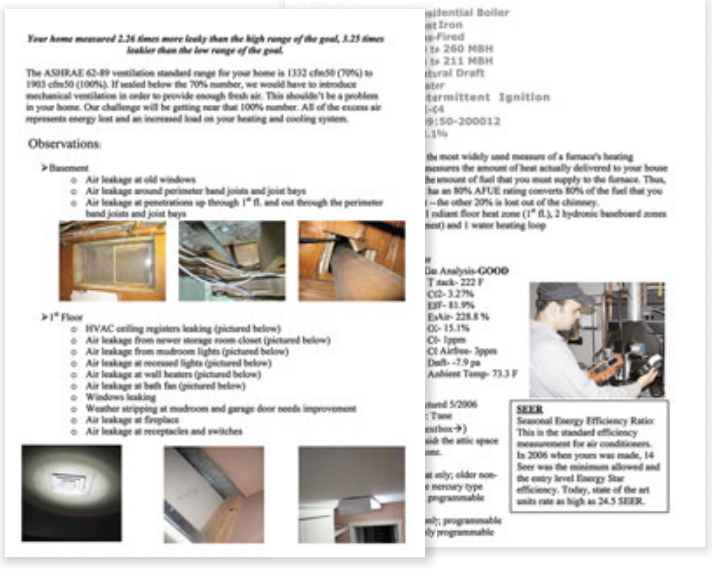
Getting Certified for Home Energy Audits

by Robert Post

As the owner of a small remodeling and handyman company (nearly $1 million annual sales before the downturn), I've always been careful to stay focused on our core offerings — bathrooms, kitchens, basements, and small jobs ranging from two-hour service calls to week-long "honey do" lists.

Over the years, we've resisted the temptation to take on larger projects like additions and new homes. We've also resisted various opportunities to offer specialty products and services, like replacement windows, siding, and garage systems. One area that did make sense for us was the remediation work resulting from residential energy audits. I've always been interested in energy efficiency and the various problems that stem from air and moisture movement in homes. And like many others, I've also come to believe that the shift to sustainable building practices is inevitable.

So recently, prompted by the economic downturn, I decided to pursue Building Analyst certification from the Building Performance Institute (BPI) and begin offering energy audits and home-performance contracting. For us, entering this niche was a natural move. I already had many years of experience working with home-energy auditors and performing the follow-up work needed. As a result, our small field staff has developed a good basic understanding of the common flaws in residential structures and how to fix them. We are already accustomed to working in crawlspaces and attics and are familiar with the steps needed to assess a home's insulation levels and airtightness.


Your home measured 2.26 times more leaky than the high range of the goal, 3.25 times leakier than the low range of the goal.

The ASHRAE 62-89 ventilation standard range for your home is 1332 cfm50 (70%) to 1903 cfm50 (100%). If sealed below the 70% number, we would have to introduce mechanical ventilation in order to provide enough fresh air. This shouldn't be a problem in your home. Our challenge will be getting near that 100% number. All of the excess air represents energy lost and an increased load on your heating and cooling system.

Observations:

- Basement
  - Air leakage at old windows
  - Air leakage around perimeter band joists and joist bays
  - Air leakage at penetrations up through 1st fl. and out through the perimeter band joists and joist bays
- 1st Floor
  - HVAC ceiling registers leaking (pictured below)
  - Air leakage from newer storage room closet (pictured below)
  - Air leakage from mudroom lights (pictured below)
  - Air leakage at recessed lights (pictured below)
  - Air leakage at wall heaters (pictured below)
  - Air leakage at bath fan (pictured below)
  - Windows leaking
  - Weather stripping at mudroom and garage door needs improvement
  - Air leakage at fireplace
  - Air leakage at receptacles and switches

SEER
Seasonal Energy Efficiency Ratio: This is the standard efficiency measurement for air conditioners. In 2006 when yours was made, 14 Seer was the minimum allowed and the entry level Energy Star efficiency. Today, state of the art units rate as high as 24.5 SEER.

Here are two sample pages from one of the author's home-energy audit reports. The full document is 22 pages long.

