Save Like an Islander
Insulation Options for Maine Island Homes

Barging a spray foam truck out to Monhegan Island.

Insulation is an important part of an energy efficient home, especially on Maine islands, with their cold, windy winters. Insulation prevents heat from escaping a building and is one component of the full "building envelope," which includes a weather barrier, air barrier, and thermal barrier (insulation). Unfortunately, many Maine island homes are not sufficiently insulated, meaning that homeowners are wasting heat and paying higher heating bills. The average Maine home has about 75% less attic insulation than recommended by the U.S. Department of Energy[1] and many island homes that were originally seasonal cottages have little or no insulation.

Once you've had an energy assessment and tightened up your home with basic air sealing, adding new insulation is a great way to further lower the cost of heating your home and increase comfort. Your energy analyst will help ensure that your home is not too tight before installing new insulation and air sealing. This fact sheet will help you consider your options for adding insulation to your home and the incentives and financing available for these upgrades.

Continued inside

Selecting your insulation

The effectiveness of insulation is measured by its *R-value*, which is a measure of how resistant it is to heat transfer. Materials with a higher R-value will insulate a home better than materials with a low R-value, resulting in better energy efficiency and lower heating costs. It is important to note that factors other than R-value can dramatically affect a building's overall energy efficiency. For example, even with a high R-value, insulation that is not properly installed to stop air flow will not be effective at preventing heat from escaping from your home. It is also important to remember that tightening up your home too much can result in indoor air quality problems such as moisture buildup and mold growth. When prioritizing insulation projects based on cost effectiveness, energy advisors recommend starting with the basement, then the attic, and finally the walls. This fact sheet discusses only insulation types eligible for Efficiency Maine incentives and excludes some traditional insulation materials such as fiberglass.

Cellulose

Cellulose insulation is produced largely from recycled paper, which has been treated with fire- and moisture-resistant chemicals. However, as an organic material it must stay dry to avoid clumping or supporting mold growth. Cellulose can be installed in two ways: densely packed into existing walls, often called "dense-pack"; and blown into attics, known as "loose-fill". This requires special equipment that can be difficult to get out to some islands, such as those not served by a car ferry. For the amount of heat retention it provides, cellulose is by far the most cost-effective insulation material available.

Pros:	• Easy to install in existing construction (loose-fill) • Very low cost • Made from recycled material
Cons:	• Under humid conditions, can absorb moisture and support the growth of mold • May settle over time, leaving gaps within walls (dense-pack) • Does not protect against air infiltration from wind (loose-fill)

Installing loose-fill cellulose in an attic.

Spray Foam

Spray foam is one of the most effective insulation materials available today. Spray foam must be applied as a liquid, which is sprayed evenly into wall cavities or over foundation walls and allowed to expand. Some spray foam material contains toxic chemicals and spray foam installed in conditioned spaces like a basement must be covered with fire-resistant paint. For more information about safe application of spray foam, visit the EPA's Spray Polyurethane Foam information page at http://1.usa.gov/1CL2nrm Installing spray foam requires special equipment that can be difficult to get out to some islands, such as those not served by a car ferry.

Pros:	• Very effective insulation with high R-value (R5-R6 per inch) • Provides air and moisture barrier • Conforms to oddly-shaped spaces (such as fieldstone basement foundations) • Commonly available in cans in small quantities for filling gaps in existing insulation
Cons:	• Expensive • Larger (building-scale) installations require specialized equipment • Some products contain toxic chemicals • Some products use environmentally harmful production methods • Must be covered with fire-resistant paint

Foam Board

Foam boards are excellent insulators and are easy to install in new construction. Because they are rigid and do not allow the passage of moisture or air circulation, foam boards are a very resilient insulation material. Foam boards are also unique in that they have extremely high compressive strength and can be used beneath poured concrete to create insulated concrete slabs.

Pros:	• Easily cut to different sizes to fit within walls • High R-value (R3.6 – R8 per inch) • Edges can be sealed to studs with spray foam • Can be used as exterior insulation • Impenetrable to wind • Does not absorb moisture
Cons:	• Cannot be installed without access to wall cavity • More expensive than most batt insulation. • Environmentally harmful production methods, often using hydrochlorofluorocarbons (HCFCs)

Rigid foam against a foundation.

Mineral Wool

Mineral wool or rock wool is made from fibers produced from molten basalt. It is available as batts or boards. Mineral wool insulation does not easily absorb water and batts are generally more rigid than fiberglass.

Pros:	• Can be used as interior or exterior insulation • Non-flammable • Resistant to water absorption • Not attractive nest material for rodents or insects
Cons:	• Requires access to wall cavity - cannot easily be blown into walls • Slightly more expensive than other materials with comparable R-value • Moderate resistance to air infiltration from wind

Comparison

Insulation type / specifications:	Cellulose	Spray foam	Foam board	Mineral wool
R-value (per inch)	3-3.8	5-6	3.6-8	3.2-3.5
Commonly available form(s)	Loose-fill, dense-pack	Sprayable liquid	Rigid boards	Batts, rigid boards
DIY retail price, estimate (3.5"x4'x8' area)	$4 to $5	$185 to $220	$46 to $74	$11
DIY retail price, estimate (R30 roof, 4'x8' area)	$10 to $15	$250 to $300	$80 to $110	$27 to $30
Commonly installed without removing wall	Y	N	N	N
Protects against wind penetration	N (loose-fill) Y (dense-pack)	Y	Y	N (batts) Y (boards)
Provides moisture barrier	N	Y	Y	N

Financing options and incentives

Efficiency Maine offers incentives of up to $1,000 for approved wall, basement, and attic insulation. In addition to the rebates available through the Home Energy Savings Program, Efficiency Maine also offers low-interest, long-term loans of up to $25,000. For more information on Efficiency Maine financing options, visit: http://www.efficiencymaine.com/at-home/energy-loans/

Group purchasing: strength (and savings!) in numbers

Islanders know that buying in bulk and sharing with neighbors helps reduce the cost of getting goods and services out to their island, and the same is true for heating systems! For example, homeowners on several Maine islands have built on the Weatherization Week model by sharing the cost of barge or ferry trips for a spray foam truck, reducing the cost for everyone.

About the Island Institute

Founded in 1983, the Island Institute is a membership-based nonprofit organization headquartered in Rockland, Maine that works to sustain Maine's island and remote coastal communities, and exchanges ideas and experiences to further the sustainability of communities here and elsewhere. The Island Institute's Community Energy Program supports island communities seeking to better understand and confront their unique energy challenges. We work to reduce the cost of energy for homeowners, businesses and municipalities through community-based, nationally relevant models that increase energy efficiency and renewable energy options.

For more information on the Island Institute's energy efficiency programming, please contact Brooks Winner, Community Energy Associate, at bwinner@islandinstitute.org, (207)594-9209 x 148 or visit our website at **http://www.islandinstitute.org/energyinitiatives.php**

This fact sheet was reviewed by: Dana Fischer, Efficiency Maine; Ann Goggin, Goggin Energy; Keith McPherson, Home Energy Answers; Hannah Pingree, North Haven Sustainable Housing; Sam Saltonstall, Peaks Environmental Action Team

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References

1 Efficiency Maine. Insulation. http://www.efficiencymaine.com/at-home/insulation/

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