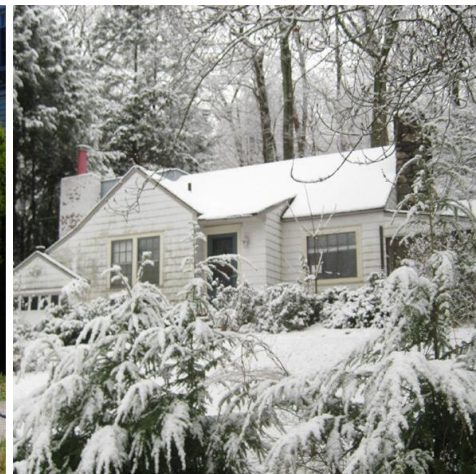
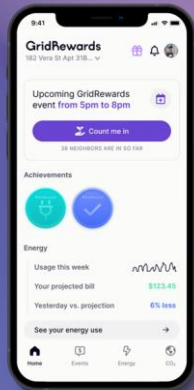


**Sustainable
Promise**



**Greening
Sherman**



COMFORT, HEALTH, AND SAVINGS FOR YOUR HOME

ENERGY EFFICIENCY / ENERGY AUDITS / CLEAN HEATING & COOLING / SOLAR

An Overview

Sunday, June 4, 2023 - Sherman Firehouse

Bob Fischman

Home Energy Efficiency & Savings





Connecticut's Target



Public Act 18-82:

"An Act Concerning Climate Change Planning and Resiliency"

Requires Connecticut's to meet its climate goals of reducing statewide greenhouse gas (GHG) emissions 45% by 2030 and 80% by 2050, relative to a 2001 baseline



THE SOURCE OF CARBON EMISSIONS

36%



**Transportation
On-Road**

9%



**Transportation
Other**



23%



**Residential Energy
Consumption**

21%



**Commercial Energy
Consumption**

3%



**Industrial Energy
Consumption**

3%



**Energy Supply
& Distribution**

1%



**Landfill &
Wastewater**

3%





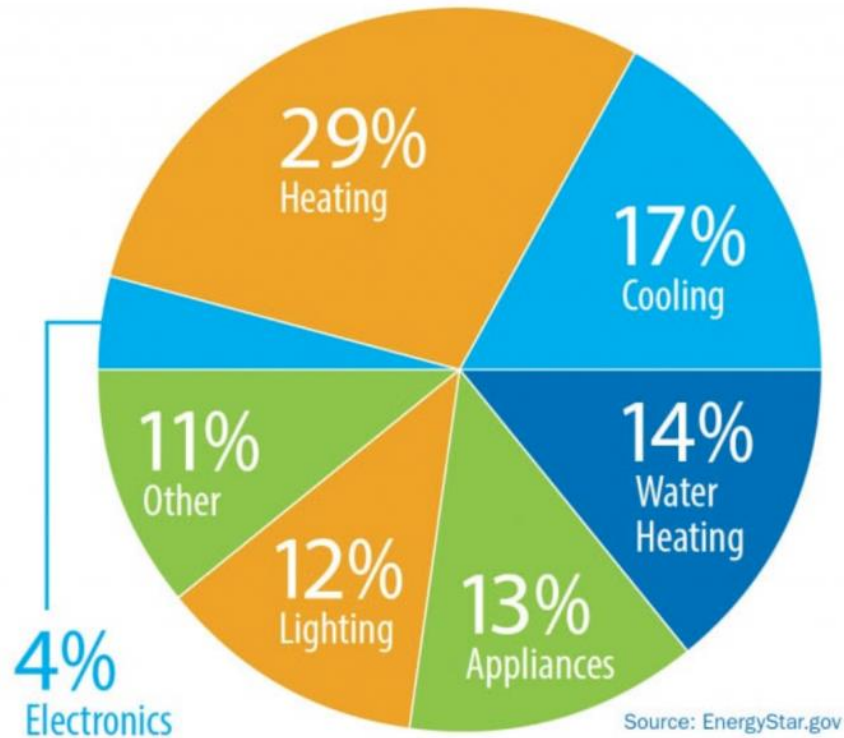
Connecticut's Strategy



- 1) Energy-efficiency improvements in buildings and appliances
- 2) Replace fossil fuel reliant equipment with renewable thermal technologies
- 3) Use of clean electricity supply resources and demand flexibility



Energy Use Breakdown
(Based on average use per household)





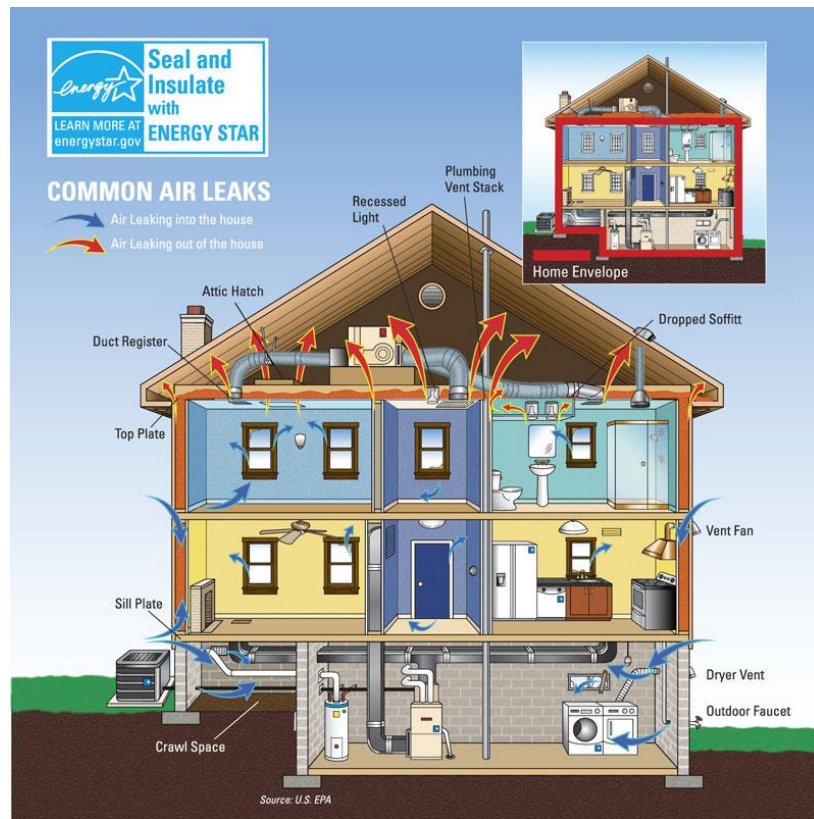
UNDERSTANDING HOME ENERGY *INEFFICIENCY*