Back to School

Gaining certification required a considerable amount of time. The BPI coursework is offered in various places and formats; I started by enrolling in a two-month Web-based program from Saturn Online, which offers "guaranteed test prep" for the BPI exam. I spent approximately four to six hours a week working through the material and taking a weekly quiz. The time you spend will vary depending on how much you already know about building science. The course is based on a textbook and manual, which Saturn sells. This was a valuable program, and I would recommend it to anyone on this path.

After completing the online course, I took a week-long BPI class, which met for eight hours a day in a classroom setting, with two field trips — one to observe a building audit and one to run practice tests on several different systems at an hvac demonstration facility. The class was fairly intense and conveyed a lot of information. The instructor, Hap Haven, showed a real mastery of the subject and presented the material with enthusiasm. The week culminated with a two-hour 100-question test, which required a score of 70 percent or higher to pass. This was followed with a proctored field exam, in which I performed an energy audit on an actual residence. The field exam was graded pass/fail; you have to pass both the written and the field exams to get your certification. Also, you're required to be recertified

every three years. There are a variety of ways to satisfy this, one of which is 30 hours of qualified continuing education.

The Financial Investment

I chose a BPI training package that covered the cost of the online course, the week-long class, and both tests. It cost around $1,200; the textbooks added about $95. As a business owner who spends roughly half his time in the field — hours that are directly billable — I also needed to count the lost revenue.

The equipment you'll need to perform audits using the BPI protocol starts at about $7,000 (I split the investment with another business owner who also performs audits). Here's a breakdown:

- Blower-door kit, used to measure and locate air leakage
- Combustion analyzer, to measure steady-state efficiency of combustion appliances
- Gas-leak detector, to check all accessible gas lines for leaks
- Moisture meter, either a pin type or noninvasive, suitable for various materials
- Smoke stick, to locate air leaks and assess draft of atmospherically vented combustion appliances
- Personal CO detector

There are also some tools you may want to consider after you're comfortable with the basic kit, though they're not necessary for meeting BPI standards:

- Digital camera
- Laptop
- Infrared camera, used to scan buildings for thermal quality, air leaks, and other issues
- Pressure pan, used to block a duct register while measuring the static pressure behind it during a blower-door test
- Anemometer, for measuring wind speed and diagnosing comfort issues relating to duct airflow
- Duct blaster, like a small blower door, used to test for duct leaks
- Boroscope, for inspecting inside wall cavities or other concealed areas
- Reporting and analysis software such as Treat or REM/Rate, for home energy modeling

Good Subs Are a Must

Home-performance work requires excellent insulation and hvac contractors. Fortunately, we had already developed relationships with high-quality subs accustomed to delivering on best-practice specifications — extensive air sealing, high R-value insulation, efficient hvac equipment, and insulated and sealed ductwork.

Attention to detail and quality control are critical at every step of the process. With home-performance work, the results are quantified during "test-out," which includes, for example, a final blower-door measurement and combustion tests on the heating equipment. This means the client knows immediately how well we've performed. Therefore, having subs who understand the goals and methods of home-performance remediation is essential.

A Tough Sell

Despite the recent national emphasis on a "green" economy, in our area the demand for energy audits and home-performance work is not great. One reason is that the cost of bringing older homes up to current energy standards can be substantial, yet the projects lack the emotional appeal of a new kitchen or a finished basement. Frankly, energy audits can be a really tough sell.

Also, of course, the entire industry is hampered by the economic downturn. Home-performance contracting is no exception, even with the tax incentives. Homeowners still have to find financing, and lending is tight. With so many people unemployed or insecure about their current job status, our potential customers are reluctant to spend their savings.

This economic landscape affects all remodeling sales, not just home-performance jobs. But already I've seen that having the BPI certification has helped me distinguish myself from the competition and win projects with good profit margins. On one occasion, I closed on a substantial sale by offering a complimentary energy audit.

Like any remodeling project, home-performance remediation requires that we work inside homes where people are living. We have to be sensitive to the need for privacy and respect the routines of family life. In this sense, remodeling has been good practice for home-performance work, which can be dirty and disruptive. As remodelers, we've always made the "customer experience" our highest priority, cleaning the site every day, maintaining good communication, and making every effort to achieve a successful outcome. Because we've remained focused on these primary concerns, adding energy auditing and home performance contracting has enhanced rather than detracted from our core business.

While I don't expect any short-term windfalls, the investment in training and equipment seems to be a good long-term strategy for our company and should position us well when energy prices spike again.

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