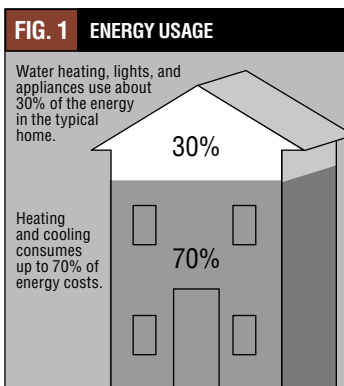


The value of extra insulation

The rising cost of energy affects us every time we fill our gasoline tank. But that's not the only place we experience the results of higher energy costs. We're reminded of it every time we pay our home's gas or electricity bill as well.

That's why increasing the energy efficiency of new homes is a significant priority for both home builders and home buyers.

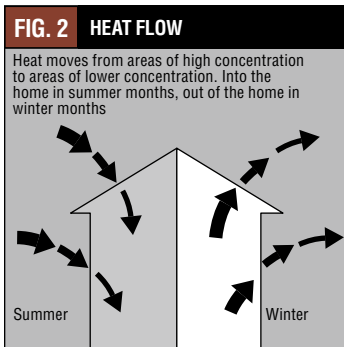
Let's look at where the largest percentage of a home's energy costs are expended and how the usage of a material like QuietBrace® structural sheathing can increase a structure's energy efficiency.



Home Energy Usage

Heating and cooling account for between 55-70% of the energy usage in the typical home. Another 16-20% is used for heating water. And the final 10-29% is used for lighting and appliances.

This means the greatest opportunity for savings is reducing the amount of energy used to heat and cool the home. Specifically, it means that the greatest single factor affecting energy efficiency is "heat". (FIG.1)



Heat Flow Considerations

Heat naturally migrates from areas of high concentration to areas of lower concentration. It moves out of a heated home's interior to an adjacent unheated attic, garage or basement or to the exterior during winter. Then, in summer warm air moves from the hot exterior of a home to its cooler interior.

To maintain an acceptable level of comfort, that heat loss in winter must be made up by a home's heating system. In summer, the heat gain must be

removed by the air conditioner. Reducing the energy consumed in this process starts with reducing heat transfer. (FIG.2)

Heat Transfer Process

Heat is transferred by one of three processes. The first is conduction, which is the transfer of heat through direct contact. Concrete is a heat conductor, and so is wood to a lesser degree.

Convection is the transmission of heat from an area of high concentration to an area of lower concentration by air movement. This is how a home's heating system works.

Radiation is the emission of heat waves directly from a source across a space to a cooler surface that is then heated by the absorbed energy without direct contact or forced air movement.

Insulation Basics

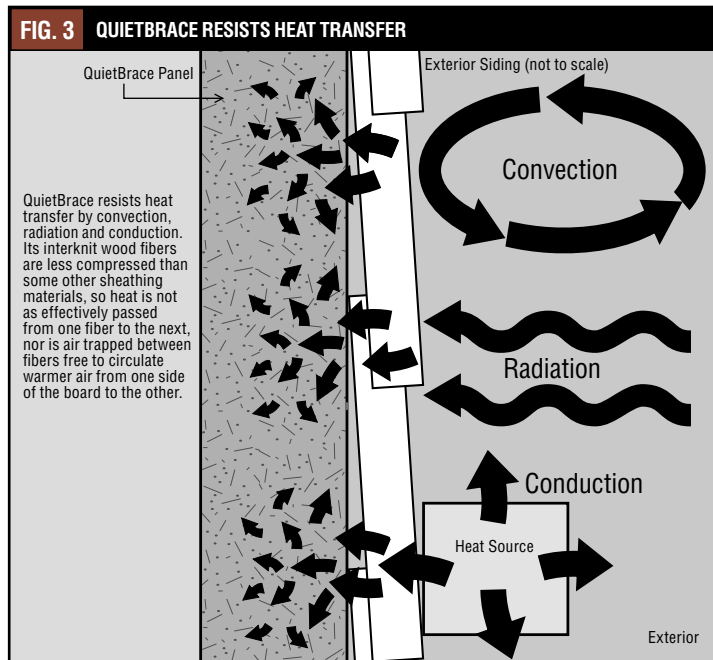
Insulation is designed to create a barrier to heat transfer. It is rated according to its thermal resistance by a measurement called an R-value. Using this

value, different materials can be compared on the basis of their insulating properties. The higher the R-value, the better the material's thermal resistance.

The fact is, insulation standards are pretty good for new construction these days. But instead of focusing on a home's primary insulation materials or priorities, we want to look at an often-overlooked opportunity to get some extra insulation value at no extra cost. We want to consider a home's exterior walls and look at more than just R-values.

When considered as part of a total wall assembly, other factors can affect the insulation's performance, too. If, for instance, the insulation is compressed, it will not provide its full rated R-value. When measured as a full assembly, the R-value will be lower than the insulation alone because some heat will flow around the insulation through the wall's studs. In a wood frame home, these wood structural components create a short circuit around the insulation.

QuietBrace™ Advantages



One way to recover some of that lost efficiency in an exterior wall is through the use of a structural sheathing product that also provides added insulation.

Adding Strength and Insulation

Wood-based structural panel sheathing is the typical solution employed by most builders to achieve code-required racking resistance. But why stop there? Choosing a structural sheathing like Temple-Inland's QuietBrace® can also increase a home's energy efficiency.

QuietBrace is a structural fiberboard sheathing composed of interknit wood fibers that provide an added R-value of 1.31 when applied as a 1/2" thick panel and an R-value of 2.06 at 25/32". That's better than twice the thermal resistance of the popular sheathing products plywood and OSB.

QuietBrace is less dense than plywood or OSB. Although it provides code-recognized structural strength by complying with the specifications of the code-referenced ASTM C208 standard, its wood fibers are not as tightly compacted as denser materials, so it offers more resistance to heat transfer.

In addition, QuietBrace also resists heat transfer by convection. Entrapped air between and within the fibers of the panel cannot circulate, so heat

transfer by air movement is virtually eliminated. And although relatively dense, QuietBrace is not solid, so its intermediate density prevents radiated heat waves from effectively raising its temperature.

QuietBrace delivers another benefit as well. It acts as a thermal break between a home's exterior materials and the studs in its walls, interrupting the short circuit that sometimes allows heat to go around the home's insulation. In this way, it not only adds extra heat resistance as an insulation material, but it also increases the overall efficiency of the wall system as a whole.

Energy and Cost Efficiency

Perhaps the greatest value of all is that QuietBrace increases the energy efficiency of new home construction without adding a cent to material costs. In fact, it routinely saves an average of 28% over plywood or OSB.

You have to apply wall bracing to meet code, so why not install a product that allows you to satisfy the greatest percentage of structural requirements, even in many wind and seismic zones, and increase thermal resistance at the same time?

When you're ready for strength, energy efficiency and cost control, discover QuietBrace sound-deadening structural sheathing for yourself.

R-VALUE COMPARISON

Material	R-value
Rigid foam insulation	8.475
Fiberglass	4.0
Mineral wool	3.33
Fiberboard (asphalt impregnated)	2.64
Plywood	1.26
Softwood lumber	1.25
Gypsum board	.64
Concrete block	.25
Brick	.11

Here is a comparison of the insulating value of some of the most common building materials, all based on a 1" thickness.