

Countering Rising Heating Costs

??? How can I counteract the rising heating costs?

It Depends On:

- ❖ Whether you are interested in short-term or long-term actions
- ❖ How you heat your home and hot water
- ❖ How efficient your home is now
- ❖ How much you have to spend on energy efficiency improvements
- ❖ What payback will be acceptable
- ❖ How willing you are to consider geothermal space heating and/or solar thermal water heating options

General Discussion

Heating costs are determined by the prices of oil, natural gas, propane, and electricity and how much of each form of energy your home uses for comfort, health, and building durability. In the short-term, you can influence how much energy you use, and in some areas, you can choose which natural gas and/or electric marketer you buy from. In the longer term, you can decide on which forms to use, for example replacing natural gas water heating with solar thermal water heating, or replace failing older, inefficient furnaces with ENERGY STAR® furnaces.

Whether you heat with natural gas, home heating fuel oil, propane and electricity is usually determined at the time the home is designed and built. Once determined, homeowners usually stay with that original fuel source. Retrofits to other energy sources may be expensive. However, you may consider them to capture other benefits (avoided future energy costs, reduced environmental emissions) as with geothermal and solar thermal.

The efficiency of your home, the efficiency of heating equipment, and how you maintain and operate it are the biggest determinants of heating costs that are under your control: how the home is oriented to the sun and wind; landscaping to shelter and shade the home; what materials the home is constructed from and the quality of the construction work itself; the barriers between the home and the air and ground moisture outside; the thermal barriers between the conditioned air inside the home and the unconditioned air outside the home; how well the conditioned spaces inside the home are sealed against the unconditioned spaces inside and outside; the efficiency of the heating, cooling and ventilating equipment; the efficiency of appliances and lighting; how well the homeowner controls energy to match their comfort needs without waste.

There are no cost/low cost measures that will save energy, for example:

- turning down the thermostat
- changing or cleaning the furnace filter(s) monthly
- turning off kitchen and bath exhaust fans when no longer needed

Greater savings may be reached with investments in insulation and air sealing of the building “envelope” and heating ducts. Some measures pay off in one heating season; others pay back in two years or more. Only you can decide how much you have to spend and what paybacks are acceptable.



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What to do?

- ✓ Take no cost/low cost actions now to reduce heating costs.
 - Reduce your heating costs right now by turning down your thermostat to 68° F when the house is occupied, and setting the temperature to 65° at night and when there is no one home.
 - If you are unable or unlikely to manually set back the thermostat, install a programmable thermostat compatible with your heating system. Programming your thermostat from 72 degrees to 65 degrees for eight hours a day while no one is home, or while everyone is tucked in bed, can cut your heating bill up to 10 percent, paying for the cost of a basic unit in less than a year.
 - Reduce your water heating costs by lowering the temperature to 120° F. (Just be sure if you have a dishwasher that there is a heating element to raise water temperature for sanitizing dishes.)
 - Properly maintain your heating system. Make sure your furnace or heat pump receives professional maintenance each year. If replacing your heating system, look for the ENERGY STAR® label.
 - Plug air leaks with caulking, sealing, or weather stripping to save 10 percent or more on your energy bill. On a windy day, hold a lit candle next to windows, doors, electrical outlets, and light fixtures to test for leaks. Also, tape clear plastic sheeting to the inside of your window frames if drafts, water condensation, or frost are present.
 - Turn off kitchen, bath, and other ventilating fans within 20 minutes after you are done cooking or bathing or until moisture and odors are removed to retain heated air.
 - Open curtains on your south facing windows during the day to allow sunlight to naturally heat your home, and close them at night to reduce the chill you may feel from cold windows.
 - Close fireplace dampers when not in use. A chimney is designed for smoke to escape, so until you close it, warm air escapes.

- ✓ Invest in greater cost, greater payback measures.
 - Decide upon your definition of “significant savings”. There are many energy efficiency improvements that will return your investment within two years; there are others that will take longer. Understand that paybacks are typically calculated based on assumptions about energy prices and interest rates. Understand those assumptions.
 - Your potential for savings is based on the initial energy use of the home. Remember that homes with the highest use have the greatest potential for savings. Many factors influence your home’s energy use including its size, age, insulation levels, equipment efficiencies and how the home is managed. Houses with below 800 ccf/year of usage would be considered low use and would not have big potential and major retrofits may not be cost effective. Homes between 800 ccf/year and 1,200 ccf/year would be considered moderate users and may have the potential for savings around 10% to 20%, but retrofits must be selected carefully. Homes using over 1,200



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ccf/yr have good potential for savings and likely will need air sealing, insulation and HVAC and duct sealing upgrades.

- Understand your current energy usage, your home's construction, and your energy using equipment and systems. There are on-line audit tools to help you identify typical savings opportunities. Several audit tools can be found at www.odod.state.oh.us/cdd/oe/ExistBuild.htm
- Retain a home energy rater to identify and rank energy efficiency investment opportunities unique to your home. A list of Residential raters can be found at www.natresnet.org/directory/rater_directory.asp#Search. Here are some actions you should expect:
 - Blower door test
 - Insulation inspection of attic and sidewalls
 - Infrared test for heat loss
 - Utility bill analysis
 - Furnace, air conditioning, fans and ductwork inspections
 - List of recommendations with rough estimates of costs, savings, and paybacks.
 - Improvements may include:
 - Air seal major bypasses and air leakage sites as identified by the blower door. Focus should be on the attic first, followed by the major wall penetrations, and finally in the basement/crawlspace perimeter. The goal is to define the envelope of the house with a continuous air barrier.
 - Insulate your attic, ceilings, exterior and basement walls, floors, and crawlspaces as recommended for your geographical area to save you up to 30 percent.
 - Insulate and air seal heating ducts, too, and keep them in good repair to prevent heat loss. Your system can lose up to 60 percent of its warm air before it reaches the register if ducts are not properly insulated and air sealed in unheated areas such as attics and crawlspaces. Don't use duct tape to seal your ducts. Only use water-based mastic, latex caulk, or high quality foil tape.
 - If you are going to replace your heating system, make sure the new system is sized properly for your home, especially if you are going to make other energy efficiency improvements.
 - Also insulate your hot water heater and hot water pipes.
- Make energy efficiency improvements yourself if you are handy and have the time, keeping the whole house concepts in mind. Refer to the [Energy Star® Do-it-yourself guide Sealing Air Leaks and Adding Attic Insulation](#). It is usually best to leave sidewall insulation to the experts with the proper equipment and training with the exception being kneewalls.

- ✓ Explore solar water heaters if you have an unshaded, south-facing roof or support structure on your property. More than 1.5 million systems have been installed in the US and surveys indicate 94% of system owners



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consider them a good investment. Information can be found at http://www.eere.energy.gov/solar/solar_heating.html

Outcomes

You can achieve savings up to 50% of your space and water heating costs in houses with high initial usage.

- ❖ Improved comfort and health with better managed air quality.
- ❖ Improved building durability through moisture control.



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