SYMPTOMS OF WASTED ENERGY

- Uncomfortable Home
- Poor Air Quality
- Mold, Mildew, Musty Odors
- Cold Floors in Winter
- Damp Basement
- Drafty Rooms
- Dust
- Moisture on Windows
- Ice Dams
- Peeling Paint
- Climate Change
- ... *A Leaky Wallet*

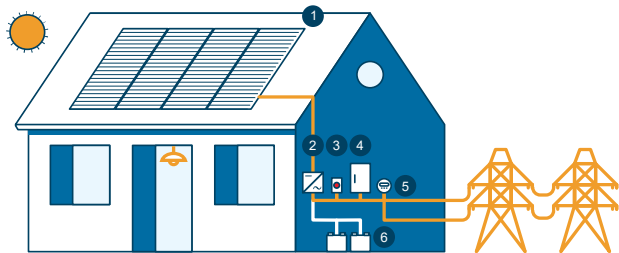
THE CAUSES

- Leaks in the *Pressure Boundary*
- Inadequate *Thermal Boundary*

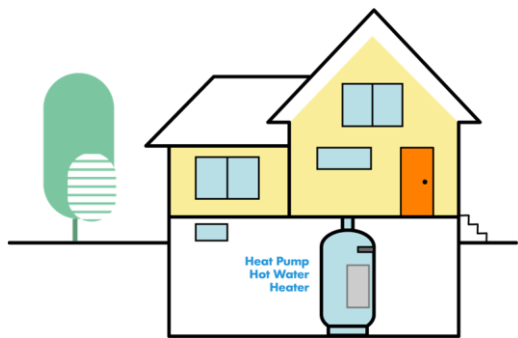




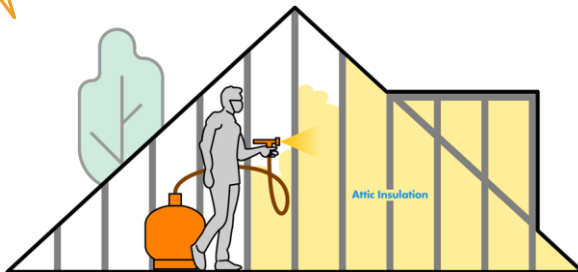
TECHNOLOGIES



