For many homeowners on a budget, replacing the old rolls of soft insulation inside their home’s walls is not often a priority. As it turns out, proper insulation can cut utility bills by up to 20%.
A benefit of air sealing is protection from allergens. Insulation that has been well-installed can serve as a barrier against outside allergens, reducing pollen and dust. Proper air sealing prevents air polluting the home from the outside. Ideally, the only air that should find its way into your home should travel through heating, ventilation, or air conditioning systems, which are protected with air filters designed to control air content. With allergens and contaminants regulated, the overall air quality of your home stays at a high standard. Proper air sealing can also guard against insects and pests entering the building.

The greatest benefit of insulation comes down to simple economics: proper insulation means more money in your pocket. That is because efficient insulation reduces the costs of electricity bills by keeping in cool air when it is hot and keeping in warm air when it is cold. Around 42% of the typical American’s utility bill is spent on running a heater or air conditioner to maintain a comfortable temperature in the home. However, when insulation is efficient, the home stays cool in the summer and warm in the winter, reducing the need to keep expensive appliances continuously running. According to the North American Insulation Manufacturers Association (NAIMA), proper insulation can reduce your home’s heating and cooling costs up to 20%.

Lower energy costs and comfortable temperatures in the home are not the only benefits of efficient insulation. Insulation also helps keep noise out, keeping a comfortable sound level in your home. When noise comes from outside the home, such as from traffic or neighbors, insulation within your walls can absorb the sound and reduce acoustics. When sound comes from within the home, such as from indoor appliances like television, insulation around openings in your home can act as a sound barrier and reduce the transfer of sound between rooms. This is particularly useful in multi-family living areas, such as condominium units. When sharing walls with neighbors, insulation becomes a valuable source of privacy.
Batt Insulation is known as one of the most cost-effective insulation options, and thus the most common. Often comprised of fiberglass, cotton, or stone wool, batt insulation comes in the form of blanket rolls. It is easy to use, quick to install, and affordable. When made of recycled content, batt insulation also can be environmentally friendly. Because of these attributes, batt insulation has proven itself a popular choice as basic insulation coverage for attics, walls, crawl spaces, ceilings, and basements in many homes.

Blown-In Insulation is known as one of the greenest insulation options, boasting a low impact on the environment due to its high percentage of recycled content. Comprised of fiberglass or cellulose, blown-in insulation often comes in the form of dense, loose fill. It creates an excellent sound barrier, is effective in saving energy, and resists insects, rodents, and mold. Because of these attributes, blown-in insulation is a favorite option for filling hard-to-reach spaces, attics, and walls.
Spray Foam Insulation is one of the greatest innovations in the insulation industry since fiberglass. It is the most advanced and energy-efficient option available today due to its unique ability to protect against all six possible paths of heating and cooling loss: conduction, convection, radiation, air infiltration, moisture accumulation, and air intrusion. This is because it has properties that not only serve as an insulation but as an air barrier as well. Comprised of a polyurethane formula that is specially mixed on-site, spray foam insulation comes in the form of either a soft compressible foamy material (open cell) or a rigid dense foamy material (closed cell). It can cut energy costs in half and may also help keep pests, noise, and allergens out. Because of these attributes, spray foam insulation is the best choice for attic ceilings, but can also be used for crawl spaces, ceilings, basements, floors, attics, and walls.

Reflective Insulation is known as insulation that was designed specifically for homes in warmer climates, primarily against the sun’s heat that hits the rooftop. Often comprised of aluminum, reflective insulation comes in the form of multiple perforated layers. It is used primarily to reduce attic temperatures, as it reflects the radiant energy of the sun by up to 97%. These properties have the added benefit of enhancing air conditioning and heating performance. Because of these attributes, reflective insulation is a top choice for roof installation, in the rafters, or in walls.
The testing that is used to determine the R-value of material is called the “Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus,” or in short, AST C518. To determine your existing R-Value, you would multiply the inch number of your insulation by the R-Value of its particular type. Below is a chart listing the typical R-Values of the different of insulation type.

