

Old

is the new



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South Carolina  
Historic Preservation Month  
MAY 2010



Restored interior of the  
Glendale Mill Office Building

# ENERGY EFFICIENCY TIPS FOR HISTORIC HOME OWNERS

Adapted from several sources

## Passive Measures

These “passive” measures can save as much as 30% of the energy used in a building. They are especially appropriate for historic buildings because they do not require alterations or introduce new materials.

- ◆ Reduce the number of lights needed by using windows, shutters, awnings and vents to get fresh air in and keep heat out in summer, and to allow heat through in winter.
- ◆ Lower room thermostats in the winter and raise them in the summer to control the temperature according to use. Installing programmable thermostats can help to reduce energy usage when you are not home.
- ◆ Have mechanical equipment serviced regularly; including cleaning radiators and forced-air registers to be sure they work properly.



## Wofford College Environmental Studies Center at Glendale Shoals

In 1832, Bivingsville Mill (later named Glendale) was opened off Lawson's

Fork Creek southeast of Spartanburg. One of the most important textile mills in the state, it manufactured cloth for the Confederacy during the Civil War and even produced wooden shoes for the war effort. The village surrounding the mill had 60 houses and 400 residents and included a saw mill, machine shop, carpenter shop and two cotton gins. All that remains of the original mill complex are the two mill towers, smokestack and the mill office.

Throughout the past decade, several unsuccessful attempts were made to revitalize the mill until it caught fire and was destroyed in 2004, but now a revitalization project is underway to breathe new life into the Glendale Village. The mill office building was donated to Wofford College, which has renovated the historic building using the latest green technology. The new Environmental Studies Center at Glendale Shoals is LEED certified and is the keystone to the revitalization now taking place in Glendale.

## Retrofitting

Limit retrofitting to measures that gain reasonable energy savings at reasonable cost, with the least effect on the building's character. *The best return on your investment is to make sure your attic is well insulated!* Avoid retrofitting that results in inappropriate alterations, such as the wholesale removal of historic windows, the addition of insulating aluminum siding, or installing dropped ceilings in large rooms. Be sure that retrofitting does not create moisture problems. As moisture comes in through the walls and roof, it may condense in retrofitted materials, creating the potential for deterioration. You can avoid this problem by adding a vapor barrier facing in.

- ◆ Check the attic, roof, walls, and basement for construction methods and the presence of insulation. Check the insulation for coverage and a vapor barrier, to determine if you need additional insulation, what type, and where to install it.
- ◆ Check air infiltration at doors, windows, and where the floors and ceilings meet the walls.
- ◆ Check the exterior materials, such as painted wood siding or brick, and the roof, to be sure they are weather tight. Be sure you can keep rain out before you spend money on weatherizing.
- ◆ The following list includes recommended retrofitting measures. The list starts with the easiest and least expensive, with the highest potential for saving energy. Items at the bottom of the list can pose technical and preservation problems and often cost more than the energy they save.

## Air Infiltration

Older houses may be drafty. A lot of heat loss occurs because cold outside air comes into the building through loose windows and doors and cracks in the building's shell. You can reduce drafts by sealing unwanted infiltration points. You can use an incense stick to check areas around doors, windows, fireplaces, skylights, and under cabinets to check for drafts. If the smoke begins to travel horizontally, you have found a leak. Cold, windy days are especially good times to look for air leaks. Be careful not to seal the building so tightly that moisture can't escape. Avoid using materials that introduce inappropriate colors or visually damage the building's architectural character.

- ◆ Seal leaks in the ductwork; ductwork is often a major source of leakage
- ◆ Seal holes in the attic with a rigid material (such as foam board, sheet metal, or plywood). Seal seams with caulk or expanding foam. Seal the attic access panel or stairway with an airtight, insulated cover.
- ◆ Seal gaps and cracks around windows, doors, pipes, and other entry points. Use silicone caulk or spray foam rated for those applications.
- ◆ Apply weatherstripping to windows and doors.
- ◆ Close the flue damper when you are not using the fireplace.

## Attic Insulation

The best return on your investment in conserving energy is to insulate your attic. Heat rising through the attic and roof is a major source of heat loss, and reducing this heat loss should have high priority in preservation retrofitting. Adding insulation to accessible parts of the attic needs little skill, is effective in saving energy and usually reasonable in cost. If the attic is unheated and not lived in, place the insulation between floor joists with the vapor barrier down. If the attic is floored or heated, insulation is usually placed between roof rafters with the vapor barrier facing in. Be sure the attic is properly ventilated, or the insulation will take up moisture and lose its effectiveness.

