

UNDERSTANDING INSULATION & AIR SEALING

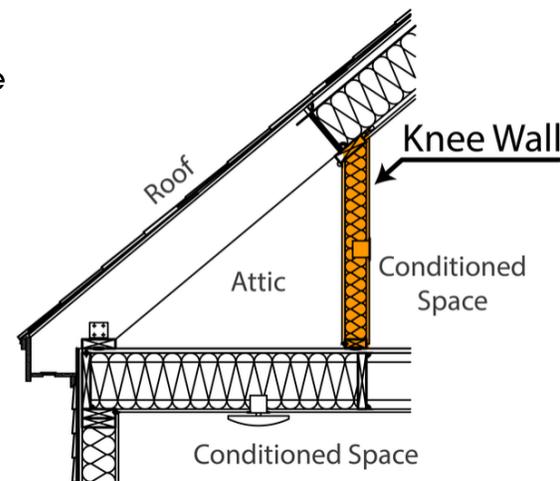
Insulation and air sealing are two of the most cost-effective ways to save energy at home

HEAT, SPACE, AND INSULATION

- Space in your home falls into one of two categories: **conditioned space** is living space you heat in winter and cool in summer; **unconditioned space** is space you don't heat or cool - an unfinished attic, garage, or vented crawlspace.
- Keep hot and cold air where you want it by creating a **continuous thermal envelope** - a combination of insulation, air sealing, and building structure that divides conditioned from unconditioned space, and from the outside.
- **Air flow** is how heat moves from one place to another. Warm air will always move to air that is colder, so the purpose of insulation and air sealing is to keep warm air where it is. Gaps in the thermal envelope let hot air out during winter, and in during summer.
- Insulation is rated by its **R-value**, a measure of how well a material resists the flow of heat, per inch of material thickness. A higher R-value means a material is more effective at insulating.

WHERE TO INSULATE

- All exterior walls of your home, and any wall between conditioned and unconditioned space, should be insulated. In existing structures, insulators cut holes in the walls, blow in **dense-pack cellulose insulation**, and patch the hole.
- Floors above vented crawlspaces, and knee-walls between conditioned space and an unconditioned attic can often be insulated with rolls of **fiberglass batt insulation**.
- The floors of an unfinished attic or unconditioned knee-wall area can be insulated by blowing in **loose-fill cellulose insulation**. This prevents heat from escaping or infiltrating the room below.

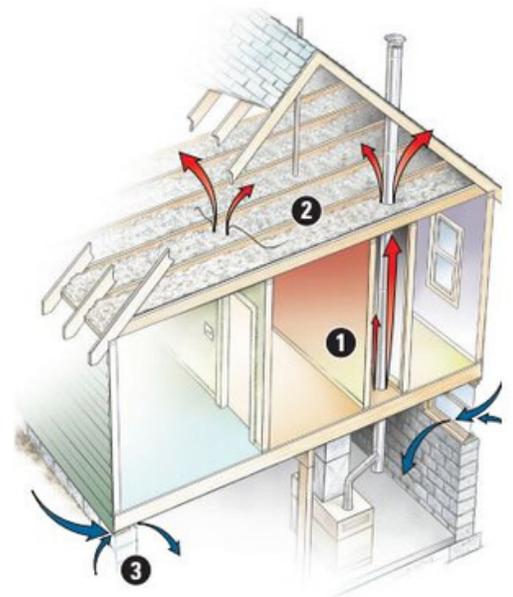


Source: University of Central Florida
FSEC Energy Research Center

- Band or rim joists - the boards that cap off the floor joists in your basement - an un-vented crawlspace, and any part of your basement foundation wall that is above ground should be insulated with **rigid foam** and **spray foam insulation**. This prevents cold air and moisture from infiltrating your basement.

AIR SEALING AND AIR MOVEMENT

- Air sealing with caulk, spray foam insulation, and weather stripping seals gaps in door and window frames, holes for electrical wire or outlet boxes, and holes where water or gas pipes enter conditioned space.
- Air sealing helps prevent the chimney effect, where warm air rises through the house (1), and into the attic through leaks around light fixtures or chimney/vent stacks (2), pulling cold air into the basement or ground floor to replace the displaced air (3). This is what makes your home feel drafty during the winter.
- Attic access doors, as well as access hatches to un-vented crawlspaces, should be insulated and air sealed. Cold air infiltration causes moisture buildup, which can lead to mold or mildew.



Source: US EPA, A Do-It Yourself Guide to Sealing and Insulation with EnergyStar

SAVINGS FROM INSULATION AND AIR SEALING

- Unless your home was built recently with energy efficiency in mind, it would most likely benefit from additional insulation and air sealing.
- An un-insulated home can lose up to 26% of its heat through the roof, 33% through the walls, and 8% through the floors or foundation.
- The U.S. Department of Energy estimates that residents can **save up to 15%** of their annual heating and cooling costs, or 11% of their overall energy costs, by insulating and air-sealing.

Call POWER to schedule your free in-home energy assessment so you can start saving today!

440-935-0995

440-774-6579

oberlinpower@gmail.com