



ECOBROKER International

Green Topic Pages

Insulation

Technology Snapshot & Benefits:

You can save a lot of money by installing or improving insulation. Insulation retards the flow of heat and is one of the most cost-effective investments that you can make. The effectiveness of insulation is measured by its tested resistance to heat flow and is known by its R value. The greater the R value, the greater the effectiveness. One of the easiest and most effective places to install insulation is in the attic, since heat rises from the heated rooms below. Insulation comes in many different forms including the familiar fiberglass, Styrofoam, vermiculite, pouring wool, cellulose materials such as shredded newspaper, and numerous foamed-in-place types. Particularly within the fiberglass and rigid foamed board types, there are a variety of choices of heat-reflective coatings. Properly installed insulation always improves comfort and reduces heating and cooling costs.

Estimated Cost Savings:

Heating buildings is one of the largest expenditures of energy in the nation and one of the greatest opportunities for saving. The average U.S. household spent more than \$2,350 in 1999 for energy: \$1,200 for home energy and \$1,150 for motor gasoline to run vehicles. (AEO2001, p.213) Of the \$1,200 spent in the home, nearly half is spent for heating and cooling (AEO2001, p.162) and in aggregate, amounted to more than \$50 billion in 1999. (p.159)

For new construction, the maximum recommended amounts of insulation yield huge savings compared to no insulation. For existing buildings, upgrading to the recommended amount of insulation will save money. The amount of savings vary widely depending upon your starting point namely, how much insulation you already have. See Energy Star's [Cost-Effective Insulation Values for Existing Homes](http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_insulation_table#insulationTable) (http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_insulation_table#insulationTable) for recommended insulating values for walls, floors, ceilings, and basements.

In general terms, when you double the R value of your insulation, the heat flow through the insulated surface will halve. Your bill, however, may not halve because of other, less well-insulated surfaces in the building. Typical savings for retrofit insulation are on the order of 20-30% of your heating bill. For a monthly heating bill of \$200, this can amount to \$40-\$60 in savings.

Issues:

A plan will help you with insulating decisions. In general, you should bring the attic insulation up to current standards because it is easy to do so. Wall insulation can be problematic, as many walls are little more than the width of a 2x4, which limits the depth of insulation that can be easily installed. Sometimes a second interior wall can be built which provides a deeper cavity for insulation as well as providing an easy opportunity to upgrade electrical wiring and new cable and telephone wiring. This is most economical when done as part of a larger room-remodeling effort.

Regional Issues:

The amount of insulation that you need varies upon your climate and exposure to prevailing winds. Northern locations benefit most from insulation during the heating season; southern locations benefit most during the cooling season.

Installation (Getting It Done):

Be sure to get bids from two or three (or more) contractors and explore different methods and types of insulation. Multiple bids will allow you to gain immediate perspective on the true costs and value of insulation in your area.

More Information on This Topic:

[U.S. Department of Energy's Building Technologies Program: Insulation Materials](http://www.eere.energy.gov/buildings/info/components/envelope/insulation.html)

<http://www.eere.energy.gov/buildings/info/components/envelope/insulation.html>

[Cost-Effective Insulation Values for Existing Homes](http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_insulation_table#insulationTable)

http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_insulation_table#insulationTable

[Buildings for the 21st Century: Wall Insulation](http://www.ecobroker.com/userdef/articles/EEInsulation/Wall_Insulation.pdf)

http://www.ecobroker.com/userdef/articles/EEInsulation/Wall_Insulation.pdf

[Buildings for the 21st Century: Ceilings and Attics](http://www.ecobroker.com/userdef/articles/EEInsulation/Ceiling_Attic_Insulation.pdf)

http://www.ecobroker.com/userdef/articles/EEInsulation/Ceiling_Attic_Insulation.pdf

[Buildings for the 21st Century: Basement Insulation](http://www.ecobroker.com/userdef/articles/EEInsulation/Basement_Insulation.pdf)

http://www.ecobroker.com/userdef/articles/EEInsulation/Basement_Insulation.pdf

[ColoradoENERGY.org - Calculating Savings: Adding Insulation](http://www.coloradoenergy.org/procorner/forumulas/insulation.htm)

<http://www.coloradoenergy.org/procorner/forumulas/insulation.htm>

References:

[Lawrence Berkeley National Laboratory](http://www.lbl.gov/)

<http://www.lbl.gov/>

[U.S. Department of Energy](http://www.energy.gov/engine/content.do)

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