

Residential Energy Efficiency

A presentation by Ryan Behling



Types of Heat Loss/Gain

Conductive Loss

Heat loss by energy transfer through solid objects

Can be solved by insulating

Radiation

Heat loss by energy moving through space (E.G. towards a cold window)

Can be solved with thermal curtains

Convective Loss

Heat loss by air movement

Can be solved by improving pressure boundary (E.G. Weatherization, air sealing)

What is Insulation?



A material which slows the conductive movement of energy



Used to establish thermal boundary of a home



Should be used in-line with pressure boundary to be most effective



Measured in R-Value, which is a measure of a materials resistance to conductive energy transfer

Common Insulation Issues

Inadequate
levels (Less than
R38 or ideally
R49)

Thermal
Bridging

Air leakage
areas

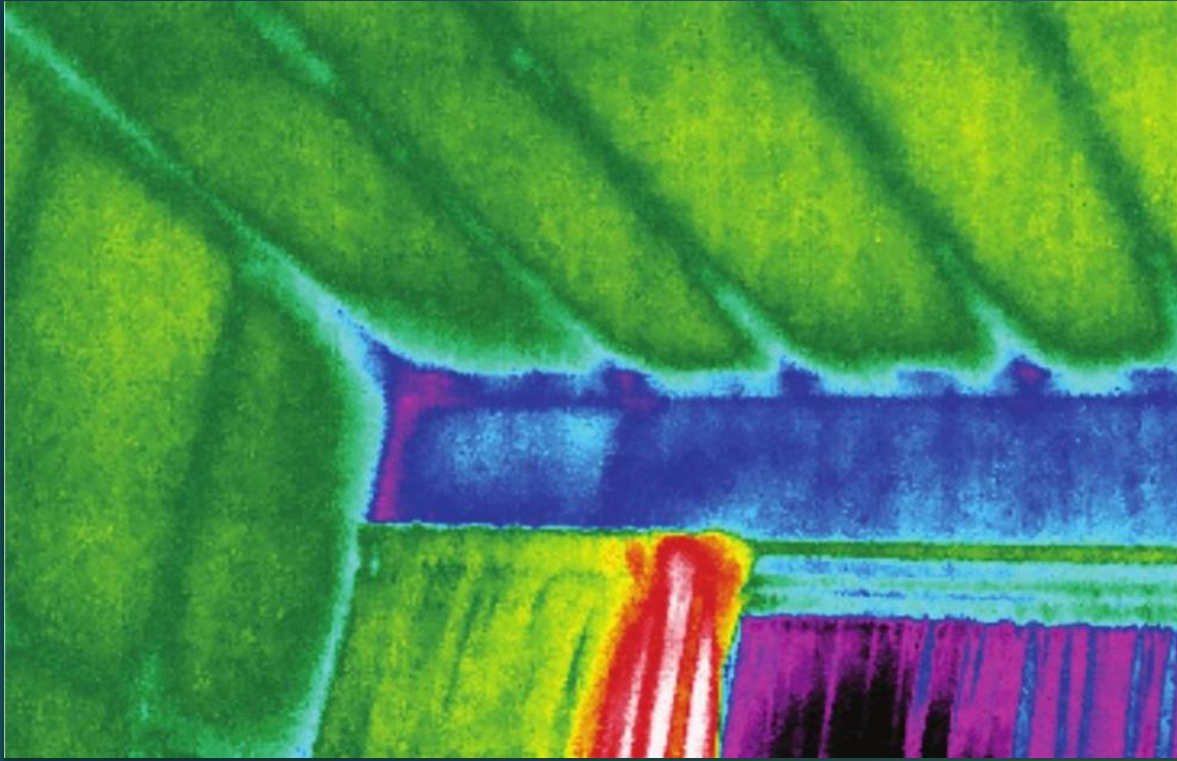
Blocked
ventilation

Open chases

Poorly insulated
access points



Inadequate
Levels



Thermal bridging



Poorly Insulated Access

Types of Insulation

- ▶ Spray Foam
 - ▶ Open Cell
 - ▶ Closed Cell
- ▶ Cellulose
- ▶ Rockwool
- ▶ Fiberglass
 - ▶ Blown
 - ▶ Batt





Fiberglass (Batting)



Fiberglass
(Blown)



Cellulose

Spray Foam

- ▶ Open or closed cell
- ▶ Excellent for rim joists
- ▶ Excellent for attics where the floor cannot be insulated
- ▶ Excellent for attics where ductwork is present
- ▶ Excellent for walls as well when applicable
- ▶ Very costly compared to other materials



