



DIY Home Energy Audit

You can easily conduct a preliminary home energy audit yourself. On a simple walk through use this checklist to identify any problem areas that your home may have. Making energy efficient changes/upgrades can significantly lower energy consumption and your monthly bill. At the end of the audit, there is a list of simple steps that you can do to save even more energy. However, this is *not* the same as an audit done by a professional energy auditor (see page 3). Check off the items once you have finished a task, and then you are one step closer to saving money on energy cost! Make notes and keep for future reference.

Add up all Your Energy Bills for the Past Year

How many kilowatt hour (kWh) did you consume? _____ How many for the highest month? _____
This will be useful benchmarking, and give a better framework of solar panel power generation.

Check for Air Leaks

The potential energy savings from reducing drafts in a home may range from 5 to 30% per year, and the home is generally much more comfortable afterward.

Air Flow: Check to see if air can flow through the places below. Hold a feather or lightweight piece of string in front of the areas below, if it moves - even slightly - there is airflow. Also, look for cobwebs - spiders put their webs where there is air movement.

- | | |
|---|---|
| <input type="checkbox"/> Electrical Outlets | <input type="checkbox"/> Fireplace Dampers - are they closed when not in use? |
| <input type="checkbox"/> Switch Plates | <input type="checkbox"/> Wall – or window – Mounted Air Conditioners |
| <input type="checkbox"/> Window Frames | <input type="checkbox"/> Attic Hatches |
| <input type="checkbox"/> Baseboards | <input type="checkbox"/> Kitchen Cabinets |
| <input type="checkbox"/> Weather Stripping Around Doors | <input type="checkbox"/> Medicine Cabinets |
| <input type="checkbox"/> Duct Disconnects in the Attic | <input type="checkbox"/> Exterior Walls |

Caulking and Weather Stripping: Check to see that it is applied properly, leaving no gaps or cracks, and are in good condition.

On the outside of your house: Inspect all areas where two different building materials meet, looking for cracks and/or gaps, including:

- All exterior corners
- Where siding and chimneys meet
- Areas where the foundation and the bottom of exterior brick or siding meet

Check for holes or cracks: In and around your walls, ceilings, windows, doors, light and plumbing fixtures, switches, and electrical outlets, pipes and wires, foundation seals, and mail slots that can leak air into or out of your home.

Seal return air chases

Anywhere you felt/saw air, cracks, or gaps, use caulking or weather stripping to fill and seal them. If airflow was felt/seen behind electrical outlets and light switch plates, purchase electrical and switch plate insulation pads to place behind the plate.



Insulation

Warm and cool inside air can be compromised by non-insulated attics requiring more heat, or air conditioning in the home.

- Attic R-Value:** Check the R-value of the insulation in your attic. In Houston it should have at least an R-value of 38.0, equivalent to 12" of fiberglass or cellulose.
- Attic Hatch:** If it is located above a conditioned space, check to see if it is at least as heavily insulated as the attic, is weather stripped, and closes tightly; if not install an attic "dome" with a high R-value.
- Attic Openings:** Check whether openings in the ceiling for items such as pipes, ductwork, and chimneys are sealed. Seal any gaps with an expanding foam, caulk or some other permanent sealant.
- Attic Vents:** Check that the vents to the outside are not blocked by insulation. You also should seal any electrical boxes in the ceiling with flexible caulk (from the living room side or attic side).
- Water Heater:** Make sure it is properly insulated with a water heater blanket, in compliance with the manufacturer's instructions.
- Water Pipes:** Check to see that they are insulated – water cools faster in exposed pipes and is therefore re-heated more often, which requires the use of more energy.

Heating and Cooling Equipment

Cooling is the greatest energy expense, accounting for half of annual energy bills.

- Forced-air Furnace:** Check your filters and replace them when dirty. Generally, you should change them about once every month or two, especially during periods of high usage. Confirm that they are the proper MERV rating for the furnace.
- Equipment Maintenance:** Have a professional check, clean, and tune-up your equipment annually. This has a very short payback!
- Ductwork:** First, Check your ducts to make sure they are all connected, both to the unit and the other ductwork. Next, check your ductwork for dirt streaks, especially near seams. These indicate air leaks, and they should be sealed with duct mastic. Insulate any ducts or pipes that travel through insulated spaces. Don't use duct tape.
- Check for unsealed air returns.**
- Programming Thermostat:** Check to see if your thermostat is programmable, and program the temperature to be set higher for air conditioning and lower for heat when no one is going to be home, and during the night when everyone is asleep, but no more than a five degree setback.

