house. At right, he uses a fan to check the tightness of a doorway.

SAUL KRAVITZ knew his house was inefficient. The kitchen was cold in the winter and hot in the summer. It was always hotter or colder upstairs than downstairs. And his gas and electric bills were too high.

Mr. Kravitz, an engineer at the [J. Craig Venter](#) Institute in Rockville, Md., had conducted his own assessment and concluded that his 41-year-old house was well sealed but probably needed some insulation. “I was convinced I had a pretty tight house,” he said.

That was before he hired an energy auditor who used infrared images produced by a thermographic camera to find temperature differences in walls and ceilings. “It wasn’t the insulation,” he said. “There were holes.” Air was pouring into the house from unseen gaps in the walls of the attic, basement and kitchen.

The rising cost of energy, a drop in the cost of thermographic cameras and demand from homeowners like Mr. Kravitz have created a new market for energy auditors, a group that once focused exclusively on helping managers of large industrial buildings cut energy and maintenance costs.

But while the residential energy assessment business has taken off recently, questions remain about whether the business will be sustainable. “We are doing really well,” said Peter Van Buren, president of TerraLogos Green Home Services, a residential energy auditor and green builder in Baltimore that conducted the audit of Mr. Kravitz’s house. The company, which charges \$495 for an audit, did 150 inspections in 2007 and expects to do twice that many this year, Mr. Van Buren said.

Energy assessment is particularly appealing to homeowners who want to lower their bills and help the environment at the same time. According to the United States Green Building Council, buildings account for 40 percent of the nation's energy consumption, with half of that from housing.

Although large corporations have long used energy auditors, their services have become affordable enough for the residential market in the past few years as equipment prices have fallen.

"The cameras that were once \$25,000 are now \$3,000," said Tom Scanlon, a vice president of the thermography division of [FLIR Systems](#), a company in Portland, Ore., that makes infrared cameras. He said that sales of thermal cameras for use in home audits had gone from zero to about 10 percent of the total in the last 18 months.

The cameras are similar to digital cameras in that they have a sensor chip that captures an image and displays it on an L.C.D. screen. But instead of capturing visible light, the thermographic sensors detect light on the infrared wavelength, measuring relative temperature differences. Cold shows as dark blue or purple, and heat as orange, yellow or white. The images can reveal a number of problems — not only leaks, but water damage behind walls, resistance in electrical wiring and the presence of insects or rodents.

Often the results are surprising.

"We go into big McMansions with the two-story atriums, and find out they are only insulated up to seven feet," said Nick Gromicko, founder of the International Association of Home Inspectors. "That's a problem, because all of the heat is at the top."

The price drop in thermal imaging cameras has proved a boon to home inspectors. "It's the first tool we have brought in that the consumer has clamored for," Mr. Gromicko said. The inspectors group, which used to charge members \$3,000 for training to become certified in the use of the cameras, now offers the service free to members. He predicts that the technology will become commonplace.

Many energy auditing companies not only conduct assessments but also provide detailed recommendations, as well as lists of approved contractors who can do what is sometimes specialized work.

The main value for Mr. Kravitz was that the audit guided him to "do things in the right order" to correct the problems in his house, he said. First was sealing air leaks that the thermal camera discovered in the roof, basement and kitchen. Next was sealing ducts, which were leaking air into walls and ceilings. "Those two things made a huge impact on the comfort of the house," he said. Finally, he replaced the heating and air-conditioning system with a smaller, more efficient model. "My electric bill for August was half what it was last year, and a third of the year before that," he said.

But consumers should choose a service carefully, experts say.

“If you are not trained and familiar with home inspections, you can make some very serious mistakes,” said Jim Seffrin, director of the Infraspction Institute, a company in Burlington, N.J., specializing in infrared training and certification. His company charges home and building inspectors \$995 for a basic course in thermography. He said that untrained thermographers could misread shadows as water leaks, leading to expensive and unnecessary repairs.

At the moment, perhaps the biggest hurdle is getting the word out about residential energy assessments. Mr. Kravitz found TerraLogos only after he approached a heating and air-conditioning company about a new unit. He was told that he was “starting at the wrong place, that I should get an energy audit, and I didn’t know that such things existed,” he said.