



[close window](#)

## Replacing windows, doors not only way to be cost efficient

March 10, 2007

By PATRICK STAHLEY

For the Journal & Courier

A Feb. 27 *Journal & Courier* article claimed that one way to increase home energy efficiencies is "by replacing drafty doors and windows."

The article discussed the abnormally low temperatures we saw during the frigid month of February and the resulting spike in heating bills. It offered window replacement in the home as a key solution to the problem.

While this idea is widely accepted by homeowners, it has actually been proven to be one of the least cost-effective methods of improving energy efficiency in the home. So what can you do?

Allow us to provide some more accurate information.

We are the Historic Centennial Neighborhood Association Team (HCNA) of the Engineering Projects in Community Service program at Purdue University. We are a student group with a goal to educate the community on ways to improve energy efficiency within their homes, particularly historic houses in Historic Centennial Neighborhood and other older neighborhoods in Greater Lafayette.

Our team faculty adviser is professor Michael O. Hunt of the department of forestry and natural resources, and a resident of the Historic Centennial Neighborhood. Our technical advisers are professor William Hill, a national authority on energy efficiency in housing from Ball State University and Dan Phillips, an energy analyst with Indiana Community Action Association, the state's agency for weatherization training. For years, these individuals have been scientifically approaching the problem of energy inefficiencies in homes, and startling discoveries have been made.

So how do you properly correct these energy inefficiencies in your home?

Extensive research has concluded that the most significant problem that affects homes is the result of air movement caused by a concept called the stack effect.

The stack effect occurs when hot air rises through the height of the home and is driven out through the ceiling, while cold air is pulled in through the foundation. This constant flow of air causes energy inefficiency and thus substantially higher costs for homeowners.

Little if any driving pressure to cause air movement occurs at the mid-height of the building, where the windows are located.

So instead of replacing windows, homeowners should concentrate their attention on sealing air leakage routes at the home's base and ceiling, as well as other unexpected routes of air leakage throughout the house. A building performance professional can help analyze these issues in individual homes.

An effective method for testing for these inefficiencies and for detecting where such changes need to be made is called blower-door testing.

This involves the use of a modified door with a fan that depressurizes the house. The depressurization allows professionals to detect air flow patterns. Images taken with a special camera allow them to determine areas that need improvement.

We hope that local businesses within the Greater Lafayette area will begin providing this service so that homeowners can make educated and cost-effective decisions in modifying their homes to improve energy efficiency and thus reduce their energy costs. This will prove to be more effective than just replacing doors and windows.

Stahley is leader of the Historic Centennial Neighborhood Association -- Engineering Projects in Community Service at Purdue.