

Deep Energy Retrofit, Westborough, Mass.

KEY DRIVER

The deep energy retrofit of a house in Westborough stands out as an example of how an owner's individual motivation and the historic nature of a building can shape and challenge an extensive retrofit.

Owner Caroline Fisher, a designer, did not pursue the home's retrofit so she could benefit from the anticipated energy savings. Rather, she was motivated by her belief in the social value and marketability of an energy-efficient home. Fisher noticed that certain homes within the community frequently changed ownership. This led her to think about the features that make some homes more comfortable to live in than others, which led her to classes in super-insulation at the [Yestermorrow Design /Build School](#) in Vermont. There she learned that an energy-efficient home not only saves energy, but also creates a home that is comfortable, quiet, and healthy — a wonderful home to live in.

DESIGN & IMPLEMENTATION

Fisher's Westborough house is an early 19th century Greek Revival antique. This made it a challenging project that required innovative and creative construction techniques. However, Jay Harnett, the builder for the retrofit, did not have experience in energy retrofits and needed to be convinced of the value of super-insulation. On Fisher's recommendation, Harnett took a class at Yestermorrow, where he learned about the inefficiencies of standard insulation, as well as the money-saving benefits of closed-cell foam.



Super-insulating the antique home was not an easy task due to the construction history of the house. Harnett installed two layers of rigid foam insulation to the back half of the house. On the front half, he added extra space to the wall cavity and blew in cellulose insulation. He then had to reframe the windows and doors to accommodate the additional insulation. Last, he attached the clapboard siding. Despite the complexity, Harnett has been eager to work on another super-insulation retrofit ever since he finished the project.

The project was completed in the summer of 2009. Fisher has put the newly retrofitted house on the market. She hopes a new owner will soon enjoy the comfort and benefits that this energy-efficient home offers.



Super-insulated attic

ENERGY-EFFICIENCY SPECIFICATIONS

WALLS: R-40 rigid foam & blown-in cellulose insulation

ATTIC: R-60 insulation (28" R-100 in gables)

BASEMENT CEILING: Soy foam insulation

WINDOWS: Pella triple-pane, U-0.26

HEATING & COOLING:

Heat-recovery ventilation system for forced hot-air distribution system

LIGHTING: Compact fluorescent

APPLIANCES: ENERGY STAR refrigerator & dishwasher