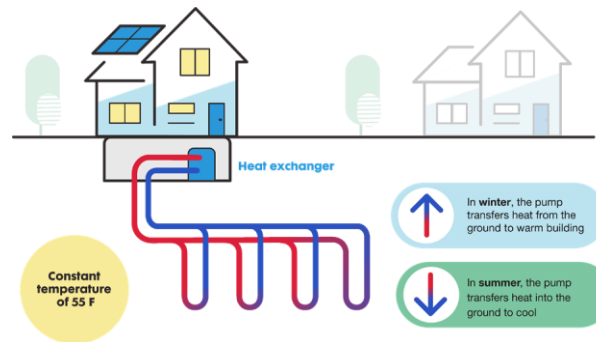
Solar PV + Storage



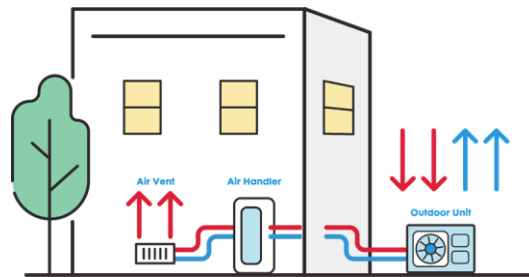
Heat Pump Hot Water Heater



Home Energy Efficiency



Ground Source Heat Pump



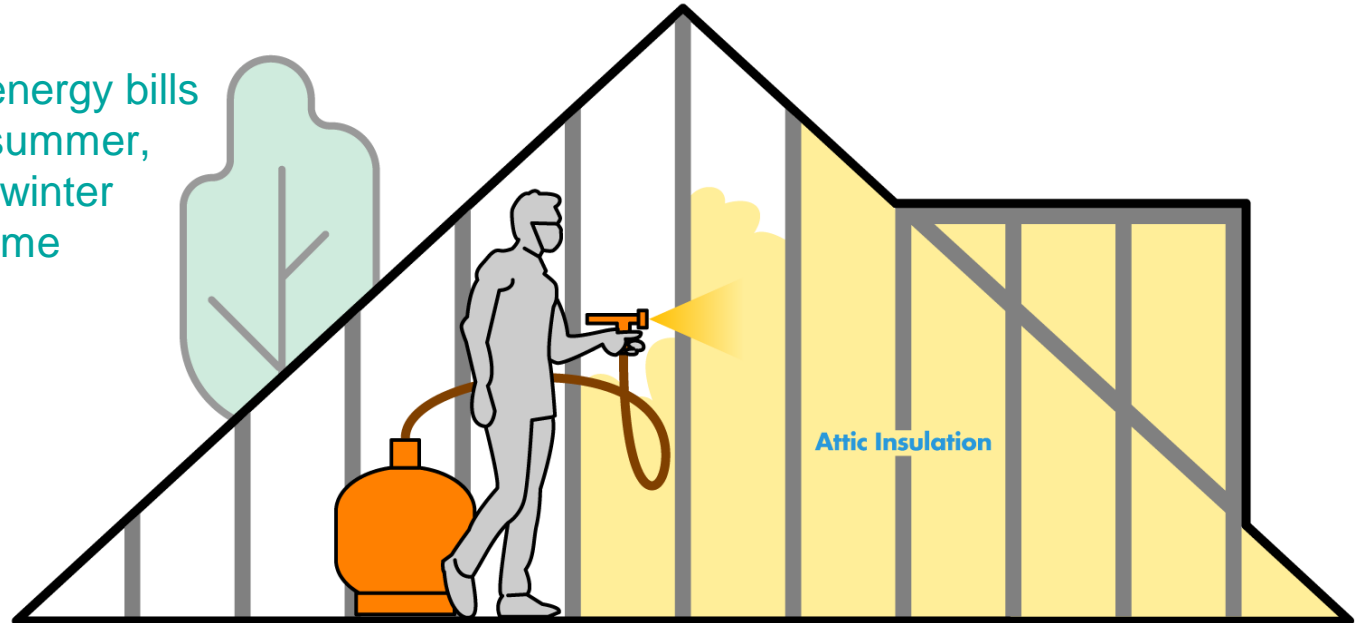
Air Source Heat Pump



HOME ENERGY EFFICIENCY WEATHERIZATION

BENEFITS

- Reduced energy bills
- Cooler in summer, warmer in winter
- Quieter home





WHY AIR LEAKAGE HAPPENS: THE STACK EFFECT



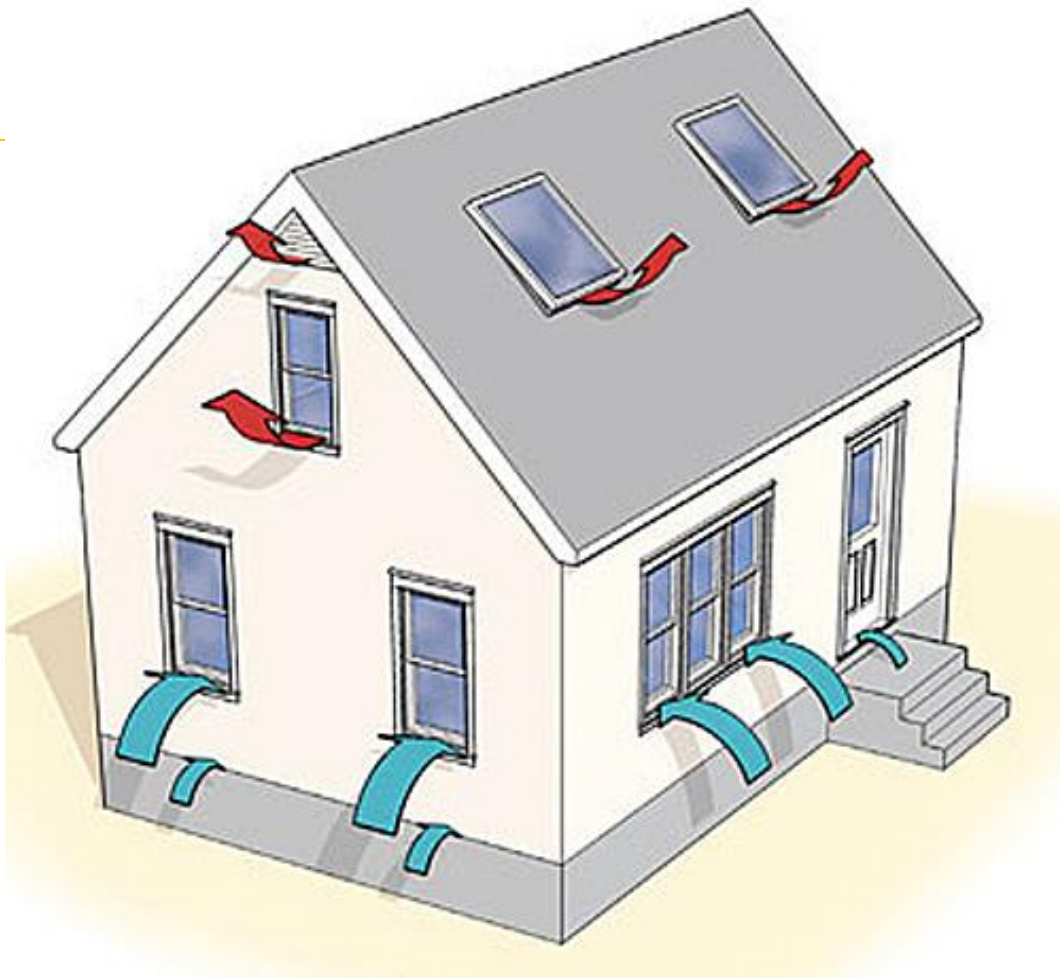
COMMON AIR LEAKS





