

# PRICE-ROME RESIDENCE

Wayne, PA



## OVERVIEW AND SCOPE

### The Residence

Jeff Price and Avery Rome purchased their two-story home in Wayne, PA in 1992. The Price-Romes were experiencing discomfort issues with the temperature inside their home. To address these issues, the Price-Romes contacted Orange Energy Solutions.

The homeowners participated in EnergyWorks, a U.S. Department of Energy-funded program that connects home and business owners in southeastern Pennsylvania with available rebates, tax credits, and very low-interest loans. The residential portion of EnergyWorks is administered by Philadelphia's Energy Coordinating Agency. Through EnergyWorks, the Price-Romes were able to receive a rebate on their home energy assessment by implementing up to \$1,000 of the energy efficiency improvements recommended. For more information, visit [EnergyWorksNow.com/](http://EnergyWorksNow.com/).

## PROJECT DETAILS

The Price-Romes decided to have extensive air sealing and insulation done. The initial blower door test indicated that the home was almost two times leakier than it should be, which represents the equivalent of having a 13 by 13 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 other harmful particles out of the house. However, if the air is exchanged more frequently, the heating and cooling system must use more energy to heat or cool the new air being introduced. Therefore, it is important to properly seal and insulate a home to prevent excessive air leakage.

### Air Sealing and Insulation

Air sealing and insulation were installed throughout the house, including the attics, garage ceiling, basement, den ceiling, and living room. Rigid foam board was installed in the attics over the bedrooms, the front and rear attics above the offices, on the back of the attic panels above the bedrooms, and on the back

BUILDING BACKGROUND

### PRICE-ROME RESIDENCE Wayne, PA (Delaware County)

**BUILDING USAGE**  
Single-Family Residence

**SIZE**  
1600 sq. ft.

**STORIES**  
2

**YEAR BUILT**  
1982

**START YEAR FOR ENERGY MANAGEMENT**  
2011

**ENERGY EFFICIENCY TYPOLOGY**  
Air Sealing and Insulation, Ventilation,  
Mold Issue Resolution

**CONTRACTOR INFORMATION**  
Orange Energy Solutions  
1395 Lawrence Road  
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[orangeenergysolutions.com](http://orangeenergysolutions.com)

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of the rear and front attic doors. All attic doors were also weather stripped. In the attics above the bedrooms, cellulose was blown in to improve the R-value from 19 to 49. R-value is a measure of resistance to heat flow. The higher the R-value, the greater the effectiveness of the insulation. Further insulation was installed in the attic above the office and den to increase the R-Value to R-49. The air sealing package conducted in the living space focused on leaks around windows.

Orange Energy installed a chimney top-damper, which provided a better seal than their previous, drafty damper. Orange Energy also installed recessed light covers in the attic above the bedrooms, and air sealed around them, which helped to reduce drafts.

## Ventilation and Mold Issues

The Price-Rome home had developed mold issues because gaps in the duct and heating and cooling system resulted in warm air meeting cold surfaces, causing condensation and buildup of moisture. Orange Energy repaired holes and gaps in ducts with duct mastic and clear caulk, and replaced leaky duct boots in order to remediate the mold issue. In order to prevent mold from developing in bathrooms, Orange Energy installed ENERGY STAR rated fans and ducts to draw out moisture and humidity and vented these fans outside the house.

When air sealing and insulating a home, it is important to provide proper ventilation so that indoor air pollutants can be drawn out of the home. Orange Energy installed cardboard wind wash baffles in the attic to ensure that insulation did not cover areas where ventilation was needed.

## Lighting

The Price-Romes switched over from conventional light bulbs to compact fluorescents. These bulbs use 75% less energy than incandescent bulbs and need to be replaced less often.

## PROJECT OUTCOME

After these measures were installed, Orange Energy conducted a follow up blower door test to verify the reduction in air flow that was achieved. Orange Energy was able to reduce air leakage by 34%.

## LESSONS LEARNED

As a result of the energy assessment and the work they had done, the Price-Rome's experienced firsthand the value of proper air sealing and insulation when making improvements to the home. When windows are installed, or other work is done on the home that affects its outer shell, it is critical to make sure that the areas around these openings are properly sealed. Otherwise, air will be leaking freely into and out of the home. The Price-Romes also realized that these measures are key to increasing the comfort of their home.

### PROJECT OUTCOMES

Annual Electricity Savings.....	\$179
Annual Gas Savings.....	\$317
<b>Total Annual Savings (16%).....</b>	<b>\$496</b>

### ENERGY SAVING INVESTMENTS

Cover and seal recessed lights, air seal, insulate, and hard duct to existing vent locations in attic over bedrooms, replace exhaust fans.....	\$2900
Sheathe knee walls, remove decking, insulate and air seal doors, draft block floor- ceiling cavity, insulate garage ceiling .....	\$3250
Air seal living space, air seal and insulate perimeter of basement, and duct work .....	\$2350
<b>Total .....</b>	<b>\$8500</b>