

United Green Power, LLC



**21 Ways
to Make Your Home
More Energy Efficient
By Mike Iamaio**

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21 Ways to Make Your Home More Energy Efficient

By Mike Iamaio, President of United Green Power, LLC

Before you consider all the ways to make your home more efficient, there are things to keep in mind as you go along your daily grind. I like to call it “Taking the common sense approach”; meaning: keep energy efficiency at the top of the list in everything you do to improve your home. Not only will it save you a ton of money over the life of the home, but it will increase your property value and make it more comfortable too. Not to mention; making your home less expensive to maintain and heat and cool.

There is going to come a time when it just makes sense to do major projects around your home. Everything from replacing a piece of soffit that’s rotted out behind a leaking gutter to reinsulating the wall, ceiling and floor on the new bathroom that she’s always wanted and you decided to add on this year. Make sure you check the insulation requirements for your area of the country. But when it comes to insulation, my approach is, you can never get too much.

Energy efficiency is more than just insulation around your home. Energy efficiency is using current technology to make your home safer. With the family adding more and more electronic devices into the home; every one of them are starting to emit and radiate an Electromagnetic Field (EMF’s) in your home. High EMF readings in your home have been linked to eye problems, headaches and sever hearing loss. We happen to have a product that will not only eliminate EMF’s, it’s a whole house surge protector and it reduces your power factor, reducing the heat and current to your motors and reinserting the excess energy back into your home saving you 12 to 30 percent on your electric bill. [This product](#) is guaranteed for 15 years and has a 25 year life expectancy, but this product has no moving parts. Other types of appliances do not have such a warrantee because they are designed to wear out. Most are guaranteed for 5 years or less with a life expectancy of 10-15 years, like a refrigerator.

But, all appliances with moving parts, motors and heating elements need replacing now and then. When you do have to replace an appliance keep in mind that you are going to be using that appliance for 10 to 20 years in most cases, so don’t scrimp and buy the cheapest thing available (unless you’re installing it in a dorm room). If you’re low on cash and have to, that’s one thing, but if you are financing anyway, a few more dollars a month, or a few more payments isn’t really going to matter in the big scheme of things.

Purchase the appliances that you really want, and make sure they have the highest SEER ratings possible to insure they are the most energy efficient models on the market, because after it’s all said and done, you are going to be using that appliance for a long time, don’t get stuck with a base model that you are going to hate...for a long time.

Making your home more energy efficient accomplishes five basic things,

- It makes your home more comfortable,
- It lowers your monthly operating expenses,
- It increases your property value,
- It makes you the owner more environmentally conscious, and
- It lowers each of our total carbon footprint of our own Mother Earth

There are a thousand things you can do to make your home more energy efficient. I am going to hone in the top 21 that I feel would make the most impact on your energy efficiency. Some changes are things you can do every day. Some may require a one-time investment, others may require financing! But don’t rush out and get a second mortgage or a home improvement loan and jump in with both feet thinking you have to get every one of these things done. Take a small project first and move into the larger projects as you can afford them. There is enough debt in this country without doing that.

Whether it's something as big as installing solar panels or something as small as turning off the lights, when you cut back on how much energy you use, you save money, and please realize that, though there are many steps you can take to make your home more energy efficient, you don't have to follow every step discussed below to be energy efficient. Even if you only implement a few of these changes you will be saving energy, money, and the environment too.

With that being said; let's get started. I am going to break this report down into five small parts; Daily Projects, Afternoon Projects, Weekend Projects, Things You'll Probably Need to Hire a Contractor For (unless you are ARE a contractor) and at the end I'm going to throw in a list of General Purpose Ideas that you can use as a list of bullet points.

Daily Projects

1. Turn off the Lights.

Make it a daily habit to turn the lights off when you leave a room or don't keep the lights on just out of habit. Turning the lights off will lower your electric bill significantly. To supplement the lights; whenever possible, open your drapes and blinds to make use of natural lighting during the day.

2. Trade in your 6 plug strips for Smart strips

Use advanced, or "smart," power strips. Advanced power strips not only help protect your appliances from an electrical surge, it also includes three distinct plug categories. By plugging certain appliances into the right one, the power strip automatically turns specific appliances on and off based on the characteristics of the appliance in the first plug (like turning off your DVD player and game console when your TV is off). The power strip does the thinking so you don't have to.