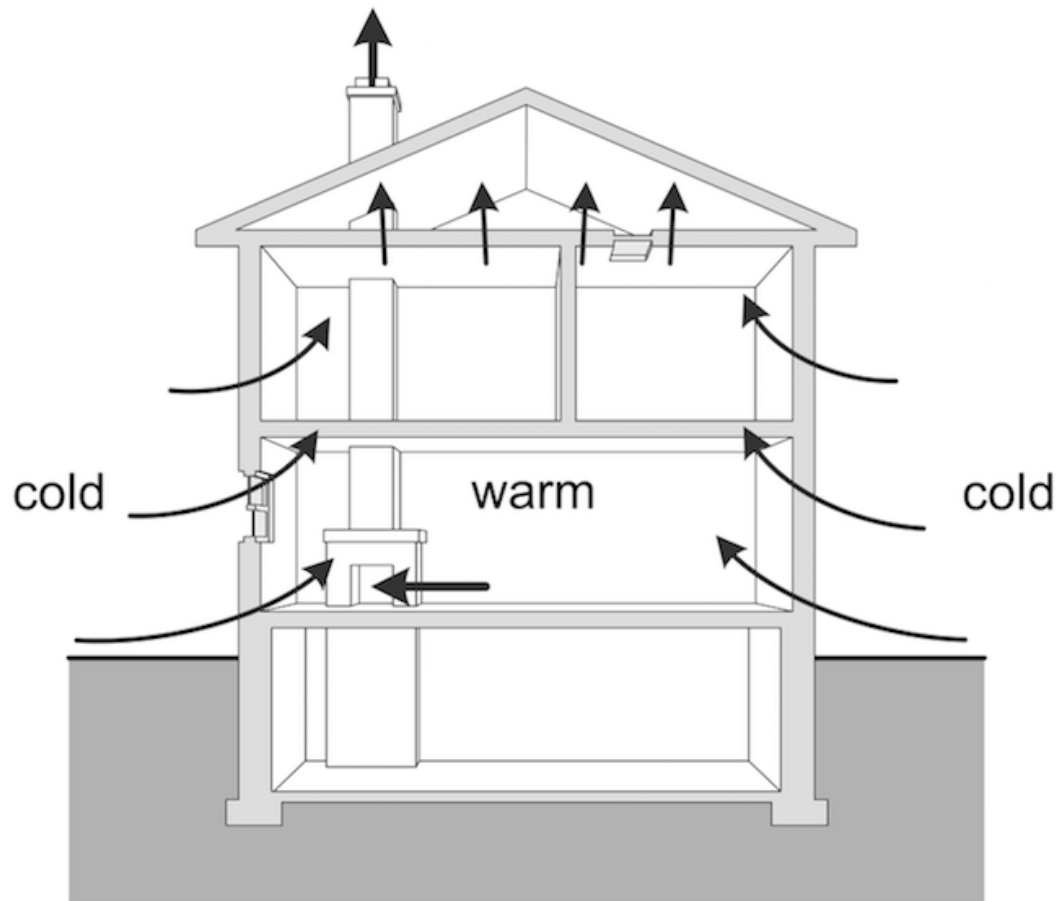
**WHY AIR
LEAKAGE
HAPPENS:**

**THE STACK
EFFECT
FROM THE
OUTSIDE**



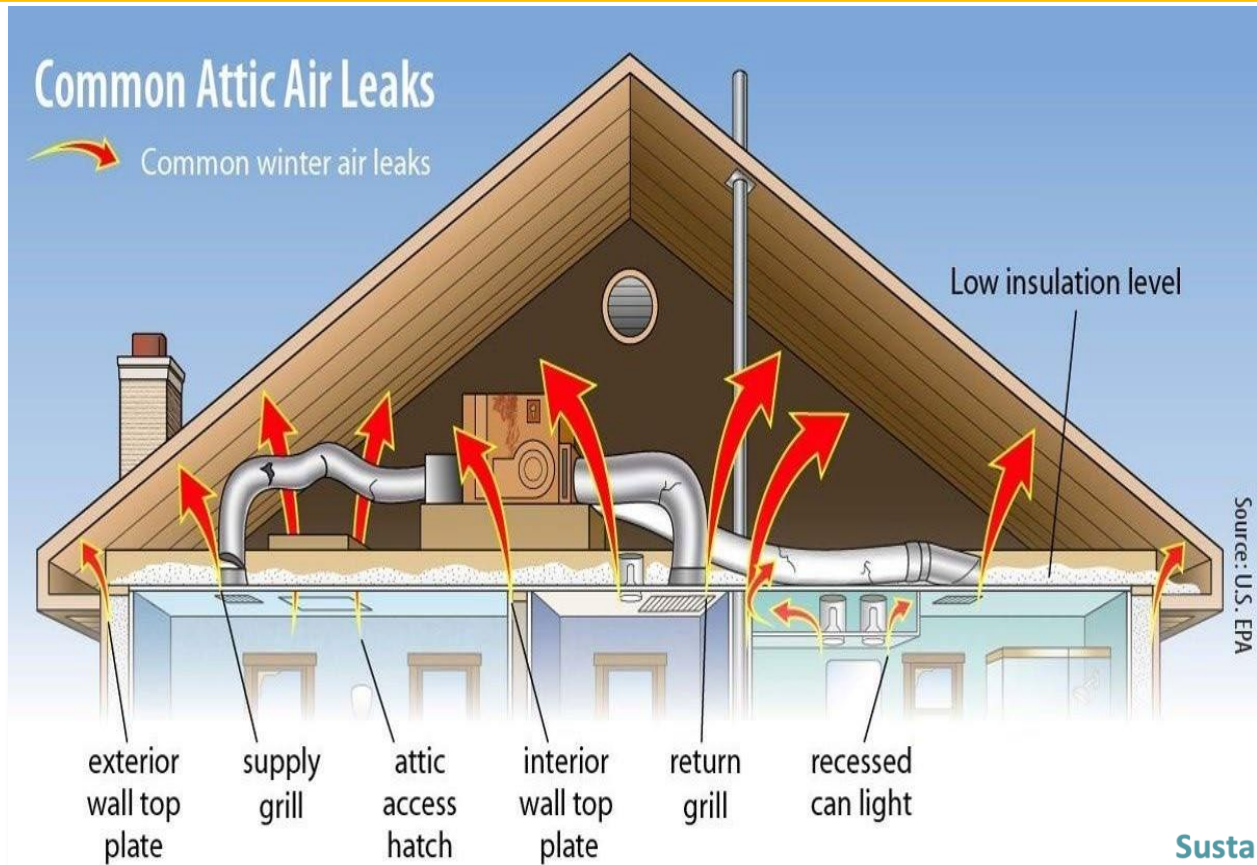


WHY AIR LEAKAGE HAPPENS: THE STACK EFFECT ON THE INSIDE





WHERE AIR LEAKAGE HAPPENS





WHERE AIR LEAKAGE HAPPENS

EVIDENCE OF
ATTIC AIR LEAKS





HOME ENERGY ASSESSMENT



A BPI Certified contractor conducts a blower door test to depressurize the home and uses an infrared camera to detect air leaks leading to heat loss