<table>
<thead>
<tr>
<th>Insulation Type</th>
<th>R-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiberglass Batt Insulation</td>
<td>R-8 (3”) to R-38 (12”)</td>
</tr>
<tr>
<td>Fiberglass Blown-in Insulation</td>
<td>R-8 (3”) to R-60 (27-1/4”)</td>
</tr>
<tr>
<td>Cellulose Blown-In Insulation</td>
<td>R-8 (2”) to R-60 (18-3/4”)</td>
</tr>
</tbody>
</table>

The below chart features R-Values of particular types of climates for attic insulation.

| Climate Type         | R-Value
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Warm Climates</td>
<td>30</td>
</tr>
<tr>
<td>Moderate Climates</td>
<td>38</td>
</tr>
<tr>
<td>Cold Climates</td>
<td>49</td>
</tr>
</tbody>
</table>
**Insulation Diagnostics**

It is important to pinpoint the problem spots in your home that need insulation, to detect potential energy-losing leaks in your home’s structure that may not be easily apparent. Using certain tools to pinpoint these possible leaks can save you hundreds of dollars in lower bills and ensure the most energy-efficient home for you and your family. Fortunately, there are a variety of different diagnostic tools contractors can use to pinpoint exactly where insulation is needed in your home.

**THE BLOWER DOOR** is a test where a fan is inserted at the front door of your home, fitted with an airtight seal then turned on, pulling air out of the building. A calibrated blower will then reveal the extent of leakage and its locations in the home. The blower door saves costs by testing the integrity of your home’s structure against leakage.

**THE INFRARED CAMERA** uses thermal imaging to indicate problem areas using temperature measurements. Thermal images can show moisture issues and energy losses in the home. In these images, color reveals problems. Dark blue areas indicate air leakages, while dark orange areas indicate too much heat energy, both of which signal the need for insulation. In some cases, the software can compile all this information into a report.

**THE MANOMETER** is one of the three components that make up a primary blower door system. It is often connected to a blower door to measure air flow and pressure, and also to record test results. Along with a calibrated fan and a door-panel system, the manometer helps the blower door test determine how much air is leaking from your home.

**3E PLUS VERSION 4** is a software program that calculates appropriate insulation thickness. Thickness is critical in insulation, and it is imperative to use the right tool to determine the appropriate thickness necessary. The software can also calculate the environmental, energy, and economic savings insulation systems provide.
CHOOSING YOUR CONTRACTOR: The Questions to Ask

Once armed with a basic understanding of insulation, the next step is to find the right contractor to complete your installation. There are many questions you will want to ask to decide the right contractor for the job, and this guide will ensure you do not overlook a single one.

> What is your total cost quote for my project, including materials and labor?
Quote for insulation installation can vary widely, so it is important to be clear exactly what is accounted for in the quote. Typically, quotes will include materials and labor and will be based on a fixed project price, the contractor’s hourly rate, or your home’s coverage area. If a contractor charges a fixed rate, ask how they will handle possible additional charges after the contract is signed. If a contractor charges an hourly rate, ask for an estimate on how many hours they expect to be on site. If contractor charges by coverage area, ask how they determine the coverage area of insulation needed. It is also helpful to ask for at least three quotes, to compare the pricing between different contractors.

> How long do you estimate my project will take?
If you expect an insulation job to be done well, it should not be rushed. However, it is understandable to want the job done as quickly as is reasonably possible. That is why it helps to know how long an insulation project typically takes to complete. A contractor’s estimate should fall logically within that timeframe. Make sure to take into consideration any estimates that may account for different scenarios: some projects need the removal of old insulation while other projects involve a brand new home with no old insulation to remove.

The size of the project is also a factor. Installing in an attic will be much quicker than installing in an entire home. Below is a general chart of time frames for regular insulation jobs.

