EPAB REVIEW OF GREENHOUSE GAS AUDIT REPORT OF 2008 BY TEMPLE U
January 15, 2008

The Commissioners of Upper Dublin Township in their initiative to reduce the Green House Gas (GHG) emissions within the Township, commissioned a GHG emission inventory prepared by Dr Lynn Mandarano at Temple University Ambler. (A copy of the complete inventory can be found on the UD Website).The report quantifies sources of GHG throughout the Township and recommends actions which will reduce the GHG emissions.

The Environmental Protection Advisory Board (EPAB) has reviewed the report, and, in an effort to provide additional methods of GHG reduction, is currently focusing on the single largest contributor of GHG in the Township, residential heating. All sources of GHG can be reduced by following recommendations in the report, and as time permits they will be addressed by the Board.

Residential Heating accounts for 54% of the GHG emissions in the Township -- over 457,000 tons of GHG. Reducing the amount of energy required to heat your home will not only reduce GHG, but will provide cost savings in the form of lower heating bills.

Simple, cost effective procedures can be utilized to weather proof your home.

- Adding insulation to your attic.
- Sealing and insulating attic access hatches and penetrations
- Sealing around windows and doors
- Adding weather stripping to windows and doors
- Keeping windows locked to create better seal
- Sealing any outlets on exterior walls
- Closing fireplace flues when not in use
- Adding glass fireplace fronts to reduce the amount of air drafted into the chimney.
- Turning down the thermostat and wearing sweaters.
- Installing compact florescent lights (cfl's)
- Installing storm windows
- When updating appliances, chose Energy Star rated appliances

Each one of the previous activities has been studied and reports are available in a variety of locations from energy companies, manufacturers, and government agencies. One of the best sources of information we found is the Federal Governments website at http://www.energystar.gov/index.cfm?fuseaction=find_a_product.

The site lists Energy Star rated products; has recommendations for energy-saving home improvements; and has interactive sections for your specific circumstances. The site also provides a link to a list of the IRS energy tax credits for the upcoming year.

http://www.energystar.gov/index.cfm?c=products.pr_tax_credits

Some of the money you spend to improve energy efficiency may be tax deductable. Please review the specifics of the program to determine your eligibility.

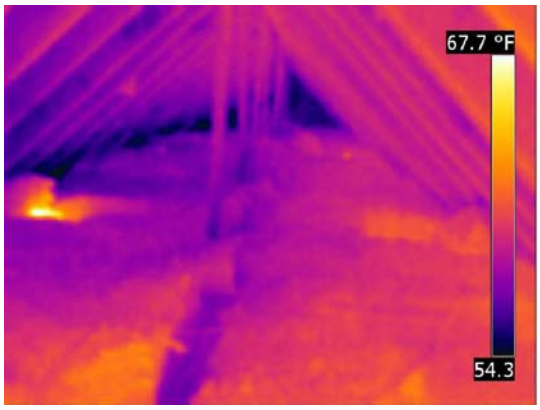
The State of Pennsylvania also has information available online at

http://www.turnsealsave.org/turn_down/index.html.

INCREASING THE ENERGY EFFICENCY OF YOUR HOME

ATTIC INSULATION

Most of the heat lost in a house is through the ceiling into an unheated attic space. Heat rises and looks for the easiest way to escape into the atmosphere. As shown in the thermal graphic below, the light areas are heat transference from air gaps and through thinner insulation.



Adding additional insulation is a relative easy and cost-effective way to reduce heat loss and to save money on your home-heating bill.

Attic access hatches are typically locations of air infiltration and heat exchange. Sealing around the hatch and placing insulation on top of the cover will help reduce the amount of cold air allowed into your home, and minimize the heat escaping.

FIREPLACES

One of the biggest myths about energy savings is that it's always a good idea to use a fire place to heat your home. But here's the interesting truth we uncovered: Conventional, masonry fireplaces without energy-saving features often take more heat from a space than they put into it.

A fireplace may look warm and cozy; but all things considered, they tend to be relatively-inefficient for home heating. Believe it or not, fireplace efficiency ranges from plus 10% to minus 10%. The negative efficiency results from the fire sucking heated air from inside the home to fuel combustion. This air is then vented up the chimney, which pulls cold outside air into the home through the small cracks around windows and doors.

Even when there is no fire burning, fireplaces can vent heated air – especially when there is no flue damper or if the damper does not seal tightly or is left open.

Here are some ways to improve fireplace efficiency:

- If your fireplace does not have a damper, the first improvement is installing one, so you can close "off" the chimney when the fireplace is not being used. Non-flammable open and closed signs that hang from the damper handle make it easy to remember if a damper is open or closed.

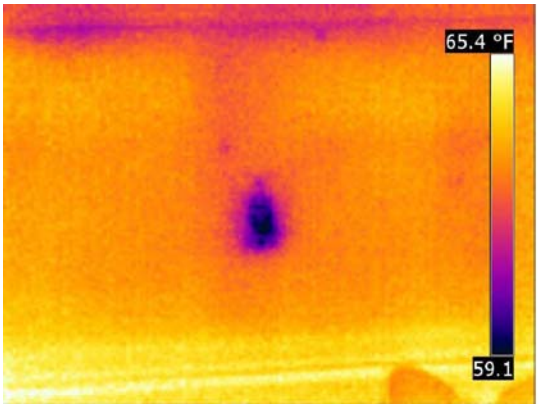
- Installing glass doors on your fireplace will help prevent heated room air from escaping up the chimney. The fire still draws air through vents below the doors, but only enough to burn the fuel.

