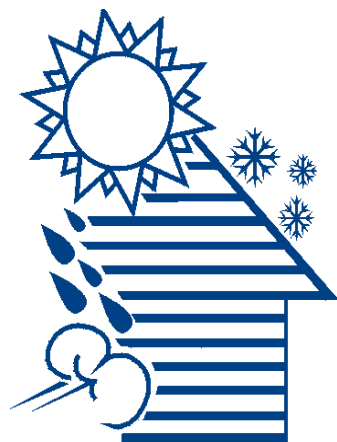


# Typical Weatherization Measures

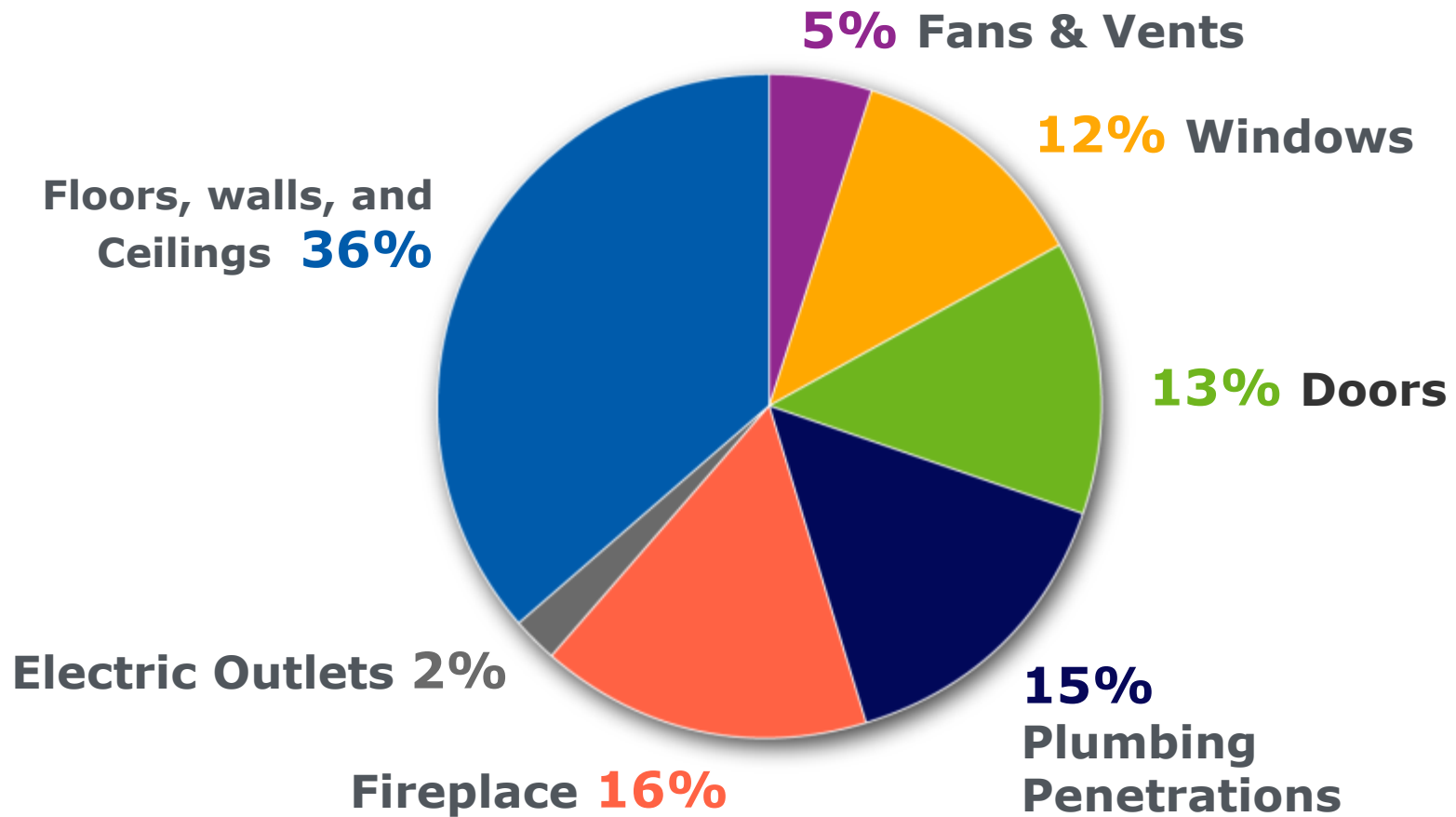
In no particular order



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# Air Sealing and Attic Prep