KNEE WALL ATTIC INSULATION & VENTILATION

Insulating Cape- Style Kneewalls

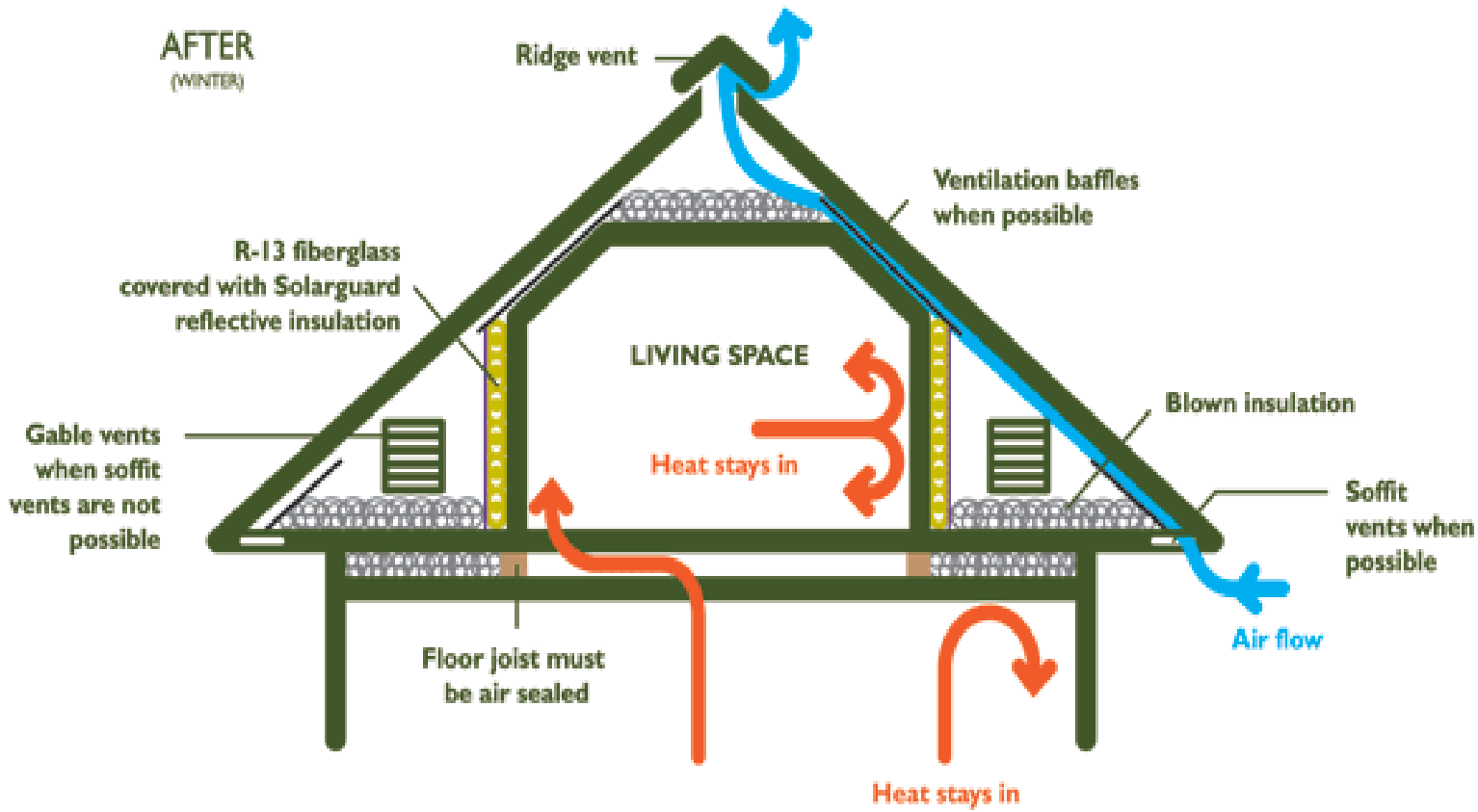


Diagram Credit: Energy Smart Ohio

What is Weatherization?



