



Home Energy Efficiency Improvements

Barbara Englehart and Kent Brown at
120 N Columbus Street

- 1943 - Original Arlington Forest House
- 2003 - 3 Story Back Addition
- 2024 Project
 - Focus started on fixing the orig house lack of insulation
 - Resulted in:
 - **Whole house efficiency,**
 - **Savings,**
 - **Safety,**
 - **Comfort**
- Done by Home Energy Medics, LLC in January/February 2024

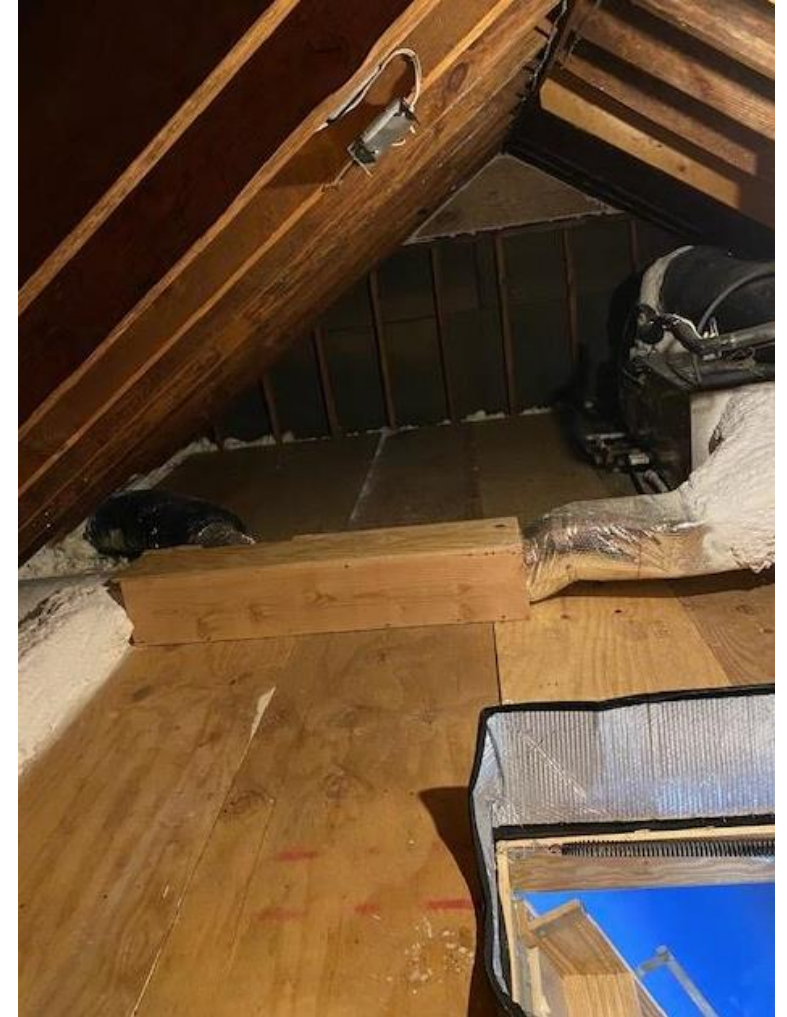
Problem: Hot/Cold Rooms due to Attic Air Leakage and Poor Airflow

- Original house bedroom were either hot or cold
- Almost no insulation in orig attic; addition has some insulation/awkward access
- The attic ducts with the 2003 addition heat pump were long, winding flex ducts, aka spaghetti



Solutions for Hot/Cold Rooms due to Attic Air Leakage and Poor Airflow

- *** • Attic Air Sealing and Insulation to R-49
 - Removed all fiberglass insulation
 - Added open cell foam in old attic floor
 - Added cellulose in renovated attic
- *** • Complete Attic Duct Re-design and re-route
 - Changed from flex lines/spaghetti
 - To primary metal line down the center
 - with graduated smaller direct offshoots



