

Fireplace Plug Energy Loss Prevention References



U.S. Department of Energy
Energy Efficiency and Renewable Energy

Energy Savers *A consumer guide to energy efficiency and renewable energy*

The Chimney

Chimneys harness the heat of the fire to create what's called a *stack effect*. As the warm air from the fire rises, cooler house air rushes into the wood-burning appliance through vents, providing the oxygen the fire needs to burn. Starting a fire with a good hot burn will encourage this healthy draft to flow. Also, between the higher and lower pressure zones of the home lies a neutral pressure zone. The neutral pressure zone tends to move toward the largest air leak. When the top of the chimney is located above the home ceiling (as it should be), the chimney's neutral pressure zone is above the neutral pressure zone of the house. **This creates a flow of air into the appliance and out the chimney even when no fire burns.**

<http://www.eere.energy.gov/consumerinfo/factsheets/nb4.html>



Federal Citizen Information Center

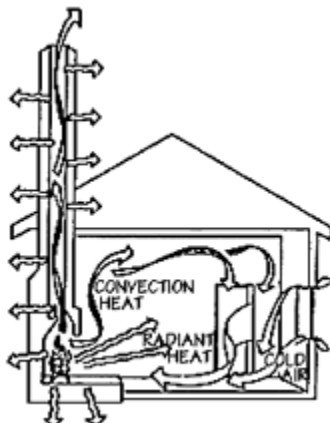
**Pueblo,
Colorado**

Other ways to save energy and money

Keep your **fireplace** damper closed. Since heat rises, an open damper allows heat to escape from your home.

An open fireplace draws much more air than needed for combustion. As the large volume of air is drawn up the chimney, warm air from other areas of your house goes up the chimney, too. This steals heat from the other rooms and pulls cold air into the home through cracks around windows and doors and other leaky places that cannot be completely sealed off.

An open or poorly sealed damper can draw air up the chimney even when the fireplace is not in use. This can occur during both heating and cooling seasons, creating a net energy loss on an annual basis. <http://www.pueblo.gsa.gov/cfocus/cfappliances04/focus2.htm>



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Toronto Hydro Energy System

Energy Efficiency Tips

When your fireplace is not in use, keep the flue damper tightly closed. A chimney is designed specifically for smoke to escape, so until you close it, warm air escapes - 24 hours a day.

If you never use your fireplace, plug and seal the chimney flue to prevent warm air from escaping.

Keep your fireplace damper closed unless a fireplace is going. Keeping the damper open is like keeping a 48-inch window wide open during the winter; it allows warm air to go right up the chimney.

http://www.torontohydro.com/electricsystem/powerwise/energy_tips/index.cfm?topic=63&version=print



Flue Sealers

Even brand-new dampers may not close tightly. Dampers can become warped after the first hot fire. They may even be installed incorrectly to begin with. There are products commercially available to temporarily seal off the flue and stop air from escaping up the chimney. One product is an inflatable stopper that you insert into the flue. Most models are made of heavy plastic with an attached tube for inflating the device. The tube hangs down into the fireplace to remind you that the stopper is there. The flue must be totally cool before installing the stopper. Most manufacturers recommend cleaning the flue before inserting the stopper to ensure a tight and effective seal. This also minimizes the amount of soot that will fall out of the flue when you remove the stopper. Stoppers cost \$50. Depending on how often you use them and your climate, they may pay for themselves within a few years.



Louisiana Department of Natural Resources

Energy loss through a fireplace happens year round if special measures are not taken to prevent it. Even with the damper closed, air infiltration still takes place. Heat loss occurs up the chimney even when the fireplace is not being used. In summer, cooled air escapes through the closed, but not airtight, damper. <http://www.leeric.lsu.edu/energy/fireplaces/>

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Louisiana Department of Natural Resources Practical Energy Efficiency Helps

ENERGY SAVING HOME IMPROVEMENTS - Improving Fireplace Efficiency

The greatest heat loss from a conventional open fireplace is through the damper. The damper consists of a cast-iron frame with a hinged lid to open or close the throat opening above the fireplace. It is important that the full damper opening area be equal to or greater than the flue area in size. Dampers are not always installed in fireplaces but are definitely recommended.

