

Weatherization 101

What do these guys do?

<http://www.waptac.org/MediaModule/video/450/Grandmas-House.aspx>

The complex audit: the house is a system.

- Energy Auditors
 - What are they checking?
 - Attics
 - Walls
 - Foundations/crawlspaces
 - Windows
 - Doors
 - Lighting, refrigerator
 - General heat waste items
 - Health and safety items
 - Dryer venting, smoke detectors
 - CO detectors, ventilation



There's more??

- Client interview
 - Energy consumption/education
 - Health concerns
 - Problem areas in the home
- Lead and mold/hazards
 - Proper documentation
- Diagnostic testing
 - Combustion analysis (furnace/water heater)
 - Blower door testing
 - Infrared scan
 - Exhaust fan flow



How do we know it will save energy/money?

- Savings-to-Investment Ratio (SIR)
 - Calculated within the WXPro audit software
- How much a measure will save (savings) over its lifetime compared to its cost (investment)
 - Pre/post R-values
 - Material and labor costs
 - Life time of the measure
 - Furnace efficiency
 - Energy/fuel costs
- An energy conservation measure with a SIR of 2 would save/payback 2 times the cost of the measure in energy savings
- Does it show a significant payback?
 - Why is it high/low
 - Are the R-values correct
 - Fuel costs correct
 - Is there enough labor
 - Is this the right material/application
- Health/safety and general heat waste measures are done without a SIR

Insulation Type Existing R-Value Length of Attic Post R-Value Width of Attic Bags Needed Existing Inches of Insulation Net Sq. Ft. Coverage

	Material Code	Description	Qty	Override Qty	Location	Price	Extended Price
▶	Cellulose - Loose Fill	Cellulose - Loose Fill	26	☐		4.88	126.88
	Attic Dam	Attic Dam 1x10x10	1	☐		10.57	10.57
	DowBoard	Foam Insulation 4 x8x2" sheet	1	☐		31.99	31.99

First Year Savings=60.31 * Simple Payback=3.72 yrs S.I.R.=5.22

Materials Perform Task: ☒ Yes ☐ NoLabor

Delete

Comments

Setup

Other Costs

<< Previous

Next >>

Add

Finish

Duplicate

Total

Measure 6 of 13

Measure: IA - Loose Fill Attic

Measure	Materials	Labor	Other	Total	SIR	Perform
EB - Lighting	22.32	29.45	0.00	51.77	1.88	Yes
G - General Heat Waste	35.21	30.68	0.00	65.89	0.00	Yes
▶ HS - Health and Safety	111.02	122.70	0.00	233.72	0.00	Yes
IA - Densepack Attic	29.28	366.16	0.00	395.44	5.83	Yes
IA - Densepack Attic	122.00	269.88	0.00	391.88	6.96	Yes
IA - Loose Fill Attic	169.44	54.82	0.00	224.26	5.22	Yes
IP - Perimeter - Above Ground - Interior	624.78	657.59	0.00	1282.37	9.74	Yes
IP - Perimeter - Above Ground - Rim Joist	124.91	24.54	0.00	149.45	2.50	Yes
IW - Densepack Walls	131.76	662.58	0.00	794.34	5.94	Yes
S - Storm Window Replacement	103.40	24.54	0.00	127.94	3.85	Yes
S - Storm Window Replacement	478.76	49.08	0.00	527.84	1.98	Yes
S - Storm Window Replacement	48.15	11.86	0.00	60.01	4.36	Yes

Add

Edit

Forms...

Work Order...

