

How to Do Your Own DIY Home Energy Audit

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A thorough DIY home energy audit locates all the points of heat and cooling loss around inadequately sealed openings and areas of insufficient heat retention across large surface areas like walls, windows, and doors. Those losses, of course, can negatively impact your comfort and energy costs during cold and hot temperatures. A professional energy audit involves specialized equipment and data calculations. But, you can perform your own home energy audit using the DIY home energy audit checklist below. ***It takes some time to conduct a thorough evaluation, but it can be well worth the effort to increase your comfort levels and reduce your energy bills from 5% to 30% per year.***

DIY Home Energy Audit Checklist

Identifying Energy Efficiency Problems in Your Home

Discovering and completing some needed adjustments can cut household energy consumption significantly. An energy audit is the right place to start. Inspect each interior space, including the attic and basement. List all locations you find with air leaks or insufficient insulation. Then, determine the best no-cost or low-cost solutions to correct the heating and cooling losses at each point.

Doors and Windows

Windows and doors are the most common sources of large and easily correctable energy losses. So, unless there's a more obvious issue in your home, it makes sense to begin your home energy audit by inspecting all doors and windows throughout the house.

Examine Each Window and Door

Try rattling each one. Movement indicates likely air leaks. Or, if you can actually see daylight coming in around the edges of a door or window frame, you are losing serious amounts of energy through those openings. Use weather stripping or caulk to seal all crevices.

Inspect the storm windows and doors

Note any that are broken, or that have any loose or missing hardware, or that do not fit properly. Consider replacing old windows or doors that are not providing reasonable insulation performance with upgraded, high-performance energy-efficient replacement windows. Or, if such replacements are not in the budget, you can install low-cost sheets of plexiglass.

Inspect Window Sealing Materials

Check weather stripping and caulking around all windows and door frames. Treat all openings that do not have sealing, and replace existing rubber, magnetic, or window seals that are no longer performing well. Remove deteriorated weather strips, and scrape off old dried and shrunken caulking elsewhere around windows and doors, and replace weather strips and/or caulking with fresh material, as needed.

Evaluate Window Locations

Assess windows and doors that receive many hours of direct sunlight over the year, and consider adding an awning, blinds, solar screens, or tinting, to reduce the effects of direct sunlight to comfort, contents of your home, and to energy bills. You may find planting trees a good option for a shade over some windows and doors. Avoid planting trees of species that can eventually hang over the house and create hazards and insurance issues.

Attic

For heating and cooling to work efficiently, a home's attic must be providing efficient protection. Examine the attic ceiling, to make sure that heat is not leaving the house through the roof.

Evaluate Insulation Quality

Make sure insulation inside the attic is sufficient to prevent snowmelt on the rooftop caused by the heat emanating upward from inside your home.

Inspect Weather Strips and Sealants

Examine all openings around ductworks, plumbing pipes, electrical boxes, chimneys, and other utility items that are tightly sealed. Replace worn weather strips, and seal all gaps with expanding foam sealant, caulk designed for the specific purpose, or another appropriate sealant.

Examine Attic Vents

Check to ensure that attic vents are unobstructed by insulation and that air can flow freely through vents.

Check the Vapor Barrier

Confirm that there is a vapor barrier under your attic's insulation. The barrier can be made of tar paper, plastic, Kraft paper with batting, or other material. If there is no barrier, consider painting your home's interior ceilings with paint featuring vapor barrier properties. This helps prevent water vapor from passing through your ceiling and compromising the efficiency of your insulation and potentially causing structural damage.

Examine the Attic Hatch

Make sure the attic side of the attic hatch is insulated as heavily as the rest of the attic floor, if applicable.

Walls

The walls of your home can allow serious heating and cooling losses if the insulation value is below the recommended minimum for your area's climate conditions. (If you have an older home, insulation levels recommended may be higher than at the time your home was built.)

Examine Exterior Walls

Check for cold areas on expanses of closed walls against your home's exterior. If necessary, replace insulation to material with a sufficient R-value to keep your home comfortable and control energy bills.

Access the Insulation

Choose a wall. Ensure that no electricity is coming to outlets or any wiring in the wall. Behind a couch, or at some other obscure spot, drill a large enough hole to view the insulation and to look through to see the depth of the insulation material in the wall cavity. Ideally, the entire wall cavity should be filled completely with insulation material.

Obtain a Deeper Wall Inspection

If your inspection of some walls indicates that the entire wall might not be insulated, or that insulation has settled in some areas, consider having a thermographic inspection.

Basement

Check the walls, floor, and ceiling of your basement for cold areas. Insulate all these surfaces, as needed, to maintain comfortable temperatures in the space and minimize heating and cooling loss.

Check Floor Insulation

If your basement *is not* temperature controlled, determine if there is sufficient insulation under the floor of the home's living space above. An R-value of R-25 is normally recommended as the minimum insulation between the basement and a home's living space above, in most areas of the lower 48 mainland United States.

