



ENERGY E-TIPS

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Heating and Cooling Your Home

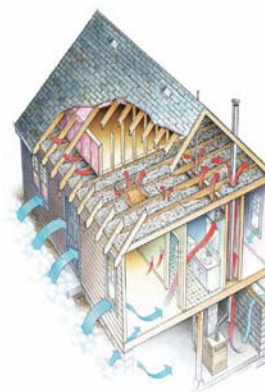
It was mentioned in the one of our previous ENERGY E-TIPS editions that about 44% of all household energy expenditures are associated with heating and cooling our homes. With an average American household cost of \$2,200 per year for energy bills, many consumers desire to make sure that their heating and cooling works efficiently. This edition of ENERGY E-TIPS explores how to maximize the efficiency of your heating and cooling appliances.

What is the heating envelope?

Before we discuss heating and cooling appliances, it is important to think about the current state of a home's heating envelope. Heating envelope can be defined as all the boundaries that separate the inside of our homes from the outside weather, which include walls, roof and windows. Conditioned air in the heating envelopes (i.e. heated air in the winter) leaks to the outside. This phenomenon of air leaks are most noticeable in winter, and are referred to as "drafts" by most people. Drafts lead to wasting energy and increasing our energy bill. Consumers notice these drafts around windows and doors; however, the most significant air leaks are usually in the attic and basement. When warm air rises in cold weather, it can be wasted as it is pulled into the attic through these air leaks, and cold air is sucked in through windows, doors and basement leaks. The shape below shows some of the possible air leaking points (red arrows represent hot air leaks out of the home and blue arrows represent cold air leaks into the home). Therefore, sealing air leaks, adding insulation and maintaining proper ventilation are important aspects to home heating and cooling.

Sealing these leaks is relatively easy, but needs some attention and takes some time. Review the "Do It Yourself" sealing guide (http://www.energystar.gov/ia/partners/publications/pubdocs/DIY_Guide_May_2008.pdf) from Energy Star for detailed instructions on how to seal and insulate various portions of your house. Supplies that will be used are insulation, caulk, flashing, and home / safety tools.

Be sure to keep proper ventilation outlets to the attic (kitchen, bathrooms, laundry rooms, and other rooms with high water usage). Many times homeowners will seal up the home and add extra insulation in these ventilation outlets that cause moisture problem in the home. Detailed information on ventilation can be found on the EPA website for indoor air quality: <http://www.epa.gov/iaq/homes/hip-front.html>.



Heating, Ventilating, and Air Conditioning (HVAC) Systems:

Once you have an energy-efficient structure, it is time to consider the appliances. If your HVAC equipment is older than 10 years or keeping your house uncomfortable, have it evaluated by a HVAC professional contractor. If it is not performing efficiently, consider replacing it with a unit that has earned the ENERGY STAR label. Depending on where you live, replacing your old heating and cooling

equipment with ENERGY STAR qualified equipment can cut your annual energy bill by nearly \$200. In the past, there have been tax credits and rebates for using certain percentage of energy-efficient appliances (such as Heaters and Air Conditioners).

Because the total cost is still very high on these systems, many homeowners may feel like they cannot afford to replace both heater and air conditioner with the highest rated efficient model. If this is the case, consider only replacing the heater; as the blower is used for both heating and cooling seasons. Remember to use professional installers when purchasing these products. New equipment must be properly installed because improper installation can reduce system efficiency by up to 30% costing you more on your utility bills and possibly shortening the equipment's life.

Maintenance Tips

Here are some tips to make sure that your heating, ventilating, and air conditioning (HVAC) appliances are maintained properly:

- **Change your air filter regularly:** Check your filter every month, especially during heavy use months (winter and summer). If the filter looks dirty after a month, change it. At a minimum, change the filter every 3 months. A dirty filter will slow down airflow and make the system work harder to keep you warm or cool—wasting energy. A clean filter will prevent dust and dirt from building up in the system.
- **Tune up your HVAC equipment yearly:** Yearly tune-up of your heating and cooling system can improve efficiency and comfort. A maintenance checklist can be found here: http://www.energystar.gov/index.cfm?c=heat_cool.pr_maintenance.
- **Install a programmable thermostat:** A programmable thermostat is ideal for people who are away from home during set periods throughout the week. Through proper use of pre-programmed settings, a programmable thermostat can save you about \$180 every year in energy costs.

References:

- A Guide to Energy Efficient Heating and Cooling. Energy Star http://www.energystar.gov/ia/partners/publications/pubdocs/HeatingCoolingGuide%20FINAL_9-4-09.pdf
- Heat and Cool Efficiently. Energy Star Website: http://www.energystar.gov/index.cfm?c=heat_cool.pr_hvac

Samy Sadaka
ssadaka@uaex.edu
Rachel Lipsey
rlipsey@uaex.edu

