

How does building science apply to a simple remodeling project?

Although a remodeling project may involve only one room in the house, other parts of the building are usually affected because a house works as a system. With an experienced remodeler who pays attention to the interaction between components of your home, you can be assured that the changes you make in one area will not result in a negative impact somewhere else.

There are opportunities to improve energy, comfort, and durability in every type of remodeling project. A remodeler who is well-versed in building science will not only provide a high-quality renovation project, but can also improve the overall performance of your entire home.



Adding attic insulation while maintaining proper ventilation can improve comfort, lower energy bills, and reduce moisture-related roofing problems.



How will I know if my remodeler really does use building science to increase the energy efficiency of my home?

Because many energy efficiency improvements are behind the walls, in the attic, or in the basement, you may not be able to see these measures. But, undoubtedly, you

Heating and cooling account for over half of the energy use in a typical U.S. home, making it the largest energy expense for most homeowners. A typical duct system can leak 30% of its air. If leaky ducts are located in unconditioned spaces, this can mean that \$3 of every \$10 you pay for heating and cooling is wasted.

will notice changes in comfort and, for larger remodeling projects, savings in utility costs as well. When you are seeking bids from remodelers, ask about their building science and energy efficiency training.

Where can homeowners get more information about building science and energy efficiency?

- www.eere.energy.gov/consumer
- www.energystar.gov
- www.mme.state.va.us/de/handbook_one.html
- www.oikos.com/library/airsealing/index.html
- www.buildingamerica.gov
- www.aceee.org
- www.rmi.org
- www.southface.org
- www.toolbase.org

For local information:



YOUR REMODELING PROJECT

Using Building Science to Improve Home Performance



Comfort • Quality • Energy Efficiency

What is building science?

Building science uses the fundamental laws of physics to understand how a building works as a system of its many interrelated parts. Rather than isolating the individual

components of a home, the building science approach analyzes the interaction between components and systems, occupants,

and the outdoor environment. Building science entails the careful consideration of how energy and moisture flow into and out of a home and the careful application of materials and methods to optimize and manage those flows.

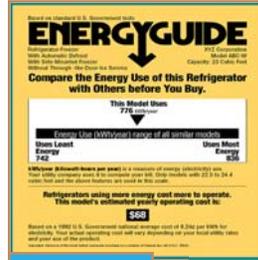
With a remodeler who understands the “building science basics” of how a home functions, you can be assured that, in

addition to investing in aesthetics and livability, you are also investing in improvements that will reap the tangible rewards of comfort, energy efficiency, and durability for years to come.

Myth: I shouldn't seal my house too tightly because it needs to breathe.

Reality: Unintentional air leakage through walls, floors, and ceilings can result in condensation and trapped moisture that eventually rots building components. It is much healthier for you and your home to seal the building shell well and introduce fresh air intentionally.

How can energy efficiency and building science benefit my remodeling project?



An energy efficient project that is designed using the fundamentals of building science and constructed with careful attention to detail can effectively handle moisture (from indoors as well as out), temperature extremes, and wind—keeping you comfortable everywhere in the home and protecting the building from the elements.

Using building science, remodelers can avoid problems such as oversized air conditioning systems which cycle on and off frequently—shortening equipment life and resulting in a cool but clammy home.

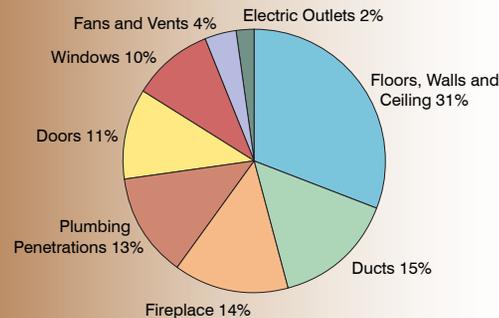
Your remodeled home can be more energy efficient and comfortable and require less maintenance and energy expenditures than before. Furthermore, by employing sound building science, you can avoid risks such as mold and poor indoor air quality.

Will using building science to improve energy efficiency increase the cost of my remodeling project?

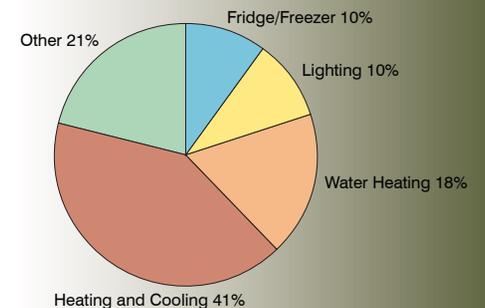
The best part about using building science to identify appropriate energy improvements is that it often doesn't add to the cost of your project. Yet, it lowers energy and maintenance costs and saves you money for as long as you live in your home. A contractor who has completed training in energy efficient remodeling can help determine the most cost effective measures to incorporate into your project.

Also, keep in mind that some energy improvements can actually eliminate other expenditures. For example, sealing against air leakage and increasing insulation in an addition can eliminate the need for a larger furnace to heat the added space. In this way, building science and energy efficiency expertise can actually reduce first cost. Furthermore, studies have consistently shown that energy improvements add to the resale value of homes.

Sources of Air Leaks



Residential Energy Use



Add value and comfort to your remodeling project while cutting energy and maintenance costs!