- While glass doors certainly improve the overall efficiency of a fireplace and still enable you to see the fire, they do have one drawback: they partially block the direct radiant heat you feel from the fire.

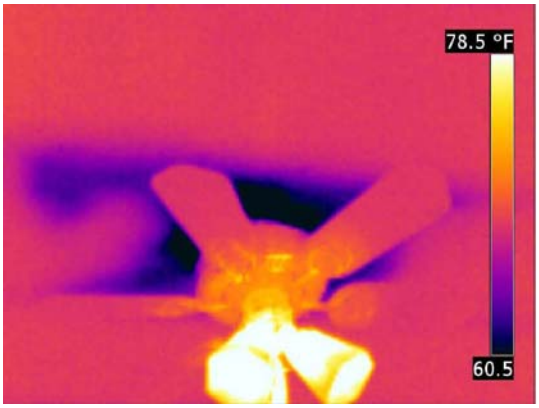
- Another improvement is to duct outside air into the fireplace. This is even more effective when it is combined with the installation of glass doors. Then the fireplace does not use room air for combustion at all. If you have glass doors, the vents can be sealed completely.

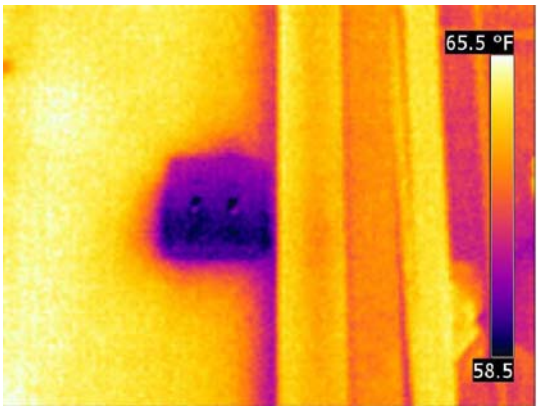
SEALING AROUND OUTLETS, FIXTURES AND SWITCHES ON EXTERIOR WALLS

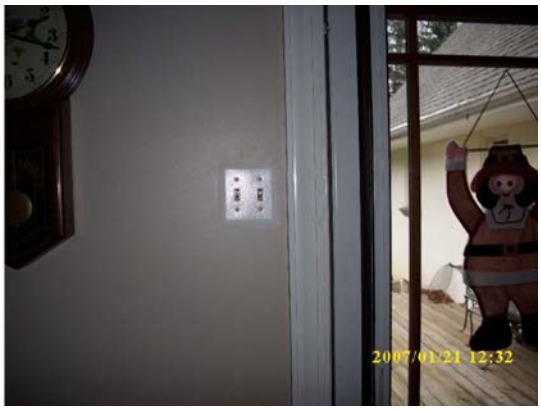
Air infiltration around outlets on exterior walls contributes to heat loss throughout the house. As shown below, on an exterior wall an outlet with standard insulation will allow a 6 degree difference between the air around the cover plate and the interior wall. Sealing around the outlet cover plate to prevent air entering the house will eliminate that heat loss.



Additionally sealing around light fixtures and switches should also reduce heat loss.

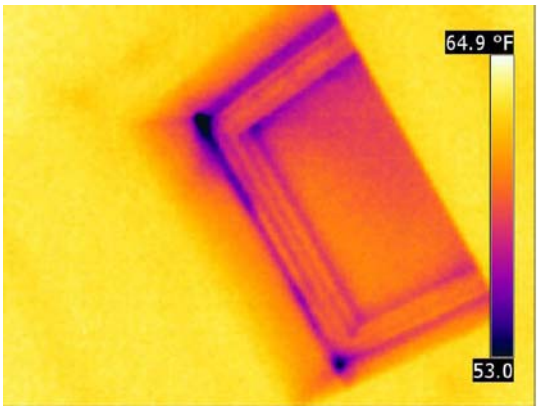






WINDOWS AND DOORS

Windows and doors can be a source of great heat loss if not properly made to function efficiently. The best window made becomes a liability if air is allowed to infiltrate around the window frame. As shown below, installation of trim and sealing around the window with caulk will prevent air infiltration.



Older wooden windows can be fitted with weather stripping, and LOW-E Storm Windows installed for a fraction of the cost of new windows. The storm window adds an extra layer of thermal protection and reduces the amount of air infiltration if installed correctly. The resultant payback for the storm window improvements tends to be much less than that of new windows. Of course if the windows are beyond repair or rotten, then the only course of action would be replacement. The addition of plastic wraps on the interior of windows during winter months is a cheap and cost effective way to save heating dollars if storm windows or replacement windows are not in the home-improvement budget.

Weather stripping around door jams is a good way to prevent heat loss. As homes age and humidity changes; doors and windows will move slightly, swell and shrink. Installation of flexible weather stripping on contact surfaces seal the moving parts and prevent heat loss.

The addition of storm doors helps stop wind driven air into the house and prevents heat loss by placing an additional thermal barrier between the house and the atmosphere.

SUPPLEMENTARY INFORMATION ON THE WEB

The attached link to Energy Star Do It Yourself Guide provides additional details and ideas on making your home more energy efficient.

http://www.energystar.gov/ia/partners/publications/pubdocs/DIY_Guide_May_2008.pdf

PECO Energy has programs and information on energy efficiency and reduction of green house gases

http://www.exeloncorp.com/ourcompanies/peco/pecores/save_energy_money/