Nathan Chandler over at howstuffworks has this to say about the new smart Strips

"Turn off the lights in your computer or TV room, and you'll probably see eyes peering through the darkness. All of those glowing LEDs, clocks and power switches are sneaky electronic vampires. While you can't slay them with a stake through the heart, you might be able to manage these vampires more easily with the help of a smart power strip.

Traditional power strips are an affordable way to expand the number of electrical outlets in your home. But their convenience can encourage you to leave electronics plugged in all the time -- and many devices keep drawing power even when you're not using them. Printers, DVD players, computers and plasma TVs are all examples of products with standby modes that make them convenient to use but suck significant power on the sly. This so-called phantom power drain costs you money, wastes electricity and ups your carbon output to boot.

Smart power strips, on the other hand, work to reduce your power usage by shutting down power to products that go into standby mode. Doing so may save you some serious cash. Statistics vary, but experts say standby power consumption in an average home ranges from 5 percent to 10 percent of your household energy consumption. It can also account for about 1 percent of worldwide carbon dioxide emissions [source: Lawrence Berkley Nation Laboratory].

You could combat vampire power by continually unplugging your gadgets, but with a smart power strip you won't have to.

3. Make sure your ceiling fans are on the right setting for the current season.

You may not know it, but ceiling fans turn in two directions. For good reason: One rotation direction pushes air down, and the other draws air up. During the summer, make sure your fan is pushing air down creating a "breeze" by rotating in a counter-clockwise direction; in the winter, you'll want it to turn clockwise at a low speed creating an updraft which forces the warm air near the ceiling down into the room. You'll be more comfortable and your home will use less energy trying to regulate the temperature. (Helpful hint: The switch to change the rotation direction should be near the fan blades. To determine which direction the air is moving, simply stand under the fan, and look up.)

Afternoon Projects

4. Switch From Incandescent To Fluorescent Lighting.

A quick count noting your different bulb strengths and a trip to your local big box home improvement store will put you in front of all the fluorescent bulbs you need to make your home as efficient as possible when using any bulb type appliance. Although these compact fluorescent bulbs do cost a little more initially, the end result is they last 8-12 times longer than incandescent bulbs. Fluorescent light bulbs are great for places that have lights on for a long time. However, if the light is always going on and off, it can shorten their life-span.

But, even if you can only afford a few at a time, using a mix of these fluorescent and incandescent bulbs throughout your home can have an impact on your overall energy usage.

5. Install a Programmable Thermostat

Another way to cut energy costs is by installing a programmable thermostat. These devices "save about 10 percent on your heating bills and your cooling bills in the summer, so they pay for themselves literally in a matter of months. Programmable thermostats can trim about \$180 a year from your energy bill by automatically reducing your heating or cooling when you need it least. Some thermostats are easy to set and use but others are so complicated that you might end up spending more on energy, not less.

That's why you won't find the Energy Star on any thermostats, which stopped certifying them in 2009 mostly because they were hard to use. New standards that factor in ease of use are being developed. But you don't have to wait. Manufacturers have made some of the newer thermostats less daunting by adding colorful interactive touchscreen displays.

Most thermostats can keep rooms close to the set temperature but our favorite is the new [Nest Learning Thermostat](#). It actually programs itself in about a week. It creates a personalized schedule based on the temperature changes you've made and continually adapts to your changing life by learning your schedule and the temperatures you like. It keeps you comfortable and saves energy when you're away. You can even adjust your temperature from anywhere using your smartphone, tablet or laptop. You can also adjust your schedule and check your Energy History.

6. Buy a Cheap Caulking Gun and Seal it up

Make a close observation around the outside of your home. Check every window frame, window pane, door and plank for cracks in the existing caulking. Whether you have board siding or bricks look over your entire house for new cracks and apply caulking to fill and seal them.

Plugging up the leaks that allow cold air to slip into your house—and drive up your heating bills—is an important first step in creating an energy-efficient home. You'll find most of these leaks around doors and windows, but they also can be in your basement or attic. Anywhere you can see light through or is an apparent crack needs to be caulked.

7. Don't forget About Your Access Doors

Along with using caulking, install weather stripping to make sure doors and windows are properly sealed. Anywhere that cold air can get in robs your home of heat in the winter and air conditioning in the warmer climates.