A well-designed, properly-installed damper will:

- allow regulation of the draft
- permit adjustment of the throat opening according to the type of fire and draft to reduce heat loss up the chimney
- close off flue to prevent heat loss from living area when the fireplace is not being used
- close off the chimney in summer to prevent insects, birds or bats from entering the house through the chimney.

<http://www.leeric.lsu.edu/bqbb/7/energy/fireplace/>

U.S. DOE, Energy Efficiency and Renewable Energy Network, Consumer Energy Information: EREC Reference Brief. EREC is operated by NCI Information Systems, Inc. for the National Renewable Energy Laboratory/U.S. Department of Energy.

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<http://greennature.com/article399.html>

Fireplaces: Studies in Contrasts by A. C. S. Hayden <http://hearth.com/what/more/skip.html>

A. C. S. (Skip) Hayden is head of Energy Conservation Technology at the Combustion and Carbonization Research Laboratory (CCRL) of CANMET in Ottawa, Canada.

Energy-efficient, environmentally-friendly, and safe alternatives to the outmoded conventional fireplace are here, and they're aesthetically pleasing too.

As a member of the Industry for 17 years, I personally think that inefficient, open fireplaces SHOULD be against building codes. A building Inspector would refuse to approve your house if you cut a one square foot hole in the wall and let your heated air escape, but that's exactly what a fireplace does. We must move on from early "Americana" , and just as we rid ourselves of the gas guzzlers, **get rid of OPEN fireplaces that waste our resources.**

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- **Leakage when the Fireplace is not Used.** Masonry fireplace chimneys have a large cross-sectional area, using 8"212", 12"212" and even 12"216" tiles. This represents a large leakage area either where heated house air can escape--even when the fireplace is no longer warm, or where downdrafts of cold outside air can enter the house. Dampers nominally serve to close off the chimney, but in most cases they are quite ineffective, if they are even used. Devices such as roof-top dampers can provide a much more positive seal on the off-cycle.

Fireplaces and Woodburning Stoves ... May Raise Energy Costs

<http://www.blackhillspower.com/fireplace.htm>

Fireplaces were once the source of heat in American homes, so it is understandable that many homeowners believe burning wood in their fireplaces is saving them energy and fuel.

Unfortunately, the opposite is actually true in many cases. Fireplaces are notorious for heat loss. While burning, the average fireplace is operating between 5% and 15% efficiency, drawing almost as much heat up the chimney as it is producing, plus losing a tremendous amount of heat through infiltration and conduction during the 90-95% of time it sits idle in the home.

The fireplace damper does not completely stop air movement up or down the flue. A seal is not formed even when the damper is closed. Infiltration around the perimeter of the damper is considerable in most cases, since oxidation, residues, and head warpage have contributed to the size of gaps.

A single layer of metal is all that separates treated inside air from the elements outside -- a loose fitting layer at that. If any other opening in the building envelope were to be covered only by a loose fitting sheet of metal, the homeowner would be alarmed and give immediate consideration to the problem. But since the fireplace damper is hidden from view, it usually goes unnoticed.



Fireplaces

WOOD-BURNING FIREPLACES – ACE HARDWARE <http://www.acehardware.com/sm-fireplaces--bg-1266851.html>

Conventional masonry fireplaces and older prefabricated fireplaces are about 10 percent energy efficient. They can also cause a net heat loss in the home if not operated properly.

According to experts, the greatest heat loss comes when the fire burns down and the firebox cools. Unless the damper is closed, the chimney will continue to draw warm air out of the room.