Inspector

Haugstad

an Gaytan

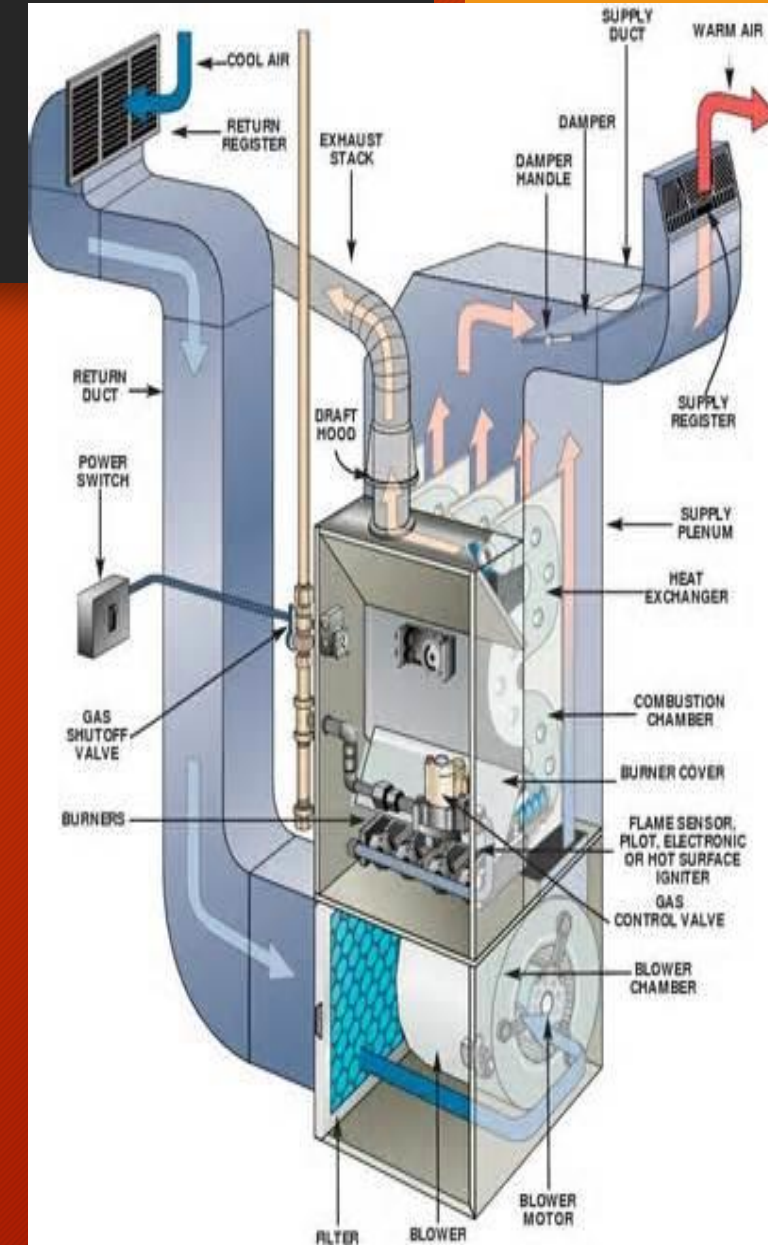
The crews: backbone of Weatherization!

- Many inefficient building practices
 - How will we align the thermal and pressure boundaries?
- Safety
 - Client
 - Crew
 - House
- Follow rules/regulations/best practices/building codes
- Installation techniques/materials
- Procedure/work flow
- Quality of work
- Missed measures
- Client interaction
 - Keeping them informed



Wait, there's more.

- Diagnostic/blower door testing
 - Where to look for air leakage
 - What did we miss?
 - Infrared camera
 - Duct leakage testing
 - Room pressure testing
- Furnace tune and clean
 - Combustion analysis
 - Furnace Technician
- Worst case draft testing
 - The most important test we do
 - What is it? Why its important?
- The final inspection
 - Huge responsibility



Quick facts.

- As a State in 2013
 - Total Pre Blower door testing was approximately 1,000,000 cfm50
 - Total Post Blower door testing was approximately 700,00 cfm50
 - 495 homes tested
 - About 600 cfm reduction/home or 60 sq. in.
 - Over 200 sq. ft. total
- Equates to \$91,000 that is saved every year for approx. 20 years
 - 84 homes not tested for health and safety reasons.
 - This savings may be much higher
- Does not include energy saved from SIR.
 - Example
 - About \$2 million spent on materials last year in WX
 - Lets say the same in labor.
 - \$4 million (mat. and labor) with an average SIR of 2 would mean that over the next 20 years there will be \$8 million savings just from the work done in 2013. Add in the \$90,000/year from infiltration loss = \$1.8 million over 20 years. Approximately \$10 million over 20 years in 2013 alone.

Other factors that go un-noticed.

- Health benefits
 - 2013 NASCSP Conference in Washington D.C.
 - Noted over \$2 savings in health care costs for every \$1 dollar spent in WX
 - Noted that WX homes have 2.5 times less doctor visits than un-WX homes
- Weatherized home
 - Increased comfort
 - Physically
 - Mentally