Sealing of leaks in a building that allow for air infiltration



Used to establish the pressure boundary of a home



Should be used in-line with thermal boundary to be most effective



Typically diagnosed using pressure testing devices

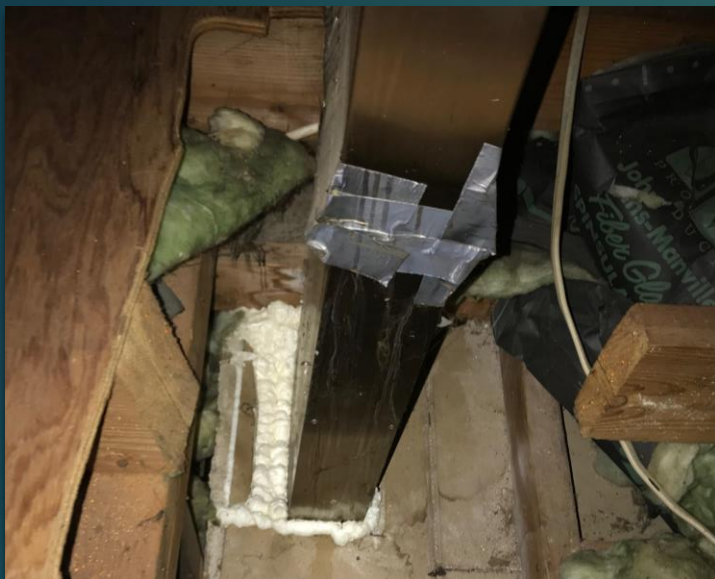
Common Infiltration Issues

Poorly sealed doors

Drafty windows

Attic
penetrations/chases

Basement rim joists
and penetrations



Attic top plates/ Penetrations

Drafty Doors/ Windows





Basement Rim Joists/ Penetrations



Interior Storm Windows

- ▶ Can be great alternative to replacement
- ▶ Much shorter ROI
- ▶ Doesn't change home's aesthetic



Blower Door Testing & Duct Blasting

Home Energy Solutions (HES)



Energize CT's residential
assessment service



Offered to all
Eversource and UI
customers, once every
6 years



Small copay (\$50
currently)



Income-Eligible option
as well



Administered by
utilities, executed by
private vendors

Benefits of a HES Assessment

- ▶ SAVE MONEY- LOWER YOUR ELECTRIC AND FUEL BILLS
- ▶ SAVE ENERGY- LOWER YOUR CARBON FOOTPRINT AND HELP FIGHT CLIMATE CHANGE
- ▶ LIVE MORE COMFORTABLY- GET RID OF DRAFTS AND COLD SPOTS IN YOUR HOME
- ▶ TEST YOUR HOME FOR HEALTH AND SAFETY ISSUES (MOLD, ASBESTOS, GAS LEAKS, CO)
- ▶ RECEIVE INCENTIVES ON LARGER MEASURES, MANY OF WHICH ARE HIGHER THAN EVER

A Home Energy Solutions Visit (on 1-4 unit homes) Includes:

- ▶ THOROUGH INSPECTION OF YOUR HOME FOR POTENTIAL HEALTH & SAFETY HAZARDS
- ▶ TESTING FOR AREAS OF HEAT LOSS IN YOUR HOME, AND SEALING OF THOSE AREAS AT NO COST ON THE SPOT
- ▶ INSTALLATION OF LOW-FLOW WATER FIXTURES
- ▶ SEALING OF DUCTWORK (INCLUDING AEROSEAL FOR INACCESSIBLE AREAS IF NEEDED)
- ▶ IDENTIFY DEEPER MEASURES NEEDED (INSULATION, WINDOWS, HVAC, MANY OF WHICH ARE HIGHLY INCENTIVIZED) AND PROVIDE REBATES



Home Energy Solutions Income Eligible (HES-IE)

- ▶ PARTICIPANTS MUST FILL OUT A BASIC APPLICATION TO QUALIFY BASED ON INCOME
- ▶ NO LIMIT ON LEDS INSTALLED
- ▶ SIGNIFICANTLY HIGHER INCENTIVES ON LARGER MEASURES SUCH AS INSULATION, WINDOWS, AND HVAC (ESPECIALLY HEATPUMPS,) IN MANY CASES UP TO 100%



Insulation Incentives

- ▶ \$1.70/sqft for Attic floors, Floored over attics, Basement/garage/crawlspace ceilings, exterior walls, rim joists
- ▶ Capped at 75% of total cost or \$10,000/home
- ▶ Existing conditions must qualify (Attic $<R19$, Walls $<R4$, Basements $<R6$,
- ▶ Final conditions must qualify (Attic $>R38$, Walls $>R13$, Basements $>R19$)
- ▶ Only obtainable through HES



Other Energize CT incentives

- ▶ High Efficiency Gas Furnace- \$700
- ▶ High Efficiency Gas Water Heater- \$300
- ▶ Energy Star Appliances- \$50
- ▶ Wi-Fi Thermostats- Up to 100% covered (with demand control)
- ▶ \$1250/ton on Heatpump heating systems
- ▶ \$750 on Heatpump water heaters
- ▶ More at [EnergizeCT.com](https://energizect.com)



Energize CT Financing



C4C MICRO:
-<\$3,000,
-QUALIFYING UPGRADES
-0% APR
-ON-BILL
-36 MONTHS
-QUALIFIED INSTALLERS ONLY



C4C HEATING SYSTEM:
-<\$15,000
-HEATING SYSTEM UPGRADES
-0.99% APR
-ON-BILL
-UP TO 10 YEARS.
-QUALIFIED INSTALLERS ONLY

3 Ways To Sign Up For HES

1

Sign up online at <https://www.eversource-ct.com/HES/> for Eversource customers, you will be linked up with a program vendor

2

Sign up via phone by calling 877-WISE-USE to be linked up with a program vendor

3

Contact a specific program vendor directly to book an assessment with them

Find a list of program vendors at <https://www.energizect.com/find-a-contractor>

Thank You!

► Questions?