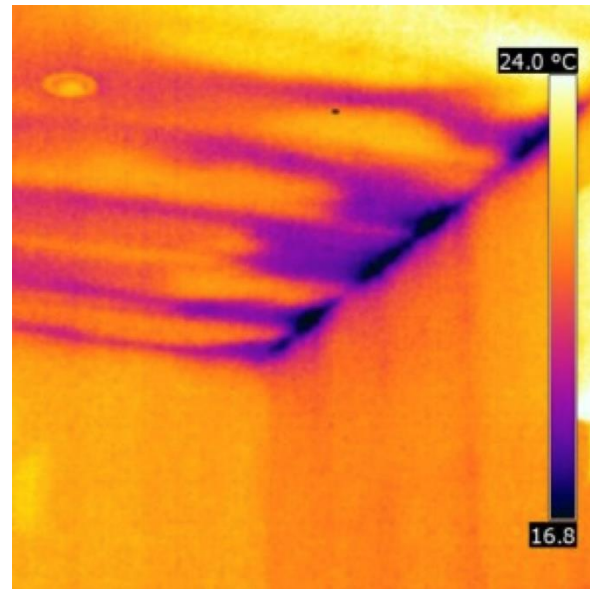
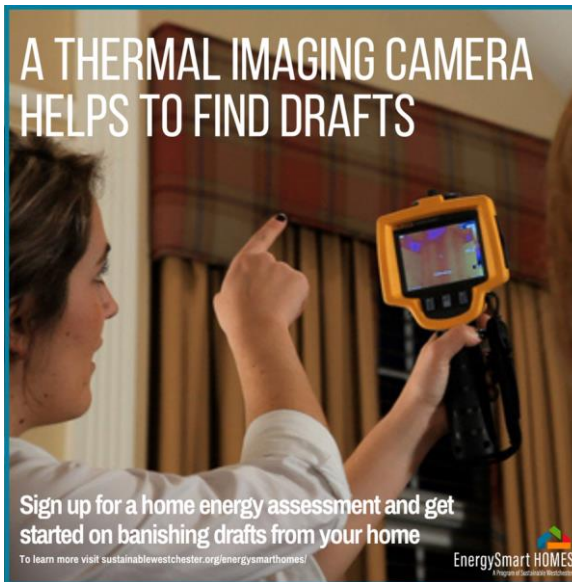




HOME ENERGY ASSESSMENT



Thermal Imaging:
Infrared camera helps
diagnose insulation
and air leakage issues





AIR SEALING

BENEFITS

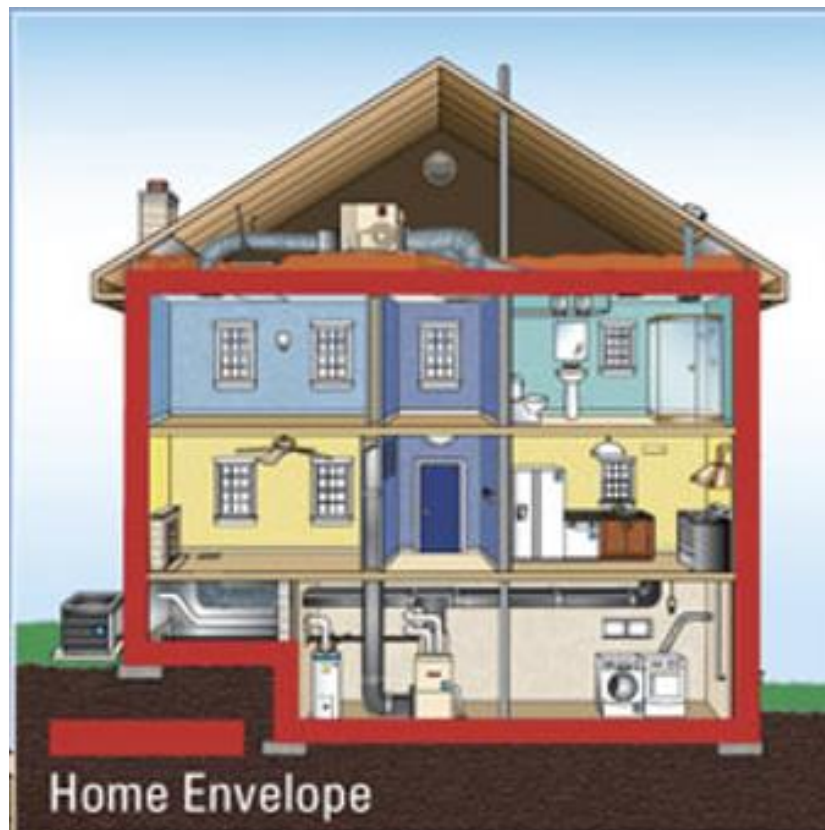
Tightening the Pressure Boundary reduces drafts through the home





THE THERMAL BOUNDARY

IS THE HOME'S
INSULATION
CONTINUOUS
AND IS IT
SUFFICIENT?