*** Rework of addition work done in 2003 (after 20 years of inefficient heating/cooling)

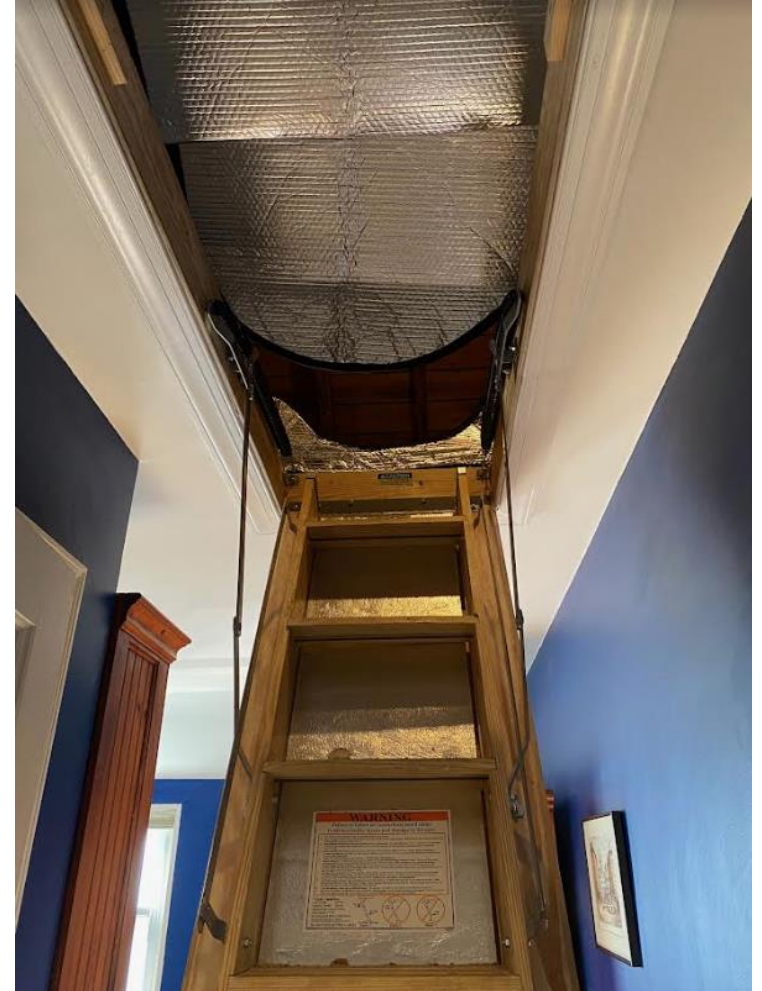
Solutions for Hot/Cold Rooms due to Attic Air Leakage and Poor Airflow

- Attic and ducts are now sealed and insulated with a more direct path to heat and cool the intended upstairs rooms



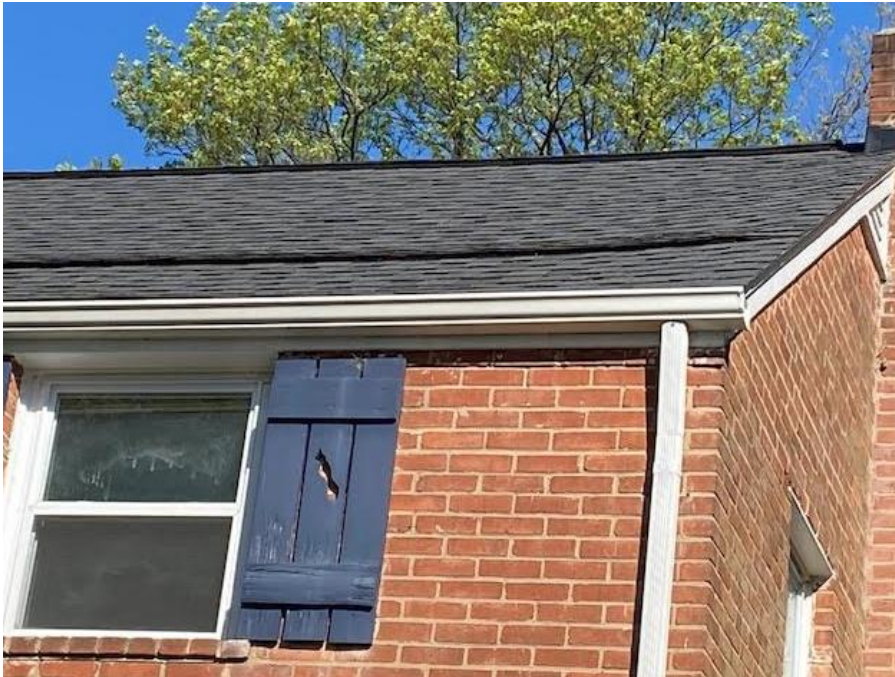
Solutions for Hot/Cold Rooms due to Attic Air Leakage and Poor Airflow

