

Butler family of St. Matthews

Chimney steals energy savings



Home Fast Facts

- Built in 1972
- 1,296 square-foot, brick ranch style
- Crawlspace with attic
- 4 occupants
- Average monthly electric bill: \$400

Linda Butler cried when she received two \$500-plus electric bills, including one that was nearly \$800. Each winter, she huddled in her living room and felt cold air on her legs, with plastic covers over her windows and doors to keep out the cold. In the summer, hot air met her at the front door when she entered her home.

Comprehensive Home Analysis

- Deborah Evans of Evans Heating and Cooling conducted a comprehensive home energy analysis with a blower door diagnostic test and found the house was five times as drafty as it should be if it were properly air sealed. The main source of the air leaks was a wood stove chimney that was no longer in use. The stove pipe had been plugged with newspaper, but the attic and wall space around the chimney was open. Evans also determined that the heat pump was in poor working condition.

Heating and Air Conditioning

- Comfort Services of Columbia replaced the 1999 2.5 ton heat pump that had a 10 SEER efficiency rating when it was new (the estimated operating efficiency was 6-8 SEER at the time of replacement) with a 2-ton 15 SEER Lennox heat pump. The new system actually has a smaller capacity than the previous one because insulation and duct improvements have reduced how much heating and cooling the home needs.
- The manual thermostat was replaced with a Honeywell 6000 programmable thermostat that is ENERGY STAR qualified.

Ducts

- The old flex duct system was poorly sealed and insulated. Comfort Services of Columbia completely replaced it with a hard metal pipe trunk and new flex duct to each room. The bedroom vents were moved away from doorways to exterior walls to better balance air flow. The size of the return was increased as well because the old return did not allow enough air to properly balance the home for comfort.

Air Sealing and Insulation

- In the attic, Apple Blossom Insulators pushed aside the R-13 level of cellulose insulation, installed metal flashing where the chimney met the attic wall, and applied silicone caulk in gaps around the chimney, electrical/plumbing penetrations and other areas where air could pass between the attic and living space. They increased the insulation level to R-38 using blown cellulose insulation, and created a new, insulated attic entry door.
- In the crawl space, Apple Blossom Insulators installed a 6 mil-thick vapor barrier on the ground and up onto the wall. In the area above the crawl space and under the flooring, they installed R-10 Eco-Cell batt insulation made from recycled newspapers.
- Comfort Services sealed the chimney in a way that it could be reopened if the family decided to use it again.
- Evans Construction Group of Orangeburg replaced the warped windows that could not be fully closed. They caulked around windows, doors and the brick hearth, and patched a hole in the brick wall where the flue for the wood burning stove was removed.

How the House Was Helped

Presented by

Shape Your Home for Energy Savings

Water Heating

- Evans Heating and Cooling installed an insulation blanket on the water heater because it was in unconditioned space outside of the living area.

Results

Linda Butler says she can already tell the difference in the home's comfort. She is very grateful for all the hard work by so many people.

Actual Investment

Costs

- Heat pump and duct system replacement by Comfort Services of Columbia.....\$8,000
- Attic and crawl space sealing and insulation by Apple Blossom Insulators.....\$3,500
- Window installation, caulking and sealing by Evans Construction Group.....\$1,500
- Comprehensive analysis and water heater insulation by Evans Heating & Cooling.....\$425

Total estimated value of weatherization efforts in this home.....\$13,425

NOTE: The value of work on this home exceeded the \$10,000 per-home target for **Help My House!** energy makeovers because the statewide and local sponsors and installers who donated their time and materials on the project insisted on doing the job right. The additional effort and expense were necessary to weatherize this home to their high standards.

Who Helped

Heating and Cooling System
installed by



www.comfortservices.com
(803) 825-4149

Heating and Cooling System
provided by



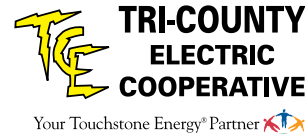
www.lennox.com

Comprehensive Home Analysis
and Water Heater Insulation
provided by



www.evansheatcooling.com
(803) 438-1902

Participating Electric Cooperatives



Air Sealing and Insulation
installed by



www.abinsulators.com
1-800-606-1900

Window, Door and other Air Sealing by
Evans Construction Group, LLC
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Shape Up Your Home for Energy Savings

Presented by The Electric Cooperatives of South Carolina

Home Energy Efficiency Makeover

Linda Butler's home, St. Matthews, SC

On her **Help My House!** contest entry form, homeowner Linda Butler wrote, "The house is nearly forty years old. In the winter my bedroom is cold and in the summer it is hot. This past winter, my light bill was so high, when I received it the only thing I could do was cry. I had (one) bill for over \$500 and another one was over \$700."

BEFORE



The 10 year-old heat pump was operating 6-8 SEER (Seasonal Energy Efficiency Ratio) -- less than half the efficiency of modern units. It needed to be replaced.

AFTER



A new high-efficiency Lennox heat pump and programmable thermostat will dramatically improve comfort and energy savings in the home.



Tests showed the house was five times as drafty as it should be if it were properly air sealed. The main source of the air leaks was a wood stove chimney that was no longer in use. The stove pipe had been plugged with newspaper, but the attic and wall space around the chimney was open.



Gaps around the chimney, doors, windows and other areas were caulked and sealed. Blown cellulose insulation was installed in the attic, and a new, insulated attic entry door was created. A vapor barrier and batt insulation were installed in the crawl space.



Windows were leaky, warped and missing the hardware needed to close and lock them properly. Exterior doors also were leaky and lacking proper foam or vinyl insulation sealing.



Replacement windows, new caulk and sealing around windows and doors will help protect the home from outside air infiltrating the home, improving comfort and efficiency.