## Basement and Crawl Space Insulation

A lot of heat escapes through cold basements and crawl spaces. Adding insulation is very effective, but can be complicated by the dampness often present. Be sure to install the insulation properly for the specific location. In crawl spaces and some unheated basements, insulation is usually placed between the first floor joists (the basement's ceiling) with the vapor barrier facing up. Do not staple the insulation, because staples often rust away. Use special anchors developed for insulation in damp areas.

## Mechanical Equipment

Be sure that your equipment works as efficiently as possible. If the best professional advice is to replace your equipment, keep the following in mind. First, equipment you install now will go out of date quickly relative to the life of your historic building. It may be best to wait until new technologies are more feasible, efficient, and inexpensive. Second, do not install new equipment and ductwork so that the installation or later removal will damage the historic building materials. Hiding piping and ductwork inside walls or floors may not always be appropriate because of the potential for damage. Make every effort to choose a mechanical system that requires the least intrusion into the building's historic fabric and that can be updated or altered without major damage to floors and walls.

## Windows and Storm Windows

Windows are a source of heat loss because they are often sources of air infiltration. Adding storm windows improves these characteristics. If your building has storm windows, either wood or metal framed, keep them. Be sure they fit tightly and are in good working condition. When installing storm windows, be careful not to damage the historic window frame. If metal frames damage the building's appearance, you may need to paint them to match the historic frames. Storm windows are readily available in a variety of sizes and styles, at reasonable cost.

## Interior Storm Windows

These can be as effective as exterior storm windows, but they can damage the historic windows and sills by condensation. Moisture may condense on the outer (historic) sashes and sills, blistering the paint and damaging the wood. You can use rigid plastic sheets as interior storm windows by attaching them directly to the historic sash. They are not as effective as storm windows because they can allow air to infiltrate around the sash. If you use plastic sheets, be sure to install them with the least possible damage to the historic sash, and remove them occasionally to let the sash dry. Be sure that the historic frame and sash are completely caulked and weather-stripped. If you use interior storm windows, you can reduce the potential for moisture deterioration by opening or removing the windows during mild months. Replacement windows, especially vinyl or aluminum, will seriously lower the historic integrity of your home, and are not allowed in most circumstances. The City of Albany staff and Landmarks Advisory Commission must approve replacement windows and doors on historic homes in the National Register Historic District.

## Doors and Storm Doors

Most historic wooden doors, if they are solid wood or paneled, have fairly good thermal properties and should not be replaced, especially if they are important architectural features. Be sure to maintain doors and frames, paint regularly, and caulk and weather-strip when needed. Storm doors improve energy efficiency, but the cost can be high compared to the savings. Storm doors are not recommended for mild climates, because of their effect on a building's appearance. Storm doors should be compatible with the building's architectural character and painted to match the historic doors.

## Wall Insulation

The cost of adding wall insulation to a wood frame building is high, and the potential for damage even higher. Wall insulation is not very effective for small, one-story frame buildings because heat loss through the walls is relatively low. Consider wall insulation in a cold climate if your historic building is two or more stories, but use extreme care in installing. Insulation must be dry to work properly. Installing insulation in wall cavities without a vapor barrier and some ventilation can be disastrous. The insulation will become saturated with moisture and actually increase heat loss. Water vapor can also condense into droplets and seriously damage sills, window frames, framing and bracing. Correcting these problems can require completely dismantling the exterior or interior wall surfaces, at great cost. If it is absolutely necessary to add wall insulation to your frame building, install the insulation from inside the building, with the vapor barrier facing in.

## Electrical Safety

Ensure that the wiring in your older home is safe by having a licensed electrical inspector or electrician inspect it.

- ◆ To help prevent fires, consider installing arc fault circuit interrupters (AFCIs) on general-purpose circuits, especially on circuits for bedrooms. New homes are required to have AFCI's for bedroom circuits. Many older homes have a fuse box instead of a breaker panel; unfortunately, AFCI's cannot be installed on fuse boxes or on older breaker panels that are incompatible with new AFCI's. Therefore, you may have to replace the fuse box or breaker panel with a new breaker panel. However, the safety benefits are worth the expense.
- ◆ If your house (or an addition to your house) was built between 1965 and 1974, it may have aluminum wiring, which can be a fire hazard. You can have an electrician perform certain measures (short of replacing all of the wiring) that can make your house safer. For more information, read the Electrical Safety Foundation International's publication *Repairing Aluminum Wiring*.