8. Plant a Tree (or 3)

Outside your home, plant deciduous shade trees in your yard on the side of your house that gets the most intense sun during the summer months (usually the side with the western exposure). The tree and its leaves will then provide shade during the hottest time of day and naturally help to keep your home cool. In winter, when the tree will be bare, it will allow warm sunshine into your home during the most optimal time of day.

9. Reduce Electrical Energy Consumption Without Changing Your Habits

Even though this one technically belongs under the Contractor classification, it's actually something that can be done in an afternoon. To complete this; have a [Green Power Box](#) installed near your breaker panel. The [Green Power Box](#) is a relatively inexpensive device designed by the industrial engineers at [United Green Power, LLC](#), for use in residential applications. It's a whole house surge protection device made from a bank of commercial capacitors and custom set to the needs of your particular home for maximum savings. Once set properly, this device will protect your whole house from electrical surges, rid your home of harmful EMF's and save you from 12 to 30% on your monthly power bill, paying for itself in a relatively short period of time.

10. Vacuum and dust your refrigerator coils and fan regularly

Dirt and dust build up on your refrigerator's coil and fan. That can decrease airflow and affect the fan's balance, which can contribute to premature failure of the compressor. Gently vacuuming and dusting these parts will help make your refrigerator run more efficiently and last longer. Be sure to unplug your refrigerator before cleaning. (You might want to set a quarterly reminder on your calendar to do this.)

Don't forget a refrigerator usually has 2 sets of coils, condenser coils and evaporator coils. Older refrigerators have the coils on the back, but the newer refrigerators have them both underneath or inside of the cabinet. Just make sure to clean the dust and lint formed on anything that looks like the radiator in your car.

11. Take the screens off your windows in the winter

Leaving the screens in place during cold weather is OK in that it won't damage your home or the screens. However, screens inhibit sunlight from coming into your home, which means you're blocking the sun's natural heat from flowing in. By removing the screens during the winter, your home can soak up as much free heat from the sun as possible.

Store them in a safe dry place so they are easy to clean and replace in the Spring.

Weekend Projects

12. Insulate upstairs

Adding insulation can help keep your home comfortable all year round. But depending on the type of house you have, that could be easier said than done. According to the Department of Energy, “approximately half of the homes in the United States are under insulated.” Adding new or additional insulation to your ceilings, attic and walls will prevent cold drafts and air leaks to keep warm air inside during the freezing winter. When the weather heats up, these same improvements will help trap the cool air from air conditioning the inside of your home during the sweltering summer.

Most houses have 4 to 6 inches of insulation in the ceiling. If you have access to your attic, you can check the depth of the insulation by sliding a ruler down the side of a rafter and making a judgment call about what the average height is. If you have 6 to 8 inches, you probably have plenty. But the old rule of thumb is, you can never have too much insulation.

If you have blown in insulation and it is not quite enough, you don’t necessarily have to hire a contractor to add additional blown in insulation. Whatever you do, consider the type of ceiling you have and if it will support the additional weight of more insulation. Attics oftentimes have vents exposed in them instead of protruding through the top of the house, so they will put a layer of dust across the surface of your insulation. Over the years, this dust, along with what comes in with the wind through the course of natural ventilation, will add weight to your insulation.

If your ceilings are just sheetrock with no additional backing material, considering that sheetrock is nothing more than a layer of Plaster of Paris between two sheets of heavy paper, it may not support the weight of additional insulation.

Rolls of batten insulation can be purchased that will fit exactly between the rafters in the commonly built home. Allowing you to put insulation in your attic as you can afford it and you can easily do it yourself. If your insulation is already at the top of the ceiling joists, consider laying your batten insulation at 90 degrees across the joists. Then you can shove the battens tight together making a complete layer across the entire ceiling and keeping the excess weight on the joists and not the sheetrock.

Whichever way you decide to proceed, just make sure to stay on the ceiling joists and don’t fall through the ceiling. If you do, your inexpensive do it yourself project just turned into a fairly expensive repair.

13. Seal the ducts

In forced-air heating and cooling systems, ducts carry hot or cold air to different parts of home. The Environmental Protection Agency estimates that roughly a fifth of this air escapes through leaks. To address this headache, consumers can use several methods to repair leaks in exposed ducts.