# Primary Air Infiltration Sites

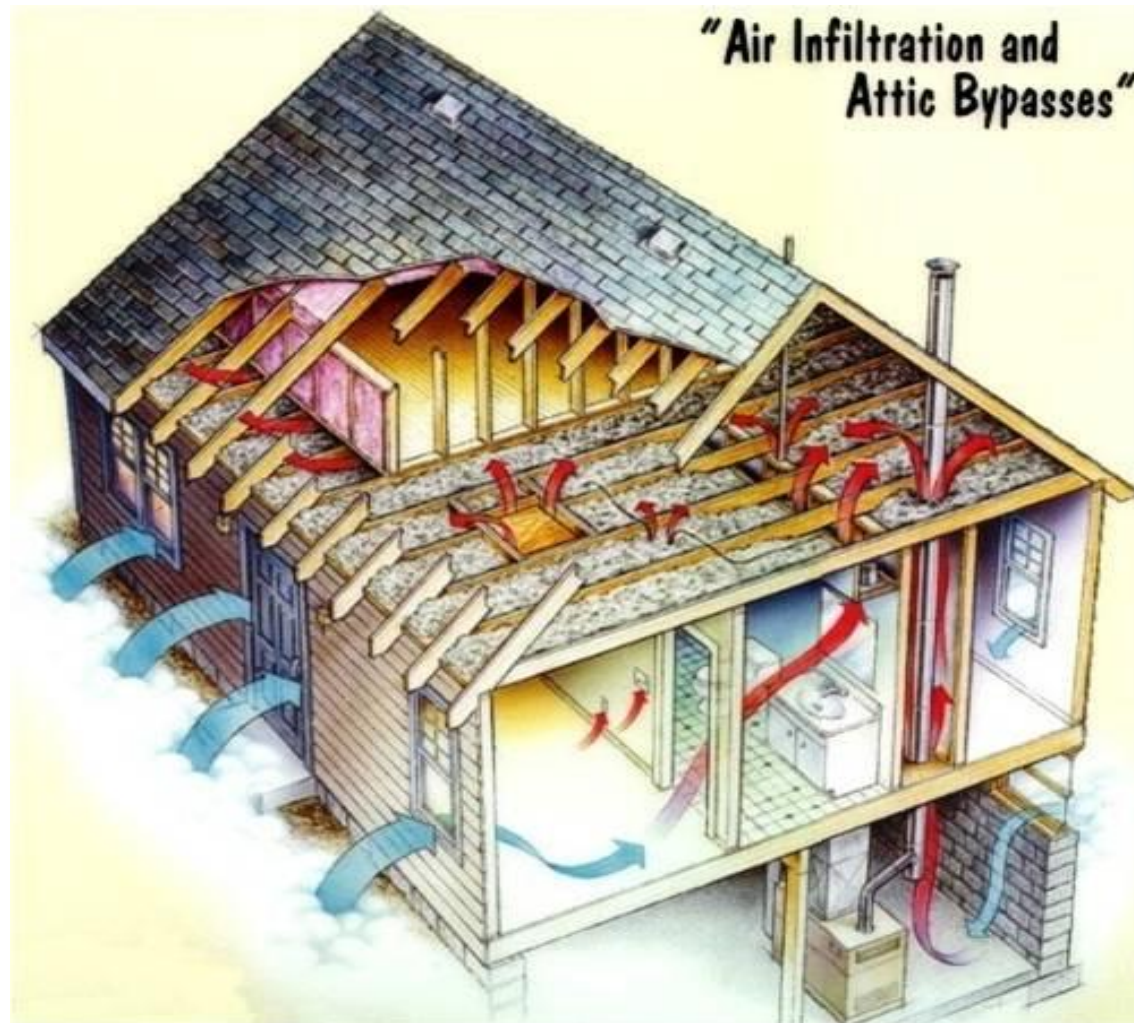


*Data courtesy of the California Energy Commission*

# Common Tools for Attic Prep & Air Sealing



1. Urethane foam (spray foam)
2. Foam board
3. Sheet metal/foil
4. Mastic and gloves
5. High-temperature caulk
6. Utility flags
7. Insulation rulers
8. Tin snips and zip ties
9. Stapler
10. Weatherstripping
11. Zip tie tightening tool
12. Utility knife