Lighting / Electronics / Appliances

Only 10% of an incandescent bulb's energy provides light. The remaining 90% gives off heat, which is problematic during the summer months. Add up the light fixtures in your home, and then think of them as individual heaters adding to your cooling costs.

- Light Bulb Watts:** Examine the wattage size of the light bulbs in your house. You may have 100 watt (or larger) bulbs where 60 or 75 watts would do. Replace incandescent light bulbs to compact fluorescent lights or LED's where lights are on for hours at a time.



- Check to make sure all electronics and appliances are only plugged in if they are in use:** Even better— use a power strip to plug in your electronics and appliances and simply turn off the strip when they are not in use.
- ENERGY STAR rated Electronics and appliances.** Definitely consider ENERGY STAR electronics and appliances for your next purchase, as they can save operating and air conditioning cost. Generally, each three kWh (kilowatt-hours) of energy saved within the home will reduce the need for mechanical cooling by an additional kWh.
- Refrigerator Units:** Is your refrigerator older than ten years? If so, it will be worth the replacement cost, and get the most efficient one you can, as it runs 24-7. By the way, this applies to the old refrigerator kept in the garage too.

Windows

- Check windows for shade.** Exterior trees or awnings are a great idea.
- Solar screen and films on all windows that are not shaded by trees and/or overhangs:** The sun's rays entering your house through the windows add considerably to the air conditioning load. Solar screens of efficient films with Solar Heat Gain Coefficients (SHGC) below 0.30 will reduce this load. Google or check the yellow pages under window tint for installers. Screens are less expensive than films. North facing windows receive indirect sunlight and can do without screen or film applications.

Plumbing

- WaterSense Low flow shower heads, sink faucets, and toilets:** They add negligible cost to the house (and could even be less expensive), yet they will conserve water and water heater energy, and save money over time. Replacing an old toilet with a high efficiency model can conserve up to 16,000 gallons of water a year!

Additional Information

- Compare your home's energy to other similar homes; go to http://www.energystar.gov/index.cfm?fuseaction=home_energy_yardstick.showStep2 and see how you rate.
- Use the home energy saver website <http://hes.lbl.gov/> as an additional resource to your **home energy audit**; calculate how much you can save by becoming more energy efficient.
- If you want to further improve the efficiency of your home, especially if you have high energy bills or your home is uncomfortable, consider contacting a professional to conduct a home energy audit to diagnose why.

Your first step should be to contact your utility to see if they offer free or discounted energy audits to their customers. If not, you can hire a home energy professional, such as a certified Home Energy Rater, to evaluate your home's energy efficiency.

To find a Home Energy Rater, visit the [ENERGY STAR for Homes Partner Locator](#).

- If you have any questions regarding your home energy audit, please feel free to email the Green Building Resource Center Program Director at steve.stelzer@houstontx.gov



Energy Saving Tips

- Use task lighting instead of brightly lighting an entire room; focus the light where you need it
- Turn lights off when you are not in a room. Turn off the TV when no one is watching it.
- During hot summer days keep your window coverings closed to block the sun's hot rays, and use white window shades, drapes, or blinds to reflect heat away from the house
- Use energy-saving settings on refrigerators, dishwashers, washing machines, and clothes dryers
- Air dry dishes instead of using your dishwasher's drying cycle
- Try raising the temperature in your house a degree or two
- Take short showers, with a low-flow showerhead, instead of baths
- Wash only full loads of clothes when possible and clean your dryer's lint filter after every load
- Turn off your computer when it is not in use; automatic switching to sleep mode or manually turning monitors off is always the better energy-saving strategy
- Don't place lamps or TV sets near your air-conditioning thermostat. The thermostat senses heat from these appliances, which can cause the air conditioner to run longer than necessary
- Reduce air conditioning costs by planting shade trees and shrubs around your house, especially on the west side and by your air conditioning unit

Visit <http://www.takecareoftexas.org/> to find more tips on how to be energy efficient

Ceiling Fans: Ceiling fans can be extremely efficient for improving comfort and reducing air conditioning use, so don't stop with bedrooms. The cooling effect that people feel will encourage them to raise the thermostat by as much as 4°, and each degree the thermostat is raised above 78° will save about 7% of cooling costs, making fans a very good investment. Just remember to turn them off when you leave.

Load Contribution to a Typical Houston Home Air Conditioning System