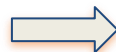


INSULATING THE HOME

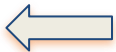
BENEFITS

- Improving the Thermal Boundary reduces heat loss from the home

Cellulose insulation in the attic caps thermal losses



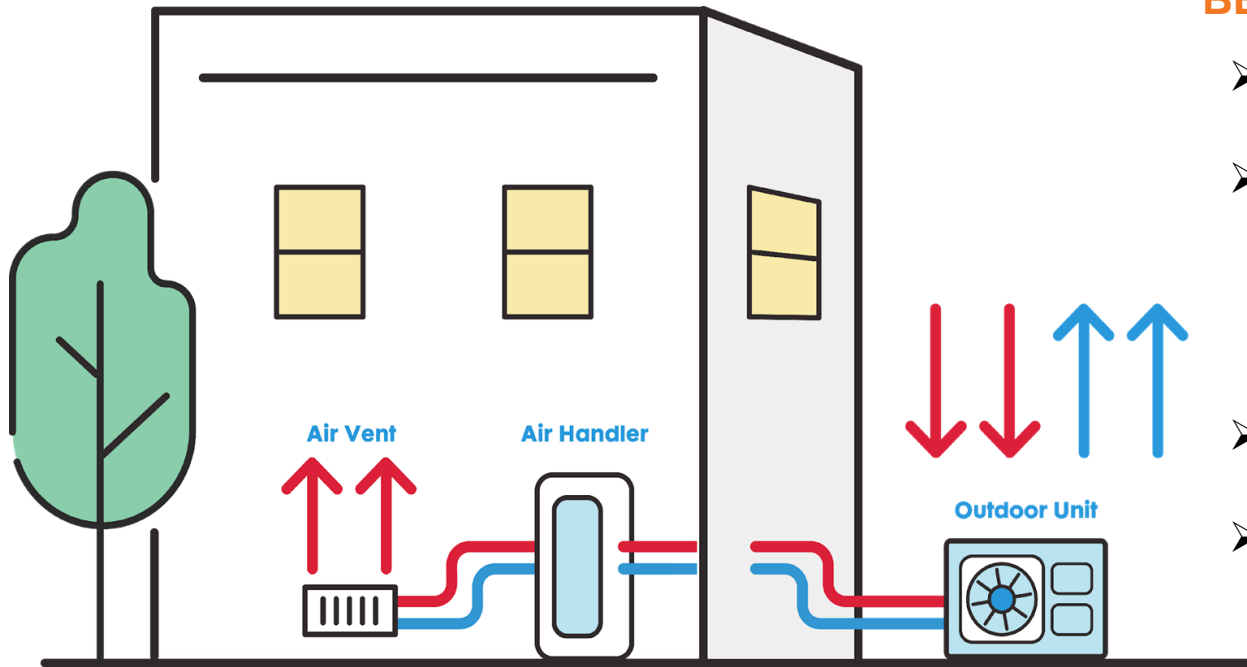
Cellulose insulation is dense-packed in walls



Foamed cellar rim joist air seals and insulates



AIR SOURCE HEAT PUMPS



BENEFITS

- Heating & Cooling
- ASHP pumps are 2 to 3 times more efficient than most fossil fuel heating systems
- Two types of applications
- Rebate + tax credit



AIR SOURCE HEAT PUMPS

DUCTLESS SPLIT SYSTEM

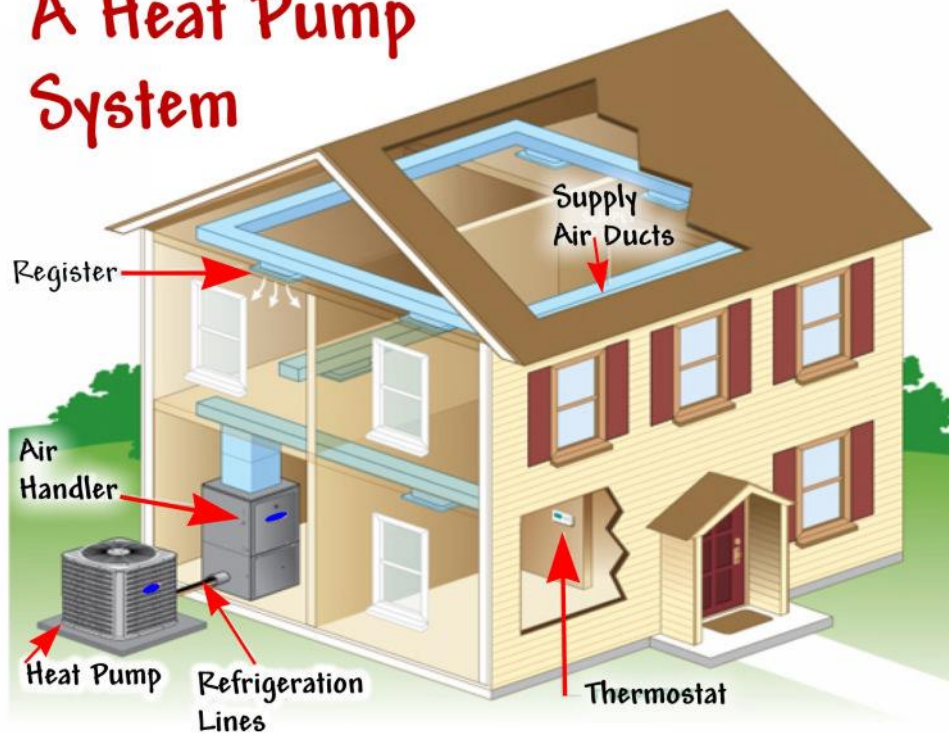
- Multiple indoor blower units connect to one or more outdoor units





