



COOLING & HEATING

Devens Green DOE Challenge Home Devens, Mass.

Imagine that instead of costing you energy, your home actually produced energy? This is exactly what Wes Parlee made possible with his 1,912-square-foot custom home in Devens, Mass.

Parlee's home only cost about \$40,000 more than traditionally built homes of the same size, but with an annual average of \$6,000 in energy savings, the investment will pay for itself in about six years and continue to produce profit after that. This includes a \$1,000 utility rebate from the power company for the energy his home feeds back into the grid.

► Challenge

To build a highly efficient custom home that met strict DOE Challenge Home as well as Zero Energy home criteria.

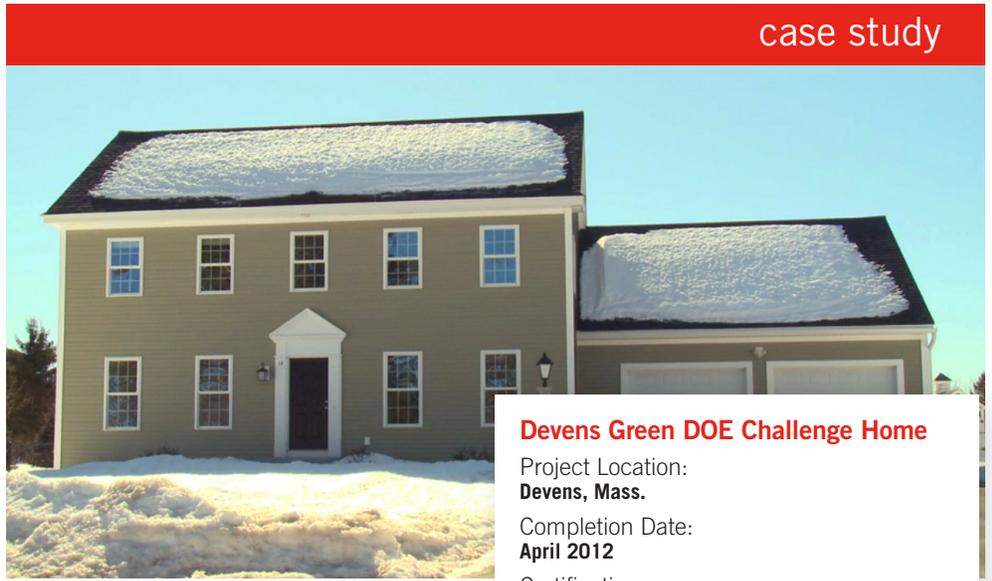
Parlee's home is one of eight in the Devens Green Zero Energy community built by Transformations, Inc., a Townsend, Mass.-based builder specializing in developing and building sustainable Zero Energy communities.

Carter Scott, president, Transformations, designed and developed the community in partnership with MassDevelopment, the Massachusetts state finance and development authority, and Building Science Corporation, part of the U.S. Department of Energy's Building America program. The initial project started in 2009, and Parlee moved into his home in April 2012.

Parlee worked with Scott on design details for the 3-bedroom, 2-bath home, which features a New England Saltbox exterior design and a spacious open floor plan inside. "We have really enjoyed the beautiful indoor features like the bamboo flooring and high-end wood laminate cabinets.

► Solution

An H2i[®] ductless system from Mitsubishi Electric helped the team save enough energy to win the DOE's Housing Innovation Award and earn the homeowner a \$1,000 monthly utility rebate.



But what is really fantastic is the fact that our home generates enough energy to power our utility needs and enough extra to power an electric car for 30,000 miles per year," said Parlee.

The home incorporates many cutting-edge building science features, such as a super-insulated building shell, carefully flashed triple-pane windows (R-5 value), 78 235-watt photovoltaic panels on the roof and three super-efficient HVAC systems from Mitsubishi Electric US Cooling & Heating Division (Mitsubishi Electric), Suwanee, Ga. The HVAC systems are ductless with one wall-mounted indoor unit placed in the living area downstairs, another in the master bedroom downstairs and the third in the upstairs hallway. Because of the extremely cold New England winters, the team selected the Hyper-Heating (H2i[®]) systems. The high-performance twin rotary compressor allows for energy-efficient operation at extremely low ambient temperatures. For ventilation, the home uses a heat recovery ventilator (HRV) set on a timer to bring in conditioned fresh air at 74 CFM to each of the three bedrooms. Also, for indoor air quality, paints and finishes include low to no volatile organic compounds.

"The house is very comfortable," said Parlee. "There are no room-to-room temperature differences like you find in a regular stick-built home. In fact, during summers when outdoor temperatures reach 98 degrees or higher, I often only have to run the upstairs cooling unit. The home is so well-insulated and the ductless units are that efficient!"

Frank's Heating Service, Tewksbury, Mass., installed the HVAC system. Even with the extreme cold temperatures the Northeast

Devens Green DOE Challenge Home

Project Location:
Devens, Mass.

Completion Date:
April 2012

Certifications:
DOE Challenge Home 2013 Housing Innovation Award, ENERGY STAR[®]- Version 3, EPA Indoor airPLUS

Project Team

Owner:
Wes Parlee

Builder:
Transformations, Inc., Townsend, Mass.

HVAC Contractor:
Frank's Heating Service, Tewksbury, Mass.

Mitsubishi Electric Equipment Installed

- (3) MSZ-FE12NA Wall-Mounted Indoor Units
- (3) MUZ-FE12NA H2i[®] Outdoor Units

experiences, ductless units are ideal. The units put out 92 percent of their rated capacity at 5 degrees Fahrenheit and 58 percent at -13 degrees Fahrenheit.

Transformations has begun incorporating Mitsubishi Electric split-ductless systems into many of its sustainable buildings because of the system's energy-efficiency, performance, reliability and ease of installation. "We've come to rely on Mitsubishi Electric systems for almost all of our homes' HVAC needs," said Scott.

Reflecting back on his previous home, Parlee is very pleased with the indoor comfort. "When we had the other house, we were spending all this money on oil to heat the home in winter," said Parlee. "In this home, we do not have these bills, so in the winter, we keep the house at a very comfortable 71 degrees. The house has a consistent temperature."

Parlee was so pleased with his experience with Transformations that he is now an employee, providing assistance with quality control and selling new homes. ■