# Attic Prep ( Seal bypass)





# Attic Prep



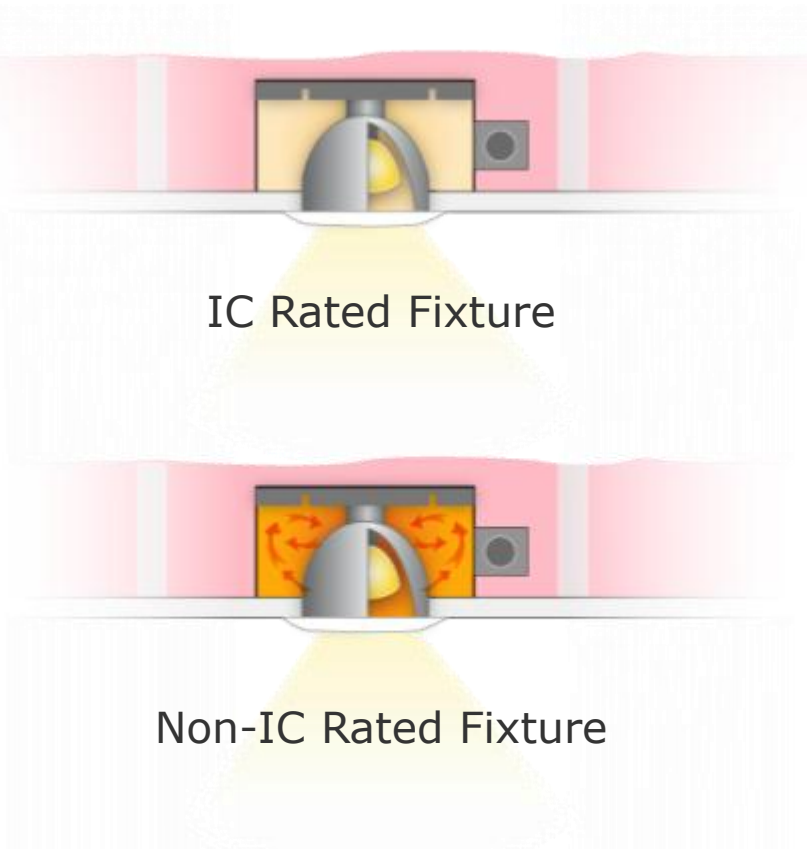


# Air Sealed attic





## Recessed Light Fixtures



## Flues

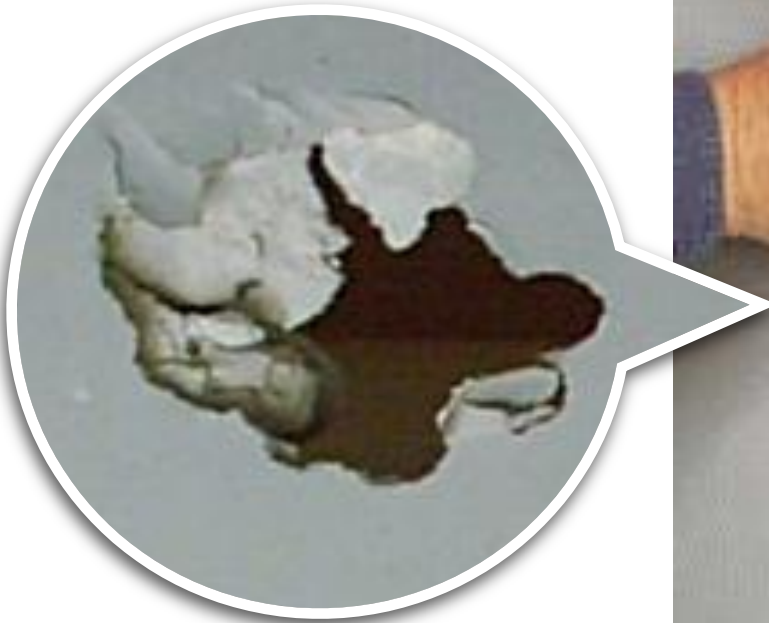


*Photos courtesy of the US Department of Energy*

# Attic not air sealed !



Yes, air sealing may require repairing damaged drywall.