<table>
<thead>
<tr>
<th>Typical Insulation Installation Job</th>
<th>Typical Timeframe Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic Insulation</td>
<td>2-3 hours</td>
</tr>
<tr>
<td>Crawl Space</td>
<td>1-2 days</td>
</tr>
<tr>
<td>Wall Spray Foam Injection</td>
<td>2-5 hours</td>
</tr>
<tr>
<td>Cavity Wall Blown-In</td>
<td>1 day max</td>
</tr>
</tbody>
</table>
> Are you licensed to operate in my state?
It is important to hire a contractor who possesses a license to operate in the particular state your home is located. Every state has different requirements, but in general, a state license shows that the contractor passed an exam on applicable business and trade laws, and met state-specified education and experience requirements. Some states even require contractors to deposit a “surety bond,” which protects you if the contractor does not complete the work. Avoid unnecessary hassles by making sure your contractor is licensed.

> Are you insured to cover any accidents while working in my home?
When hiring a contractor, ask whether or not they are insured. Insurance covers both liability and workers’ compensation, which means you are covered if the contractor causes damage to your home or if there are any accidents. Insurance protects everyone involved and is a must if you want to ensure you are protected as a consumer. Protect your insulation investment by making sure your contractor is insured.

> Are you certified under OSHA?
The Occupational Safety and Health Administration, or OSHA, is government agency whose mission is to “assure safe and healthful working conditions for working men and women by setting and enforcing safety standards...” If a contractor is OSHA-certified, it shows that they operate responsibly, under high standards of safety, fulfilling all safety requirements and reducing risk and liability on all the work they do. When contractors violate OSHA’s safety and health standards, they are fined. Ensure that all safety precautions are met by making sure your contractor is OSHA-certified.

> How many years of experience do you have?
In any industry, substantial work experience is valuable in building a contractor’s skill in their trade. The longer a contractor has been working in insulation, the higher their skill and knowledge usually are. It is also important that they specialize in installation. Also, how many years the contractor has been in business shows whether or not the contractor is well-established in the local community.

> Can you provide credible references, referrals, and reviews?
Word of mouth is often the most powerful testimony of good work, and it is no wonder. The references, referrals, and reviews of actual customers reveal the strengths of a particular contractor, as well as their weaknesses. In fact, do not stop at reviews from the contractor, but seek out unbiased reviews from online rating sites you trust. This is important to study before hiring the contractor so that you are aware of any possible adverse experiences reported by another customer in the past. It may spare you from suffering the same problem with your home insulation project.

> Can you provide expressed warranties for your work?
An expressed warranty is the contractor’s written guarantee regarding the quality of his or her work. If anything is wrong with the insulation installation work that was done, the contractor should fix the problem for no additional charge. Express warranties may vary between contractors, but when a contractor offers a generous or reasonable express warranty, it shows their confidence in the quality of the work as well as a willingness to stand behind their work.

> Are you familiar with the building codes and requirements for my home?
Building codes are regulations usually set by the city that dictate the standards related to construction, design, alteration, maintenance, and safety. Buildings must conform to these codes and requirements to ensure the health and welfare of residents. It is important that the contractor you hire is familiar with your particular local building codes and needs, and that they fully adhere to them. (cont. on next page)
CHOOSING YOUR CONTRACTOR: The Questions to Ask

(cont.)

> Are you an active member of the following associations?
When looking to hire a contractor for your insulation needs, active membership in contractor and industry associations is an excellent quality. It shows a commitment to their trade.

**NAHB – The National Home Builders Association**
The National Home Builders Association (NAHM) is one of the largest trade organizations in the United States. Their mission is to enhance the housing industry by providing opportunities for all consumers to have safe, decent, and affordable housing.

**ICAA – Insulation Contractors Association of America**
The Insulation Contractors Association of America is an organization whose mission is to give their members access to cutting edge knowledge in the industry of insulation.

**SPFA – Spray Polyurethane Foam Alliance Industry**
The Spray Polyurethane Foam Alliance is the collective voice, along with the educational and technical resource, for the spray polyurethane foam industry.

**BBB – The Better Business Bureau**
The Better Business Bureau (BBB) is a nonprofit organization whose mission is to promote marketplace trust.
Making energy-efficient home improvements is a great idea.

Let our professional team help you with selection and installation of the best possible insulation and air sealing products for your home. Start with a free estimate today by calling us or requesting an estimate on USI.com.

Insulation Recommendations by Geographic Area

Learn the recommended insulation levels for improving your home with additional insulation. Visit USIinc.com for a guide to rebates and energy efficiency.


