



How Much Can You Save On Home Heating Costs?

If you're like many of the people I speak with in Nevada County you're probably looking at a much higher heating bill this winter than in winters past. It's been colder this winter than in recent years, we've had less sunshine than normal, and the cost of propane and natural gas is higher too. The good news is there are a number of cost-effective things you can do to reduce your home heating costs and PG&E has rebates available to help you save even more on many of them.

A past Showcase article titled "Save Money This Winter on Heating Costs" touched on some of the solutions but today we'll go into them in more detail. To find out how much potential you have for savings let's first figure out how much you're spending.

If you're a natural gas customer its easy to separate your home heating from the rest of your gas use than if you use propane. For propane customers, unless your tank is filled once a month, the process of calculating your monthly gas use is beyond the scope of this article. If you're a propane customer and your tank is filled every several months or more, you need to begin by writing down the meter readings (percentage full) on your tank at the beginning of each month and be sure to keep all receipts from your supplier. Once you've accumulated a year of readings your monthly use can be calculated with help from an energy specialist or your gas company.

To estimate how much gas you're using for space heating, simply subtract your June bill (hot water only) from your December bill (hot water and space heating). Unless you have a pool or other seasonal use of gas beyond heating and water heating, your June bill should be just water heating. You can use this same simple calculation for the other months of the year.

To begin it's important to understand that your heating system is made up of three important parts – the furnace, the duct system and the thermostat. Each one of these parts plays an important role in your

consumption! Let's say you find out you're spending \$1,000 a year to heat your home. How much might you save by upgrading any one of these three parts of your heating system?

Thermostat

For every degree you set your thermostat above 68 degrees you increase your heating cost by 3 to 5 percent. In practical terms, turning your thermostat down from 72 to 68 could save you up to 20% or \$200 a year!

If you don't already have a setback thermostat, get one installed. If you have one but don't use it, program it for energy savings! Set your thermostat to a lower temperature at times you're away from the home and at night when you're sleeping. How much lower you set it, which is referred to as your "setback" temperature, depends on your comfort requirements. It may also depend on how efficient your heating system and your home are.

With an inefficient system and/or home it could take extra time to bring your home back up to temperature, so you may want to begin with a small setback and work your way up to a larger number. To compensate for the extra time it takes just ask the thermostat to bring the temperature back up sooner. You can begin by asking the thermostat to bring the temperature back up an hour ahead of time, increasing the time if necessary until you're satisfied.

Duct System

As discussed in previous articles, your duct system is very likely responsible for wasting a lot of your heating costs. Usually we'll find the duct system is poorly insulated and leaky but sometimes we'll find a disconnected duct in a home suffering from unusually high heating costs – it's not that uncommon!

An older (pre-2005) duct system might be just 65% efficient while a newer system might average 85%. Using our \$1,000 per year example, you could save \$200 a year by tuning up your ducts!

Begin by sealing the leaks in your duct system. Most systems use flexible ducts which, in and of themselves, don't leak air - it's the connections that leak. The first rule to remember is that duct tape alone should not be depended upon to seal these leaks. To seal the little leaks (1/4" or smaller) on

sheet metal connectors a sticky, gooey white substance called “mastic” is used. For larger leaks, a mesh fabric tape is used with the mastic.

To seal the leaks where the duct connects to sheet metal connectors, the inner core of flexible ducts is pulled at least one inch over the connector before being sealed with either mesh, mastic and a clamp, or two wraps of tape and a clamp. Don't buy just any duct tape, either. Be sure the tape you're getting says “CEC-approved” on the backing before leaving the store (CEC stands for “California Energy Commission”)! To assure a strong connection, the clamp you'll want to use is a large zip tie called a “panduit strap”. Once the inner core is clamped and sealed, the insulation is pulled back over the connection, the outer liner of the duct is pulled back over the insulation, and the two are secured with two wraps of tape or a clamp.

At the same time we're sealing the ducts we can use the opportunity to correct two other common problems we typically see – compressed flexible ducts. The compression takes two forms. In the first, the duct wasn't fully extended when it was installed – in other words, the accordion-like folds in the duct are making lots of little “hills and valleys” inside the duct, which will dramatically reduce the amount of air flowing through the duct. In the second, the flexible duct is squashed down by any one of a number of things. It could be squashed by a pipe or another duct, from a too-sharp turn, or because it was draped loosely over a framing member in the attic. Flexible ducts should be fully extended and supported every four feet (or less) with 1.5” (or wider) hanging straps.

Lastly, ducts in our area should be wrapped with R-6 to R-8 insulation (2 to 3 inches of minimally compressed insulation). Most existing ducts are insulated with just 2/3 of an inch of insulation (about R-2).

Furnace

A new unit can cost anywhere from \$1,000 to \$3,500. A high efficiency unit can be \$500 to \$1,000 of this cost. The higher your heating costs the more sense it makes to go for a higher efficiency.

Using our example of \$1,000 per year heating cost, if your furnace is 60% efficient and you replace it with an 80% unit, you'd save about \$250 per year. If your furnace is 15-20 years old it probably needs to be replaced anyway. A even more efficient 95% furnace saving \$368 per year would be an even

better choice in this case.

Lastly, the air filter(s) in your system should be changed when they begin to look dirty. Otherwise they'll slow the air down (similar to a squashed duct) and decrease efficiency. The filters should be located either inside your return air filter grilles or at the furnace itself.

Keep in mind that the savings from the first problem you correct, such as leaky and poorly insulated ducts, will reduce your gas use. Given a lower gas use, the 25% percent savings from the next step, such as an 80% efficient furnace, would now be 25% of \$800 or \$200 savings (the individual savings aren't simply additive).

This has been, by no means, a complete "do-it-yourselfers guide" to upgrading your central forced-air heating system. For more detailed information I recommend you visit websites such as PG&E (www.pge.com), Energy Star (www.energystar.gov) or the California Energy Commission (www.energy.ca.gov). For help with your heating system I recommend a licensed professional such as a C-20 (heating and air-conditioning) contractor or a home performance contractor.

Lastly, PG&E is offering rebates for duct sealing, energy efficient furnaces and variable speed blower motors. Be sure to visit their website for more details!



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