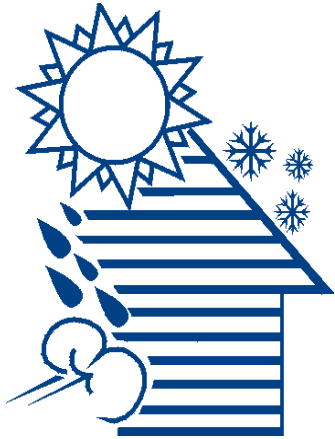


*Photos courtesy of the US Department of Energy*



# Air sealing Weather stripping

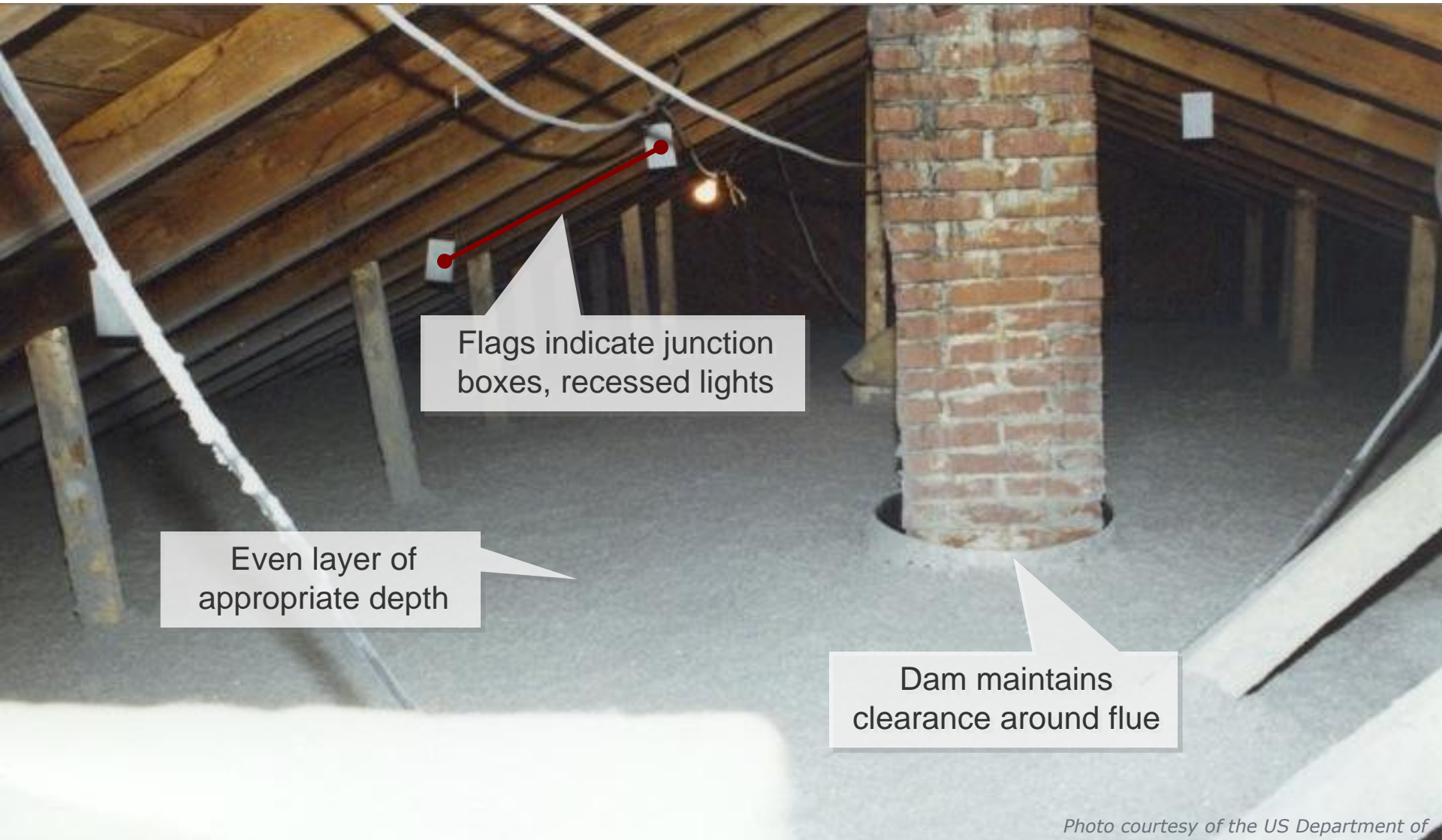




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# Attic Insulation

# Properly Insulated Attic



Flags indicate junction boxes, recessed lights

Even layer of appropriate depth

Dam maintains clearance around flue

*Photo courtesy of the US Department of Energy*





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# Dense-Pack Sidewall Insulation



- **Check material-to-Volume ratio:**  
One 30 lb. bag should almost fill 3 8' cavities with 2x4 16" O.C. framing.
- Proper density should be approximately 3.5 pounds per cubic foot

Photo courtesy of the US Department of

# Dense packing sidewalls





# Trouble-Shooting or Shooting Trouble?

Adding insulation to  
sidewalls is more than  
just blowing insulation in  
a hole