AIR SOURCE HEAT PUMPS

A Heat Pump System

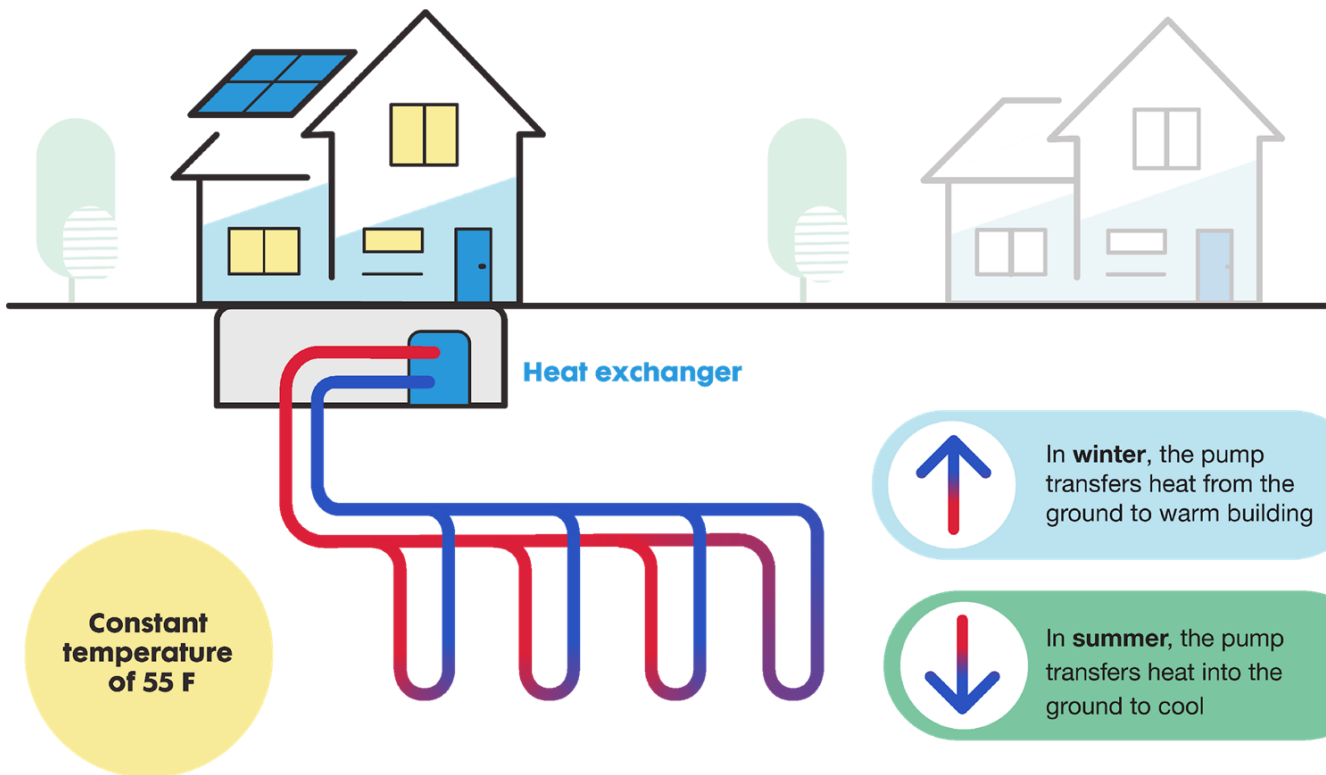


CENTRAL AIR SYSTEM

- Indoor air handler connects to an outdoor unit



GROUND SOURCE HEAT PUMP (*aka GEOTHERMAL*)



BENEFITS

- Heating & Cooling
- GSHP pumps are 3-5 times more efficient than most fossil fuel heating systems
- Most efficient cooling system



GROUND SOURCE HEAT PUMP (*aka GEOTHERMAL*)