Check Foundation Walls

If your basement *is* temperature-controlled, then the foundation walls should have insulation with a minimum R-value of R-19.

Check the Foundation Wall Top

Insulation along the top of the home's foundation wall and the perimeter of the first floor should be of an R-value of R-19 or higher, in most areas of the country.

Inspect Utility Conduits

Inspect along the full lengths of furnace ducts and hot water pipes. Any sections of these utility conduits that are passing through uninsulated spaces should be wrapped in insulation.

Heating/Cooling Equipment

If your heating and air conditioning system is over 15 years old, it may be time to replace it with a new, more energy-efficient unit, especially if your old system is not in good condition. Updating your system can significantly reduce energy bills.

Check Ductwork

Check along ductwork for sections that have become disconnected from each other, and reconnect those. Also, look along the exterior of the ductwork for streaks of dirt near seams where sections of ductwork are connected to each other. Dirt streaks are evidence of air leaks from those seams. Seal the seams with duct mastic sealant, to close those seams and stop the air leaks. Additionally, insulate runs of ductwork that pass through unheated areas of your basement with R-6 insulation, at minimum.

Change Filters

Replace dirty HVAC filters, straighten out bent coil fins, clean condensate lines, and condenser coils.

Have a Professional Checkup

Have an HVAC inspection to check refrigerant levels, evaluate airflow, locate leaks, and examine mechanical parts and the electrical system.

Assess Ventilation

Identify areas in your home with insufficient ventilation. Add exhaust fans, or an attic fan, or install vents where needed. Use double-sashed windows to increase airflow.

Lighting

Around 10% of the typical residential electric bill is for lighting, and this is an area of energy use where most homeowners are likely to find some ways to reduce consumption.

Lighting Fixtures

Replace old lighting fixtures with updated lamps, ceiling lamps, and wall sconces, with Energy Star® logo. This indicates they have received the EPA's Energy Star rating for their high energy efficiency.

Light Bulbs

Replace old incandescent bulbs with energy-efficient light bulbs. Where practical, replace higher wattage bulbs with lower wattage ones, like 75 watts or even 60 watts. This can reduce energy consumption for lighting by up to 78%. I can also cut heat emission by nearly 75%

Home Appliances

Replace kitchen appliances, water heaters, and other equipment with newer models that have the Energy Star logo, indicating that they have been validated for high energy efficiency. (Ask your electricity company about rebates on these purchases.)

Other Energy Audit Check Points

Check for air leaks around these items too. Confirm that there are no cracks, crevices, or gaps in sealing that allow leaks and that these utility items are in good condition:

- Light switch plates
- Electrical outlets
- Wall-mounted air conditioners
- Fireplace dampers
- Inlets for cables, pipes, vent ducts
- Baseboards
- Crawl spaces
- Pet doors
- Mail slots

Exterior Construction

Inspect the entire exterior surface of your home, especially all seams and junctions of different types of construction materials. Check:

- Exterior corners

- Siding
- Seals around chimneys
- Foundation along the bottom of mortar or siding
- Gaps around inlets for utility conduits

Building Pressurization Test

For more meticulous inspection to locate small drafts from air leaks, you can create your own [DIY building pressurization test](#):

1. Turn off all appliances, furnaces, water heaters, fireplaces, or other facilities in your home that operate on combustible fuel.
2. Close all windows, exterior doors, windows, fireplace flues, and exterior duct vents.
3. Then, turn on all the exhaust fans in your kitchen, bathroom, laundry room, and elsewhere in your home, or face a large window fan to the outside, and use it to draw air out of rooms.
4. Light incense sticks and move them from place to place. Small drafts from air leaks are indicated in areas where the smoke stream waivers.

Health and Safety in Home Energy-Efficiency Sealing

When sealing your home for greater energy-efficiency, be aware of the risks from combustion appliances that burn natural gas, propane, fuel oil, or wood. Be sure each appliance is receiving an adequate supply of air for ventilation needs. Contact your local gas or propane company, ventilation contractor, or other energy professional for guidance.

Completing Your DIY Home Energy Audit

A DIY home energy audit, especially in a larger house, can take days to complete. But, it can save significant amounts on home heating and cooling, making it a great investment of your time and effort. By minimizing heating and cooling losses throughout your home, you can cut your home energy bills and reduce excess wear on your HVAC system.

Advanced Window Products, Salt Lake City, UT

The four seasons of our great state bring extremes of weather conditions ranging from plunging cold, to soaring heat, and a lot of beautiful weather in between. Utah homeowners need energy-efficient windows and doors, in order to maximize comfort and minimize heating and cooling costs in our northwestern U.S. climate. Advanced Window Products offers a full line of gorgeous Energy Star products for the most energy-efficient home improvement and aesthetic upgrades.

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