*Photo courtesy of the US Department of  
Energy*



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# Duct Sealing/Repair

# Duct Sealing



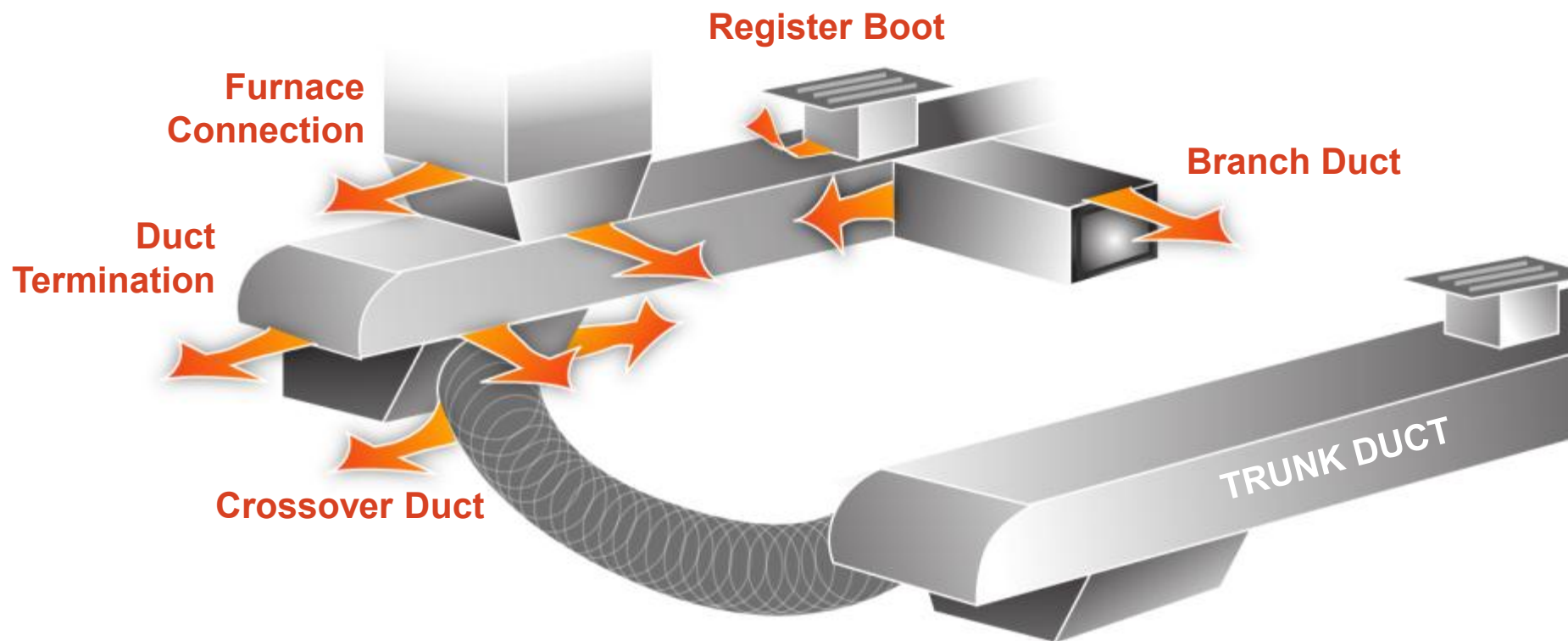
**Seal leaking Joints**



**Repair any holes**



## Typical Air Leakage Locations



# Pressure Pan Testing



- Pressure panning is sometimes used to determine how much the distribution system is leaking

Photo Source: US Department of Energy



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# Basements and Crawl Spaces



## Unconditioned Basements

- Air seal all air pathways between the basement and house.
- Seal all return and supply ducts.
- Insulate all duct work to the recommended R-value.
- Insulate open floor joists to the recommended R-value with fiberglass batt insulation. Be sure to fit insulation batts tightly to the bottom of the sub-floor and attach them with wire supports.
- Insulate enclosed floor cavities with dense-pack insulation.
- Pressure pan measurements on duct registers should read close to 0 Pa.



Photo courtesy of the US Department of Energy





Photo courtesy of the US Department of Energy





## Conditioned Basements

- Air seal perimeter mud sill, band joist and all air pathways between the basement and the house.
- Seal return plenum and all return ducts for safety.
- Seal major leaks in supply ducts by mechanically reconnecting boots to register transitions.
- Insulate band joist area to recommended R-Value.
- Consider insulating basement walls.
- Use ZPD to verify that the conditioned crawl space with reference to the house is close to 0 Pa.



