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## DEEP-ENERGY RETROFIT - BELMONT, MA

Residential Windows and Doors  
Project Profile

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## REHAU uPVC Windows and Doors Play a Key Role in Boston Home's Energy Efficiency Revolution

Bostonians have been known for having bold ideas and impressive foresight ever since colonial times. Unfortunately, they didn't put it to good use when designing and building homes throughout the first half of the 20th century. During this period of low-cost energy and little or no awareness of the harmful effects of carbon emissions, it never occurred to Bostonians – or builders anywhere in the US – to incorporate energy efficiency into building design.

As a result, the Greater Boston area is full of beautiful two- and three-story homes built in the early and mid-20th century that are, to put it mildly, energy inefficient. Buyers are eager to preserve the original features that give these residences their historic charm. They are not as enthralled, however, about living with the energy inefficiencies that previous owners through the generations considered a fact of life.

Renovation projects known as “deep-energy retrofits” turn these “energy sieves” into highly efficient structures. The process involves a whole-building analysis and adaptations that experts estimate can produce cost savings as much as 75% greater than standard energy efficiency remodeling efforts.

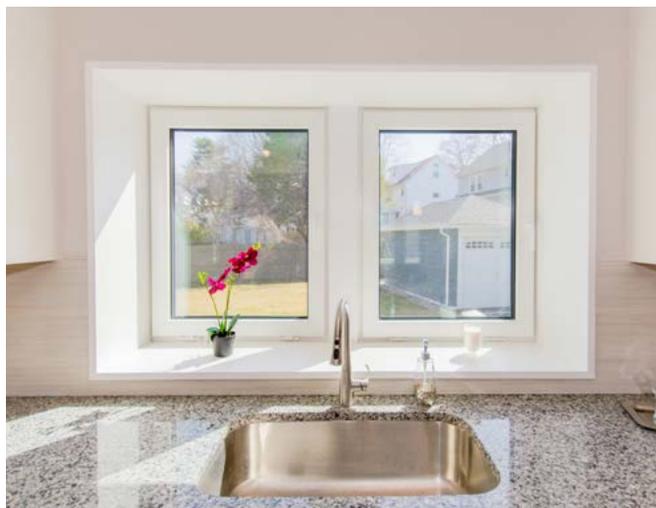
A deep-energy retrofit combines techniques such as energy-efficient equipment, air sealing, moisture management, controlled ventilation, insulation and solar control so that dramatic energy savings are achieved. Once a deep-energy retrofit project is completed the structure typically exceeds building code energy requirements by two to three times.

Boston-area architectural firm SA2 Studios and contractor Good Energy Construction combined efforts on a deep-energy retrofit of a 1927 three-story home in the Boston suburb of Belmont. “It was a complete gut renovation,” recalls Brian Butler of Good Energy Construction. “It’s easier to explain what was kept than what was not.”

A key to increasing the home's energy efficiency were the REHAU GENE windows and doors that were used. “These are high performance in every measure,” says David Paulus, owner of Milwaukee-based WASCO Windows, the manufacturer of the windows and doors for the Belmont home.

Butler explains that when selecting windows for the Belmont home, he had to balance cost against performance. The GENE series, which is made from high-tech fiber-reinforced composite material, checked both boxes and more. “Frankly, the product was excellent, the cost was within our range and, because WASCO has its operation in the United States, the turnaround time was very attractive to us relative to products that are shipped from Europe,” he says.

The efficiency of the REHAU windows was evident immediately. The project was completed in early 2015, right in the midst of one of Boston's harshest winters on record. The project's architect, Sayo Okada, recalls that the open house in February 2015 coincided with one of several sizable Boston snowstorms that year. They used minimal heat, yet the home stayed plenty warm. “Everybody was impressed by how warm the house stayed despite the cold temperature outside. It was a good education for a lot of people,” she says.



**Project:** Deep-energy retrofit, Belmont, Massachusetts  
**Type of Construction:** Single-family home, renovated in 2015  
**Manufacturer:** WASCO Windows  
**Scope of Project:** 31 windows. 2 doors  
**REHAU Systems Used:** GENE windows and doors