## Request an Energy Audit from Your Power Company

Before undertaking major energy savings measures, you should assess your home to achieve the best results for the least amount of money and time.

- ◆ Many power companies offer their customers free or discounted in-home energy audits. Contact your electricity provider for more information.
- ◆ The South Carolina Energy Office has a new technical assistance program. The Energy Technical Assistance Program will provide energy assessments, energy audits and other technical assistance on energy-related matters to public, non-profit and private, for-profit organizations. These services will be provided by a team of energy consultants under contract with the South Carolina Energy Office.
- ◆ For a more comprehensive energy audit consider paying for a home energy rating system (HERS) audit. A HERS rating can also help to secure an Energy Efficiency Mortgage (EEM) that can help pay for improvements

## More Information About Historic Preservation and Greening Your Home

The National Trust for Historic Preservation [www.preservationnation.org](http://www.preservationnation.org)

The National Park Service Preservation Brief #3

<http://www.nps.gov/history/hps/tps/briefs/brief03.htm>

SC Energy Office [www.energy.sc.gov](http://www.energy.sc.gov)

Energy Star [www.energystar.gov](http://www.energystar.gov)

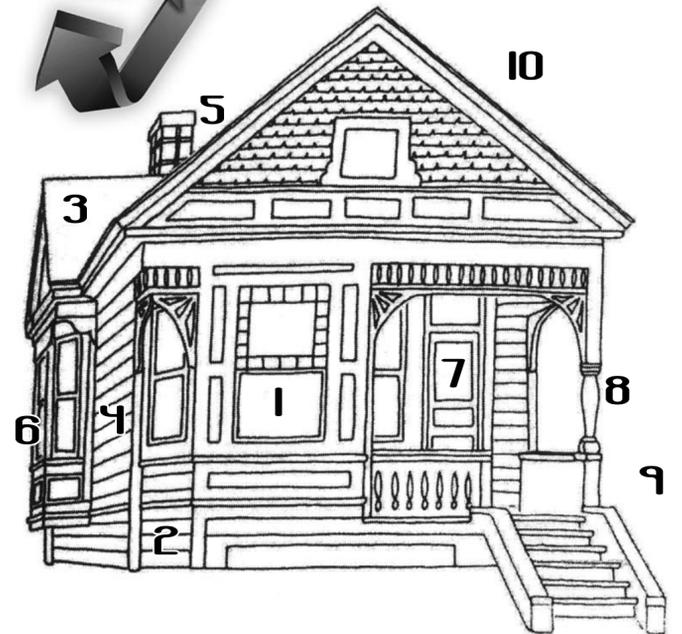
US Department of Energy [www.eere.energy.gov](http://www.eere.energy.gov)



*The State Historic Preservation Office encourages and facilitates the responsible stewardship of South Carolina's irreplaceable historic and prehistoric places.*

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10 steps to  
green.



## 1. KEEP ORIGINAL WINDOWS

Studies show original windows perform just as well as vinyl replacements. You'll reduce landfill waste and the demand for vinyl, a non-biodegradable material that gives off toxic byproducts when its made.

## 2. USE LIGHT COLORED PAINT

Light paint colors on the exterior reflect more light than darker ones, keeping your cooling costs down.

## 3. INSULATION

As much as 20% of a home's energy cost comes from heat loss in the attic, basement and crawlspace.

## 4. REUSE OLD MATERIALS

Not only are these often cheaper than buying new materials, it reduces the amount of material going into landfills.

## 5. CLOSE OFF OPENINGS

Installation of fireplace draft stoppers, dryer vent seals, and attic door covers can cut heat loss and reduce energy costs.

## 6. OPEN THE WINDOWS

In the spring & fall, opening the windows instead of running fans or A/C units can help cut costs. Try opening windows on opposite sides of the house. Many older homes were designed to have good cross-ventilation.

## 7. KEEP DOORS AIRTIGHT

Keeping doors properly weather stripped, caulked, and painted will help to eliminate heat loss. Recent studies indicate that storm doors are not necessarily cost effective.

## 8. RESTORE PORCHES

In historic homes, porches, awnings, and shutters were often designed to provide shade. Maintaining or restoring these elements will help keep your house cooler.

## 9. PLANT TREES

Evergreen trees on the north and west sides of your home can cut winter winds and leafy trees on the south and west sides can provide shade during summer days.

## 10. HAVE AN ENERGY AUDIT

Energy audits can help pinpoint exactly what areas are costing you the most in energy bills. You can visit Home Energy Saver (<http://hes.lbl.gov>) for more information.