# Foaming the Band Joist



*Photo courtesy of the US Department of Energy*





Photo courtesy of INCAP



*Photo courtesy of INCAP*



# Heating System



# Heating System Replacement

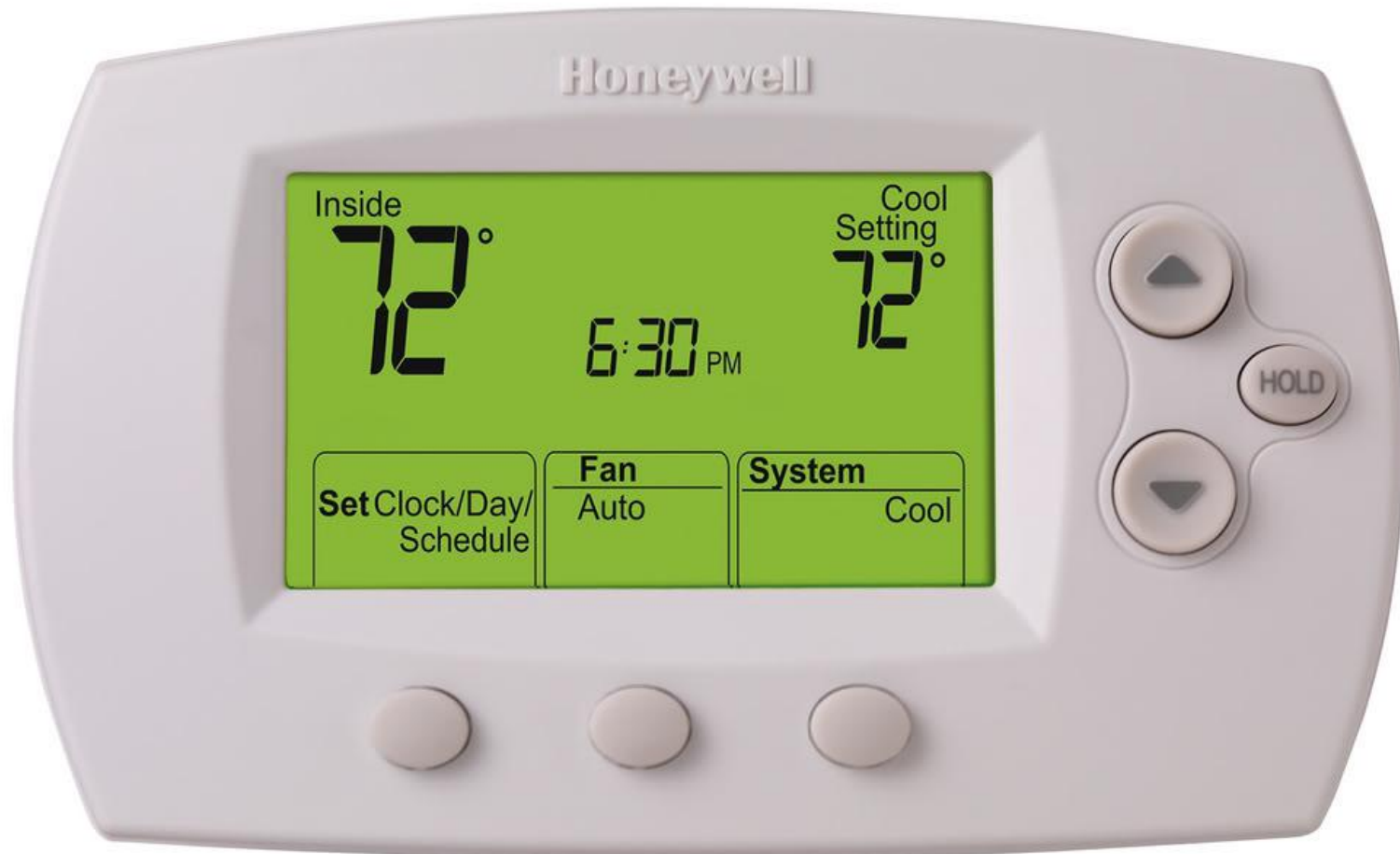


# Heat pump Heating

**This type of system  
will also provide air  
conditioning**



# Programmable Thermostat





# Baseload Measures



# Baseload Measures









# Refrigerator Replacement

**Some Energy Star  
Refrigerators use as little  
as 355 kWh**



# Window Replacement



Thank you!