Most rigid ductwork are covered with aluminum covered board type insulation. Flexible ductwork is usually covered with a more cloth-like insulation that can be wrapped around flexible sections in a more custom situation. Either type can be patched and sealed with several types of materials. Most do-it-yourselfers use aluminum tape that can be purchased at any hardware store. The latter flexible sheet insulation can cut to custom sizes and used to make patches to tape over rigid ductwork.

Leaks are not limited to the ductwork located under the house or in the attic. Make sure you remove the registers and make sure the ductwork is securely attached to the area where they come through the ceiling or floor. Once secured, take the aluminum tape and put a solid strip all around the ductwork where it comes through. This may be a good time to clean or replace those broken and/or inoperable registers too.

Things You'll Probably Need to Hire a Contractor For

14. Replace old windows with energy-efficient ones

Replacing old, leaky windows with higher-efficiency models can also make your home greener. Your windows are a major source of heat loss in a home. Replace aluminum frames. Aluminum window frames let heat transfer very easily. Vinyl frames are much more resistant to heat transfer.

Get multiple panes. Double or triple-paned argon gas-filled windows are great for keeping the heat in and the cold out (the argon between the glass acts as an incredibly effective insulator).

If you already have double paned windows, you can't afford new ones, or you just want to take it one step further try tinting your windows. While you may not think that tinted windows on the front of your house looks very attractive, you can always do it to the back windows. Just keep in mind that the south and west sides are the most important. It's surprising how much unwanted heat and cold you can keep out by having tinted windows.

If replacing the window is not an option and you don't want to tint your windows, another option is to add storm windows. Storm windows can be a lower-cost alternative to a full-blown window replacement project. If your interior windows are in good shape, then installing storm windows is a quick way to increase your energy efficiency without going through the expense and the mess of ripping out your current windows.

When it's all said and done, open the blinds. Why not leave the lights off and let some sun in?

Lighting your house with sunlight is 100% free!

15. Install Energy-Efficient Doors

Wooden access doors have been used for over a century. The latest thing to hit the market is a molded metal door that looks like a wooden panel door. These doors use a foam type insulation but the lesser expensive doors have no insulation at all. When looking for energy efficiency, avoid hollow metal doors. Any kind of hollow door is going to be terrible because the air is going to infiltrate right through. Solid doors are more expensive, but they pay for themselves in their energy efficiency.

16. Replace Older Equipment With Energy Efficient Models

Heating, ventilating, and air conditioning units have a life expectancy of 20-25 years. Replacing an older outdated HVAC system with a more energy-efficient one can lower your monthly energy bills. But before considering this project, it's essential to make sure your home is as well-sealed and insulated as possible.

AC Efficiency: A Few Things That You Need To Know

A. Air conditioner technology is getting better all the time. What used to be considered standard efficiency just a few years ago is now below the minimum allowed by law. Air conditioner efficiency is currently recognized as a SEER (Seasonal Energy Efficiency Ratio) number. A 13 SEER is the current minimum allowed.

B. Most energy utilities provide rebates on any new units with above a 14.5 SEER; When deciding on a new unit, you'll need to balance the cost with the efficiency rating. The higher the SEER, the more efficient and the more expensive the unit. But considering current refrigeration technology and the rate of diminishing returns, going above 16 doesn't necessarily equate to more energy savings.

C. The AC system's capacity is measured, oddly enough, in tons. A ton of refrigeration is equal to the cooling power of one ton (2,000 pounds) of ice melting over the course of 24 hours. Your HVAC contractor can help you decide on the capacity you'll need based on the measurements of your home and its insulation values. Just make sure they actually do a room-by-room cooling load calculation instead of Rule of Thumb sizing.

D. Rule-of-thumb sizing

Although most building codes require load calculations for heating and cooling equipment installed in new homes, the requirement is widely ignored and rarely enforced. Most HVAC contractors never perform cooling load calculations; instead, they size air conditioners by rules of thumb. The age-old rule of thumb used by most contractors was one ton of cooling equipment for every 400 square feet of conditioned space. In a concession to recent improvements in insulation levels and window specifications, some HVAC contractors have adjusted their rule of thumb, and now size air conditioning systems at one ton per 600 square feet.

Because these rules of thumb almost always result in gross oversizing of cooling equipment, most energy experts have been battling rule-of-thumb sizing for years. However, rules of thumb have their place. Using a rule of thumb is not really the problem; the problem is that HVAC contractors are using a bad rule of thumb.

