

MARTIN RESIDENCE

Yardley, PA



OVERVIEW AND SCOPE

The Residence

The Martins purchased their 3-bedroom, 1.5-bathroom, ranch home located in Yardley, PA in 2009. The upper portion of their split level home often reached temperatures of up to 90 degrees in the summer, and the Martins wanted to improve indoor comfort. They contacted Scott Home Performance Evaluations, who conducted an energy assessment and recommended several measures for improvement.

The Martins decided to participate in EnergyWorks, a program funded by a grant from the U.S. Department of Energy. EnergyWorks connects home and business owners with rebates, tax credits, and low-interest loans to perform energy efficiency improvements. The residential portion of EnergyWorks is administered by Philadelphia's Energy Coordinating Agency. Through EnergyWorks, the Martins were able to receive a rebate on their home energy assessment by implementing at least \$1,000 of the improvements recommended by Scott Home Performance. For more information, visit EnergyWorksNow.com/.

PROJECT DETAILS

An initial blower door test revealed that the house was more than twice as leaky as it should be, which in this case, is the equivalent of having an 11 by 11 inch hole in the house. A house should exchange about 1/3rd of the volume of air it has inside of it every hour in order to move indoor pollutants, excessive moisture, and harmful particles out of the house. If the air is exchanged more frequently, however, the heating and cooling system must use an excessive amount of energy to heat or cool the new air being introduced. Scott Home Performance recommended a number of targeted measures to reduce the air infiltration, such as air sealing and insulation. They also recommended sealing off the crawl space vents and improving the attic insulation. The Martins then hired ServiceMark to perform the work on their home.

BUILDING BACKGROUND

MARTIN RESIDENCE Yardley, PA (Bucks County)

BUILDING TYPE
Single-Family Residence

SIZE
1504 sq. ft.

STORIES
1 1/2

YEAR PURCHASED
2009

START YEAR FOR ENERGY MANAGEMENT
2011

ENERGY EFFICIENCY MEASURES
Air Sealing and Insulation

CONTRACTOR INFORMATION
Scott Home Performance Evaluations
215-297-5323
shinspections@rcn.com
SHinspections.com

ServiceMark
Heating / Cooling / Indoor Air Products
1.800.474.5200
Plumbing / Water Heaters
1.888.420.3569
servicemarksolutions.com

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Air Sealing

Air sealing, or sealing the air leaks in one's house, is perhaps the best and most cost effective way to save on home energy costs. Based on Scott Home Performance's recommendations, Mr. Martin undertook the project of caulking around his windows and doors, which were particularly leaky areas. ServiceMark targeted the other leaky areas in the home such as the attic, outlets, and lights, and around the rim joists in the basement. Rim joists, the wood framing pieces that go around the rim of the foundation wall, are commonly one of the leakiest locations in a home and are often not air sealed when a home is constructed.

Because it is a new addition to the home, this unit is expected to result in an increase in annual electricity cost. However, the overall savings for the home are still significant. Next, the Martins will remove their window A/C units and have the resulting gaps properly sealed. Mr. Martin reported that he was "absolutely delighted" with the work that was done, and mentioned that there was an "unbelievable difference" in the comfort of the home. The humidity levels are much lower and the temperature is much better regulated. Mr. Martin was very impressed with ServiceMark, reporting that they were very responsive, had the most reasonable prices, and were "incredibly professional."

Insulation

The main attic insulation in the Martin's home had a higher R-value than most houses of its age, but there was still room for improvement. R-value is a measure of resistance to heat flow. The higher the R-value, the greater the effectiveness of the insulation. An additional 12" of R-38 cellulose was blown into the attic, and special attention was paid to the areas around the chimney, and gaps or spots where air leakage was occurring. R-19 value batts were installed on the vertical attic walls. The hatch leading up to the attic was also insulated so conditioned air in the home cannot seep into the attic.

LESSONS LEARNED

Mr. Martin recommends that homeowners seeking to undertake energy efficiency work should budget several months for obtaining preliminary quotes from participating contractors. Mr. Martin pointed out that price ranges for work can range widely, and finding the best quote is often worth the extra time.

PROJECT OUTCOME

After the work was completed, ServiceMark performed a second blower door test. The test revealed a 25% reduction in leakiness. The Martins have installed a central air conditioning system with high SEER rating.

PROJECT OUTCOME	
Annual Electricity Savings.....	-\$276
Annual Oil Savings.....	\$488
Total Annual Savings (7%).....	\$212

ENERGY SAVING INVESTMENTS	
Cellulose Insulation and Air Sealing.....	\$2/sq. ft.
R-19 Batts with Moisture Guard	\$3.35/ sq. ft.
Foam Box to Cover Attic Hatch.....	\$250
Caulking Around Door	\$30
Weatherstripping and Door Sweep	\$25
Interior Caulking on Windows	\$18/ window
Foam for Basement Rim Joists	\$6/linear ft.