- Sealed baseboards in upstairs original bedrooms
- New Attic Ladder and Insulated Tent Hatch Cover



Solutions for Unvented Roof to Lengthen Roof Lifespan and Cool Attic

- Install ridge vent on original house
- Install smart vents on original house roof



Solutions for Lower Level Air Leakage and Pest Infiltration

- Aroseal Original House Lower HVAC System Metal Ducts – HUGE IMPACT FELT IMMEDIATELY!
- Foam Sealed Band joints in basement
- Recessed lighting changed to canned LED recessed lights with proper dimming switches



aeroseal
DUCT

DUCT SEALING REPORT

Duct Sealing Performed For:

Englehart, Barbara 120 N Columbus St Arlington, VA 22203	AEROSEAL CASE ID: 3471 SYSTEM DESCRIPTION: Gas Furnace SEAL DESCRIPTION: Clean & Seal Air Ducts / Supply Side HARDWARE: Gen2 TECHNICIAN: Freddy
DATE: 12/19/2023	

Overall Sealing Results:

BEFORE SERVICE
498.7 CFM of Leakage, equivalent to a 94.2 Square Inch Hole or 42% of the system capacity of 1200.0 CFM

AFTER SERVICE
19.3 CFM of Leakage, equivalent to a 3.6 Square Inch Hole or 1.6% of system capacity

This corresponds to a **96% Reduction in Duct Leakage**

NOTE: Duct leakage results are calculated in Cubic Feet per Minute (CFM) measured at a STANDARD OPERATING PRESSURE of 25 Pa.

Aeroseal Sealing Progress:

Sealing Time (Minutes)	CFM Leakage at 25 Pa
0	500
10	300
20	200
30	150
40	120
50	100
60	80
70	60
80	50

Duct Sealing Performed By:

Atlantic Duct Cleaning
6997 Gateway Ct
Manassas, VA 45458
Phone: 703-435-1193

Page 1 / 1

Aeroseal process uses DuctSeal sealant that is certified to meet requirements listed in UL 1351 standard. "Center of Investigation for Aerosol Duct Sealant"
Please provide Aeroseal feedback at <https://bit.ly/2021aeroseal> and reference code YNYJRCWV.

Health and Safety Improvements

- *** • Over-the-Gas-Range Vent - venting air outside instead of just circulating gas fumes inside the kitchen
- *** • Installed new bath fans for proper venting
- CO Detectors on every floor
- New Metal Dryer Vent – replacing fire hazard with flex vent



*** Rework of addition work done in 2003 (after 20 years of inefficient heating/cooling)

Final Thoughts

- Recommend you do an Energy Audit
- If you are doing a renovation, I highly recommend you consider home energy efficiency in the early DESIGN phase
- Thanks to Scott Donelson and Matt Cowan of Home Energy Medics, LLC for their great work

If anyone is interested, I have a few “Friends and Family” discount cards for Home Energy Medics services. Just let me know – barbara.englehart@gmail.com



HOME ENERGY MEDICS

<https://www.homeenergymedics.com/>