A good rule of thumb has many uses; for example, it can be used by builders to get a general idea of whether their HVAC contractor's sizing method is in the right ballpark or if he is totally nuts.

Of course, using a rule of thumb to size an air conditioner is no substitute for performing a room-by-room cooling load calculation. Room-by-room calculations are necessary for many reasons: to properly size ductwork, for example, and to address unusual architectural features like rooms with large west-facing windows. Moreover, rule-of-thumb sizing "does not account for orientation of the walls and windows, the difference in surface area between a one-story and a two-story home of the same floor area, the differences in insulation and air leakage between different buildings, the number of occupants, and many other factors."

You know that your air conditioner is sized correctly if it runs for 100% of the time on the hottest afternoon of the year and consistently maintains a comfortable temperature. Since most air conditioners are oversized, however, they tend to short-cycle, even on very hot days.

17. Keep Your Furnace Serviced

There are several things you can do to increase the efficiency of your furnace. But if you must replace your furnace, replace it with a high-efficiency furnace. A high efficiency furnace burns less gas, burns hotter, and produces less carbon emissions.

Change your air filters every 30-45 days. The reason for the time variation is living conditions. You don't have to change the filter if it's not dirty. If it's coated with lint like your clothes dryer vent, it's past time to change it out. Changing out dirty furnace filters makes it easier for air to circulate and thus makes your furnace work less.

We've talked about this already, but it's important enough to mention again. Seal your furnace/AC duct work. Keeping air in the ducts until it reaches its destination will keep your furnace from working too much.

Close the vents in rooms you use less frequently in your home, like guest bedrooms, so you're only heating or cooling rooms that are occupied. That way the air pressure created by the furnace is diverted to other rooms causing your home to heat or cool faster and become more efficient in the process.

18. Install high-efficiency water heaters

High-efficiency water heaters can drive down home energy costs. Heating your water makes up anywhere from 15 to 25 percent of the annual energy usage in a home. Another good rule of thumb to use is keep your hot water heater thermostat turned down as low as possible to sterilize your dishes. Keep your water heater at the point where it is a little too hot to keep your hands under the flow. Normally 110 degrees can be withstood. Keep your water heater in the "warm" range (120 to 140 degrees) is fine. As a matter of fact, some of the newer hot water heaters will automatically shift the temperature down to 140 if you turn it up past that. In most cases, there's no reason to keep it that hot.

You could also install a new high efficiency on-demand water heater that only fires when you call for hot water. They heat up quickly-and then it quits burning fuel when it doesn't sense a water flow. (An added bonus is the fact that they are amazingly easy to maintain.)

19. Replace old appliances

Older appliances are less energy-efficient than newer models. Replace these old rust buckets in your home with new appliances with a high SEER number or one of the new Energy Star certified appliances. This will go a long way towards saving energy and lowering your electric bills. When it's time to replace your kitchen appliances, the washer, dryer, water heater, or furnace, research the various models and features so you'll know which ones are the most energy efficient. When shopping, look for models that have a high SEER number or those labeled as "Energy Star Certified" to ensure you're getting an energy- and money-saving appliance.

Get low-flow fixtures and appliances

Low-flow toilets, shower heads, and washing machines can save a lot of water. Toilets only need enough water to flush, there is no need in sending 4 gallons of water behind it. Using low-flow shower heads can "piggyback" on the use of a new, energy-efficient water heater and help to further decrease the energy usage in your home.

One trick is to look for shower heads designed to work with low water pressure. When they are installed on a standard water system, the high pressure running through the nozzle will allow you to lower the water demand, thereby using less water, and less water demand on your water heater saving you money on your water bill and your power bill.

When shopping for a new washing machine, make sure to choose the right size for your family. Make sure the tub has multiple water level setting for those time when you just need to was a piece or two without filling the entire tub on the wash and the rinse cycle. A normal heavy load washing machine uses from 7 to 10 gallons of water on the wash and rinse cycle. Keeping your new washer at the proper level for the load you are washing is not only prudent, it's being a more consciously informed consumer.

General Purpose Ideas

20. Use your appliances efficiently

Study the operator's manual for each appliance you own or are planning to purchase so you will be familiar with the proper operating methods. Then, be mindful of how you're using your appliances. Minimize their energy expenditure by minimizing their use.

When using a dishwasher; do full loads of dishes each time. If there is an energy saving setting, use it. It normally allows your dishes to air dry instead of stem cleaning.