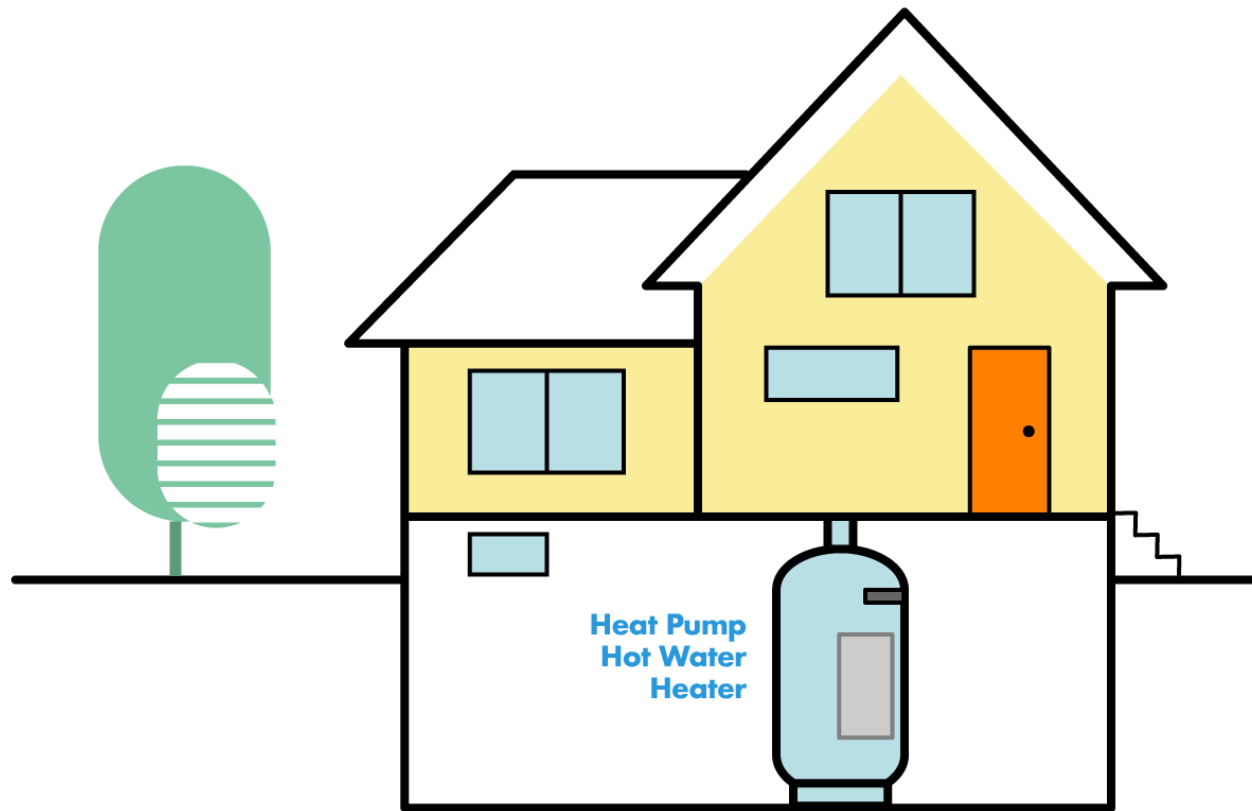


BENEFITS

- Lowest operating cost for heating and cooling
- No outdoor equipment
- Longest system lifespan
- Central air distribution
- Rebate + highest tax credit



HEAT PUMP HOT WATER HEATER



BENEFITS

- HPHWH is 2 to 3 times more efficient than most domestic hot water heaters
- Dehumidifies too!



HEAT PUMP HOT WATER HEATER

BENEFITS

- The most efficient hot water heater
- Provides reliable hot water
- Reduced energy use - inexpensive to operate
- Backup electric resistance to meet high demand
- Looks like a taller hot water tank with a heat pump on top
- No flame. No pilot light. No emissions.





SOLAR ELECTRIC (PV)



BENEFITS

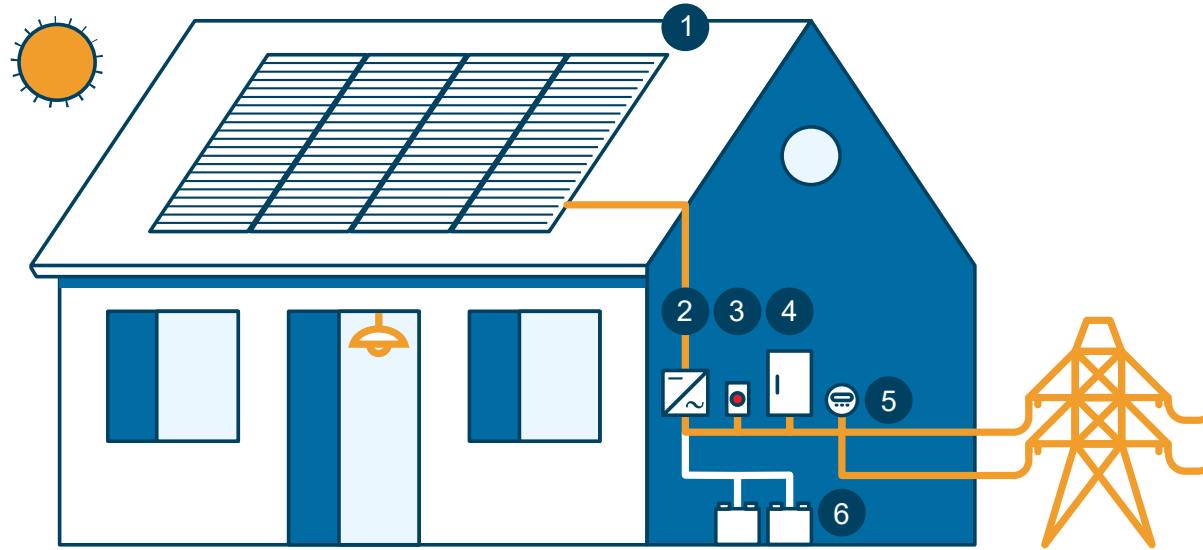
- 100% Renewable energy
- Generate your own electricity
- Sized to meet electricity use including heat pumps
- Backup battery storage available for resiliency
- Highest tax credit



SOLAR ELECTRIC (PV)

HOW IT WORKS

- Solar panels
- Inverter
- Safety disconnect
- Main service panel
- Electric meter
- Battery (optional)
- Two incentive rate structures: Buy-All or Netting





MAKING ENERGY EFFICIENCY AFFORDABLE

HOME ENERGY SOLUTIONS

Get an in-home energy performance assessment. Services can include:

Sealing air leaks and ductwork, installing hot water pipe wrap, faucet aerators, and low-flow showerheads

RESIDENTIAL INSULATION INCENTIVE

Rebate Offer: Up to \$1.70 per square foot on approved insulation projects recommended during your visit.

RESIDENTIAL TRIPLE-PANE WINDOW INCENTIVE

Rebate Offer: \$100 per window

APPLIANCE REBATES

Rebate Offer: Up to \$50 for replacement of certain inefficient appliances with qualifying energy-efficient models

HEAT PUMP REBATES

Rebate Offer: Up to \$15,000 for CC-ASHP or GSHP; Up to \$750 for HPHWH

FINANCING

Smart-E Loans for customers making home energy-efficient improvements, including insulation, air-sealing, windows, HVAC and water heating equipment, and clean energy (renewable) technologies



FEDERAL TAX CREDITS (*THE IRA*)

The logo for Rewiring America, featuring the words "REWIRING" and "AMERICA" in a bold, outlined, sans-serif font. A stylized plug icon is integrated into the letter "R" of "REWIRING". The logo is centered on a solid yellow rectangular background.

YOUR SAVINGS CALCULATOR

How much money can you get with the Inflation Reduction Act?

<https://www.rewiringamerica.org/app/ira-calculator>

Bob Fischman

robert@sustainablepromise.com

Questions?