FIREPLACES <http://www.mwcog.org/uploads/pub-documents/zlxZVw20050114145502.pdf>
Researchers have studied fireplaces to determine the amount of heat loss through a fireplace. A recent study showed that for many consumers, their heating bills may be more than \$500 higher per winter due to the air leakage and wasted energy caused by fireplaces. The reason is because hot air rises. An easy solution is to add a fireplace draftstopper, which is an inflatable pillow that seals the damper, eliminating any air leaks. Remember to remove the pillow when using the fireplace, and then reinsert after.

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http://www.indoorclimate.com/hvac_info/tipsonheatinghome.htm

Fireplace Tips

- If you never use your fireplace, put a plug in the chimney flue.
- Keep your fireplace damper closed unless a fire is going. Keeping the damper open is like keeping a 48-inch window wide open during the winter; it allows warm air to go right up the chimney.
- When you use the fireplace, reduce heat loss by opening dampers in the bottom of the firebox (if provided) or open the nearest window slightly-approximately 1 inch-and close doors leading into the room. Lower the thermostat setting to between 50 F and 55 F.
- Install tempered glass doors and a heat-air exchange system that blows warmed air back into the room.
- Check the seal on the flue damper and make it as snug as possible.

Save Energy <http://www.commonwealthfireplace.com/fp.html>

20% of energy loss is due to poorly fitted fireplace flue dampers. The air rushing up the chimney must be replaced by outside air which must be heated up to room temperature, at a considerable energy loss.



Stop the energy thief...your fireplace damper Traditional fireplace dampers leak. They leak a lot. That costs you big money in lost utility dollars going out your chimney.

Your current throat damper was designed for the days when energy was cheap. Back then if you lost some energy here and there, it was no big deal. Today it is a big deal. Energy prices have skyrocketed and are predicted to go even higher.

Be sure the damper locks into place solidly, can be raised and lowered easily and is not stained or covered with dust or chimney debris. When the fireplace is not in use, the damper should always be closed to avoid energy loss. Left open, it will let in cold air.

<http://www.woodheat.org/q&a/qafireplace.htm>

<http://www.rona.ca/webapp/wcs/stores/servlet/ContentServlet?assetId=396&langId=-1&parentAssetId=9&parentAssetId=2>



http://www.electricities.com/members/bill_inserts/energyeff.pdf

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U.S. Department of Energy - Energy Efficiency and Renewable Energy

Energy Savers <http://www.eere.energy.gov/consumerinfo/factsheets/bc5.html?print>

Fireplace Accessories and Inserts

Although wood-burning fireplaces have aesthetic appeal, they may actually remove more heat from a house than they produce. A typical, vertical-back fireplace with an open front is at best ten percent efficient in converting wood to energy and delivering it to a room. The rest of your wood dollars escape up the chimney. They also pull cold air into the house from small gaps around windows and doors. At the beginning and end of the burn, these convective heat losses are larger than the radiant heat provided by the fire. Also, most fireplaces are inappropriately situated on exterior walls. The large mass of masonry that makes up most fireplaces are poor thermal insulators and readily conduct room heat to the outdoors in cold weather.

There are several types of accessories that modestly improve the heating efficiency of a traditional wood-burning fireplace. A fireplace insert, however, is the only add-on device that makes a significant difference.

Dampers

All wood-burning fireplaces should have a damper located in the throat of the chimney, or flue, above the fireplace. A damper has a cast iron frame with a hinged lid that opens or closes to vary the chimney's throat opening. It is used to manually regulate the amount of air, or draft, going up the chimney, which controls how much air the fire receives, and the rate that it burns. The size of the damper opening should correspond to the size of the fire: a narrow opening for a small fire, wide for a big one. It is important to close the damper when a fire is not burning. This helps to minimize the loss of warm room air up the chimney. If you use your fireplace often, check the damper annually to be sure it closes as tight as possible.

Flue Sealers

Even brand-new dampers may not close tightly. Dampers can become warped after the first hot fire. They may even be installed incorrectly to begin with. You may be able to find an inflatable stopper that you insert into the flue and inflate. Traditional fireplaces typically waste more energy than they supply in the form of heat.