Since your refrigerator is the one appliance in your home that's always on, maximize its efficiency by turning the temperature to the "energy-efficient" setting (if indicated on your temperature control) or to 37 degrees (3 degrees for your freezer).

And when you go on vacation don't just turn off your appliances, throw the breaker or unplug everything except the refrigerator. Your hot water heater and other appliances are still robbing your meter of excess power. Just because they are turned off, doesn't mean they are not continuously wasting energy.

21. Finally, make sure to take advantage of the tax incentives for energy-efficient home improvements that are available through the federal government.

Recently the government has increased its incentives that allow for up to 30% of the cost of home improvements - like new windows, insulation, heating, or air conditioning - for an existing home to a maximum of \$1,500. That's money back in your pocket in addition to the savings on your power bill!

Always seek the advice of a tax professional about the proper way to handle your particular tax situation.

Bonus Section

Going Off the Grid

A. Add solar panels.

Adding solar panels to your house can help you cut down on energy costs by helping you produce a little bit of your own electricity. Once installed these units have a 25-30 shelf life with no moving parts, so a properly sized unit can help you cut your electricity cost to next to nothing. Wise advice to take would be; don't go completely off the grid. Stay connected for those long stretches of cloudy days when you need to draw power from your utility company. The good news is; on those extremely hot days when you generate excess power, it will feed back into the grid and you will be credited for what feeds back. Check with your energy provider for the exact terms and conditions that may apply.

B. Buy or build a rainwater collection system.

Did you know the average roof collects 600 gallons of water for every inch of rainfall? Don't let all that water go to waste. Rainwater collection systems allow you to trap rainwater that would otherwise become runoff. That trapped water can then be used as irrigation water for your lawn or plants without going through your meter, or harming your delicate plants with harsh chemicals .

C. Remember that there are [government grants](#) and rebates for making your home energy efficient.

D. Home improvement loans can help you cover the initial cost — and then the savings pay it all back.

E.P.A. and D.O.E. Suggestions:

According to EnergyStar.gov – a partnership of the U.S. Environmental Protection Agency and the U.S. Department of Energy – the typical household spends \$2,100 each year to heat, cool, and illuminate their homes. But reducing energy bills doesn't have to be difficult or expensive.

Up to half of the energy used in your home goes to heating and cooling. By making some smart changes in your energy usage, you can have a big impact on your utility bills.

- **Skip pre-rinsing dishes.** It's good to scrape food off before putting dishes in the dishwasher, but there's no need to rinse them. You'll save up to 6,500 gallons of water per year.
- **Replace furnace air filters often.** A dirty air filter can make your furnace work harder and use more energy. Replace the filter every two to three months.
- **Replace incandescent bulbs with compact fluorescent lamps (CFLs) or light-emitting diodes (LEDs).** CFLs can last 10 times longer than incandescent bulbs and use 75% less energy. LED bulbs are mercury-free and may last three to five times as long as CFLs.
- **Insulate water heaters and pipes.** Covering your water heater with an insulated water heater blanket can help retain heat, so the unit uses less energy to heat hot water. Foam or rubber pipe insulation keeps cold pipes from sweating in the summer and reduces heat loss from hot-water flow in the winter.
- **Seal doors and windows.** Install door sweeps at the bottom of your front and back doors to keep heat from escaping. Remove old window caulk and apply a fresh seal to retain heat in your home.
- **Clean air ducts.** Keep your air ducts clean to improve air flow and reduce stress on your furnace and central air conditioner.
- **Upgrade your thermostat.** A programmable thermostat can save you over \$100 a year on your energy bill.
- **Install low-flow toilets and showerheads.** Toilets consume up to 40% of a home's average water use. Using low-flow toilets can save more than 9,000 gallons of water a year. A low-flow showerhead only uses 1.5 gallons per minute while most conventional showerheads use 5 gallons per minute.
- **Install ceiling fans.** For summer use, ceiling fans can cool a room more efficiently than an air conditioner. For winter use, most ceiling fans have a reverse switch so that their blades force heated air down from the ceiling.
- **Hire a professional energy auditor.** Using a blower door or infrared photography, a trained auditor can assess where your home is leaking energy. Some utilities even offer free audits.
- **Plant deciduous shade trees near the house.** Leafy trees on the west and southwest sides of a house can keep your home cooler in the summer.
- **Replace leaky windows.** Replace single-glazed windows with low thermal emissivity (Low-E) windows to reduce heat transfer and keep your home cooler in the summer and warmer in the winter.
- **Insulate walls and attic.** Heat escapes through the walls and attic of homes. Blown-in foam insulation can be a very cost-effective way to seal walls, with minimal structural intrusion. Replacing old attic insulation with fresh fiberglass cover can reduce your heating bills.
- **Purchase ENERGY STAR appliances.** Refrigerators, televisions, stoves, washers, dryers, dishwashers, and air conditioners with this designation can save you a significant amount each month in energy bills. Start by replacing your oldest, least-efficient appliances first, before they have a major problem.
- **Install solar panels.** Solar panels, which can be used to heat hot water or generate electricity, can save money on your energy bills over the long run, lower your fossil fuel usage, and may qualify for tax incentives.

