

This is a reprint of Northwest Renovation Magazine's article on home energy performance testing in period homes. Trevor Frick is Arciform's Home Performance Contractor. He is a Building Performance Institute certified contractor, conducting tests and analysis of client's homes to help improve the homes energy efficiency. After evaluation, Trevor helps navigate clients through prioritizing their needs, implementing projects, and identifying rebates and incentives that can help reduce the cost of improvements. This service reaffirms Arciform's commitment to environmental stewardship, alongside its status as an Energy Trust Trade Ally and recent recognition as one of Oregon's top 100 eco-conscious companies. Call Trevor today for an audit of your home helping you save money and live more comfortably. 503.493.7344

Home Energy Audits

By Trevor Frick

People who love the charm and character of old Portland homes don't have to deal with high heating bills and drafty bedrooms forever. Many energy efficient upgrades can make a tremendous change in your comfort, safety, and utility cost.

When you think of the energy efficiency of your Portland charmer, you're often confronted with a seemingly endless list of problems: inadequate insulation, single-pane windows, outdated furnace and appliances... Rather than be overwhelmed with questions like "Where do I start?" "How do I decide what to do first?" "Which improvements make the most financial sense?" the best first step is to perform a comprehensive home energy audit.

A home energy audit takes a lot of the guesswork out of this seemingly impossible task. Instead of just guessing or taking the latest salesman's guarantee to reduce your heating bills by 30%, a certified home performance contractor comes to your home and performs a complete diagnosis of your home's energy usage using the latest in testing equipment.

What to Expect From an Energy Audit

When increasing the efficiency of your home, it's important to step back and look at your house as a system. This means understanding that your home consists of many independent components that all operate and change at the same time. This includes everything from the energy use of appliances, the number and lifestyle of the occupants in the house, and natural forces like weather. Since we are looking at your house as a system, it is important to note that upgrading certain items can have an adverse affect on others.

For example, adding a vent hood over a gas range could cause a gas water heater to back draft, or air sealing a home too tightly can lead to many health and safety problems. By the end of the audit, your contractor has a thorough understanding of the systems in your home and can recommend upgrades without sacrificing health, safety, and overall function.

Visual Inspection/Utility Bills

The audit begins with a review of the homeowner's utility bills to gather baseline data. The contractor does a comprehensive inspection of the interior and exterior of the home with input from the homeowner, giving the contractor a clear sense of how the house systems are interacting.

Blower Door Test

The blower door test is an essential tool in detecting air leakage in a home. A blower door depressurizes the house with a fan, causing air leaks to

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Technician performs a blower door test to analyze how leaky this house is and where air sealing would be most effective.



A smoke puffer is used around this window during the blower door test to make air leaks more visible to the technician and homeowner.



Door leading to the basement without a threshold gasket proves to be a large air leak in this home.

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intensify. With the use of a smoke stick, or simply your hand, air leaks can easily be felt during the test. The contractor can calculate the leakage rate in cubic feet per minute as well as air changes per hour. This test often reveals that the air leakage in a home can easily be equivalent to having a window open all year round.

Insulation/Thermal Imaging Camera

The contractor will also determine insulation levels and types in your home. While attics and crawlspaces can physically be quantified, the use of a thermal imaging camera is a useful tool for determining information about insulation in sealed cavities. These cameras can also detect air leaks and moisture problems hidden behind your walls.



The carbon monoxide output of this vintage gas range is being checked.

Combustion Appliances/Safety

All combustion appliances — like gas water heaters, furnaces, and stoves — are inspected for age, efficiency, and overall condition. The contractor uses a combustion analyzer that samples flue gases to determine carbon monoxide levels, operating efficiency, and draft amounts, potentially uncovering dangerous carbon monoxide hazards as well as gas leaks.

Duct Blaster

Like the saying “a chain is only as strong as its weakest link,” an HVAC system is only as efficient as the ductwork. A poorly designed or leaky distribution system lowers the overall efficiency considerably. The contractor can perform a duct blaster test to determine the condition of your home’s ductwork.



A combustion analyzer is used to look at carbon monoxide output and combustion efficiency of a gas furnace.

Final Report

After gathering all necessary data, the contractor and homeowner discuss a scope of work. The data collected will be entered into a computer program that computes estimated savings on utility bills, payback times, and which improvements qualify for Energy Trust incentives or tax credits. A prioritized list of upgrades is like a roadmap for you to gain the maximum energy efficiency and quality-of-life improvements for your home. While knowing all of this valuable information is great, implementing the improvements is the most important part. Some items can be done by the homeowner, but many items require the skill of a licensed contractor. A reputable home performance contractor will work with you to figure out how to best leverage your investment in your home.

How to find a Home Performance Contractor

A great way to find a home performance contractor is through the Energy Trust of Oregon (Energy Trust). Energy Trust is a non-profit organization making information, resources, and incentive funds available toward energy-efficient home improvements, and is the local sponsor of Home Performance with Energy Star, a national program put in place by the U.S. EPA and Department of Energy.

The Energy Trust of Oregon’s website has a list of approved home performance

Resources :
www.energytrust.org
www.energystar.gov
www.bpi.org

contractors on its “Trade Ally List.” In order to become an approved contractor, certification by the Building Performance Institute (BPI), a nationally recognized company based in Malta, NY, is necessary. BPI’s goal is “raising the bar” of the home performance industry by providing thorough training, testing, and certification.

Energy Trust approved contractors are also subject to quality assurance programs to ensure their work meets or exceeds all standards. Along with being a great information resource, Energy Trust offers incentive money toward energy efficient upgrades to your home. Your home performance contractor can tell you which incentives you qualify for and how to go about obtaining them.

A comprehensive home energy audit is



An exhaust fan flow meter helps accurately determine how well exhaust fans are operating.

the best first step to improving not only energy efficiency, but the health, safety and enjoyment of your home. By tackling problems that are taking money out of your pocket each and every month, you not only improve the value of your home, but free up resources for other improvements. The combination of rising energy prices and lots of incentives toward energy efficiency means now is a perfect time to make your home greener — and more comfortable. ■

Trevor Frick is a BPI certified Home Performance Contractor and Project Lead with Arciform LLC, a design-build company specializing in the restoration and remodel of historic and vintage homes. For more information visit www.arciform.com.