[The information in this article was obtained from various sources. While we believe it to be reliable and accurate, we do not warrant the accuracy or reliability of the information. These suggestions are not a complete list of every loss control measure. The information is not intended to replace manuals or instructions provided by the manufacturer or the advice of a qualified professional. Nor is it intended to effect coverage under any insurance policy. No guarantee is made for results from the use of this information. We assume no liability in connection with the information nor the suggestions made.](#)

A Word About Energy Efficiency Audits

Before you can make your home more energy efficient, you need to know where you currently stand. A so-called energy audit, in which an energy professional inspects your home to determine where efficiency can be improved, is a great way for homeowners to figure out which parts of their property need attention.

Taken in part from Energy.gov

How to Conduct a DIY Energy Audit

An energy audit is a way to assess your building's energy use and find ways to make improvements. With the results of the audit, you can reduce energy use and cut utility bills. As you prepare to conduct an audit, it can be helpful to have a floor plan to make notes for specific places and keep track of your notes.

- A simple do-it-yourself walk-through can help you pinpoint where energy is being wasted in your home and help you set your energy priorities.
- A professional energy audit will provide a more thorough assessment of your home's energy use and potential areas where you can save
- You can save 5%-30% on your energy bill by making upgrades following a home energy assessment

While a professional home energy audit is the best way to determine where your home is losing energy and where you can save, you can conduct your own simple but diligent walk-through and spot many problems in any type of house.

This "do-it-yourself" home energy audit will not be as thorough as a professional home energy assessment, but it can help you pinpoint some of the easier areas to address. When walking through your home, keep a checklist of areas you have inspected and problems you found. This list will help you prioritize your energy efficiency upgrades.

Do not assume that just because your home has been recently constructed—or even new—that there are no opportunities to save energy. Energy-saving technology has evolved rapidly over the past few years, outpacing training commonly available to many builders, including some of the most reputable.

LOCATE AIR LEAKS

First, make a list of obvious air leaks (drafts). 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.

Check for indoor air leaks, such as gaps along the baseboard or edge of the flooring and at junctures of the walls and ceiling. Also check for leaks on the outside of your home, especially in areas where two different building materials meet.

Then; Seal The Air Leaks. You should plug and caulk holes or penetrations for faucets, pipes, electric outlets, and wiring. Look for cracks and holes in the mortar, foundation, and siding, and look for leaks around windows and doors. Seal them with the appropriate material.

Consider ventilation when sealing any home; you must always be aware of the danger of indoor air pollution and combustion appliance "backdrafts." Back-drafting is when the various combustion appliances and exhaust fans in the home compete for air. An exhaust fan may pull the combustion gases back into the living space. This can obviously create a very dangerous and unhealthy situation in the home.

In homes where a fuel is burned (i.e., natural gas, fuel oil, propane, or wood) for heating, be certain the appliance has an adequate air supply. Generally, one square inch of vent opening is required for each 1,000 Btu of appliance input heat. Burn marks or soot around the appliance burner or at the vent collar, or visible smoke anywhere in the utility room while the appliance is operating, indicate poor draft. When in doubt, contact your local utility company, energy professional, or ventilation contractor to come out and inspect your units.

CHECK INSULATION

Heat loss through the ceiling and walls in your home could be very large if the insulation levels are less than the recommended minimum. When your house was built, the builder likely installed the amount of insulation recommended at that time. Given today's energy prices (and future prices that will probably be higher), the level of insulation might be inadequate, especially if you have an older home.

If the attic hatch 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. In the attic, determine whether openings for items such as pipes, ductwork, and chimneys are sealed. Seal any gaps with an expanding foam caulk or some other permanent sealant. When sealing gaps around chimneys or other heat producing devices, be sure to use a non-combustible sealant.

While you are inspecting the attic, check to see if there is a vapor barrier under the attic insulation. The vapor barrier might be tarpaper, Kraft paper attached to fiberglass batts, or a plastic sheet. If there does not appear to be a vapor barrier, you might consider painting the interior ceilings with vapor barrier paint. This reduces the amount of water vapor that can pass through the ceiling. Large amounts of moisture can reduce the effectiveness of insulation and promote structural damage.

Make sure that the attic vents are not blocked by insulation. You should also seal any electrical boxes in the ceiling with flexible caulk (from the living room side or attic side) and cover the entire attic floor with at least the current recommended amount of insulation.

Checking a wall's insulation level is more difficult. Select an exterior wall and turn off the circuit breaker or unscrew the fuse for any outlets in the wall. Be sure to test the outlets to make certain that they are not "hot." Check the outlet by plugging in a functioning lamp or portable radio. Once you are sure your outlets are not getting any electricity, remove the cover plate from one of the outlets and gently probe into the wall with a thin, long stick or screwdriver. A plastic crochet hook is particularly suited, as it will retrieve small bits of any insulation material for easy identification. If you encounter a slight resistance, you have some insulation there. You could also make a small hole in a closet, behind a couch, or in some other unobtrusive place to see what, if anything, the wall cavity is filled with. Ideally, the wall cavity should be totally filled with some form of insulation material. Unfortunately, this method cannot tell you if the entire wall is insulated, or if the insulation has settled. Only a thermographic inspection can do this.

If your basement or crawlspace is unconditioned and open to the exterior, determine whether there is insulation under the living area flooring. In most areas of the country, an R-value of 25 is the recommended minimum level of insulation.

If the sub-space is enclosed and contains heating or cooling appliances, air ducts or plumbing, you should probably insulate the sub-space perimeter rather than the living space floor. The insulation at the top of the foundation wall and first floor perimeter should have an R-value of 19 or greater. If the basement is intentionally conditioned, the foundation walls should also be insulated to at least R-19. Your water heater, hot water pipes, and furnace ducts should all be insulated as well.

INSPECT HEATING AND COOLING EQUIPMENT

Inspect heating and cooling equipment annually, or as recommended by the manufacturer. If you have a forced-air furnace, check your filters and replace them as needed.

Generally, you should change them about once every month or two, especially during periods of high usage. Have a professional check and clean your equipment once a year.

If the unit is more than 15 years old, you should consider replacing your system with one of the newer, energy-efficient units. A new unit would greatly reduce your energy consumption, especially if the existing equipment is in poor condition. Check your ductwork for dirt streaks, especially near seams. These indicate air leaks, and they should be sealed with a duct mastic. Insulate any ducts or pipes that travel through unheated spaces. An insulation R-Value of 6 is the recommended minimum.

LIGHTING

Energy for lighting accounts for about 10% of your electric bill. Examine the light bulbs in your house and consider replacing inefficient bulbs with a more efficient choice, such as energy-saving incandescents, compact fluorescent lamps (CFLs), or light-emitting diodes (LEDs). When shopping for bulbs, consider the brightness of the bulbs you want and look for lumens and the Lighting Facts label. Your electric utility may offer rebates or other incentives for purchasing energy-efficient lamps.

APPLIANCES AND ELECTRONICS

The appliances and electronics you choose and how you use them affect your energy use and costs. Examine the appliances and electronics in your home and estimate their energy use. Consider strategies for reducing the energy use of your appliances and electronics.

You might consider the following:

- Unplugging an item when it is not in use to prevent phantom loads
- Changing the settings or using the item less often
- Purchasing a new, more efficient product

PROFESSIONAL HOME ENERGY AUDIT

Once you have finished your do-it-yourself audit, consider calling in a pro to complete a more thorough assessment. Your self-assessment can help the auditor better analyze your home and potential areas for saving.

REFERENCES

References: Krigger, J.; Dorsi, C. (2004). Residential Energy: Cost Savings and Comfort for Existing Buildings. Helena, MT: Satu,