

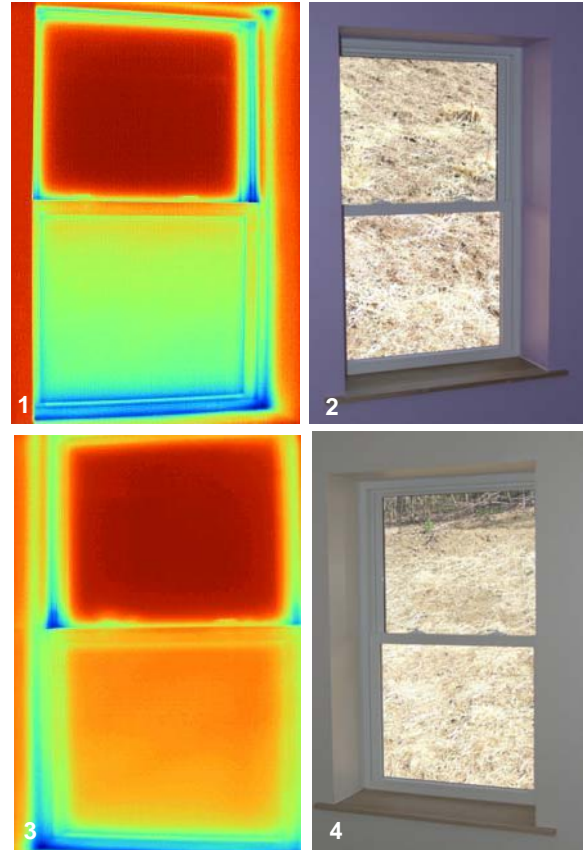
High Performance Windows: Taking an Infrared Look

One of the key features in **Building America's** "near zero energy" home constructed by **Rural Development Inc. (RDI)** in Colrain, Massachusetts (see CARB News, May 2007) is its high-performance windows. The windows have double glazing (one pane has a low-e coating) and there is an additional low-emissivity polymer film suspended between the panes. This construction, along with the krypton gas used to fill the voids between the panes and the Heat Mirror® film, result in a U-value of 0.20 Btu/ft²hr°F.

Installing Heat Mirror windows in the home was a team effort. Window researchers at **Lawrence Berkeley National Laboratory (LBNL)** contacted **Southwall Technologies**, the manufacturer of Heat Mirror film. They also contacted Paradigm Windows, the manufacturer of windows used by RDI. Together, Paradigm and Southwall were able to provide these Heat Mirror windows to the project at no incremental cost.

CARB's modeling predicts that the lower U-values of the windows will save home occupants 43 gallons of propane annually – about \$100 at current propane costs. In addition to the energy savings, there is a comfort benefit to these high-performance windows. In May, researchers from the **National Renewable Energy Laboratory (NREL)** performed tests on the home. With an infrared camera, NREL obtained images that demonstrate the performance of these windows. The top and bottom sashes of the windows (*above*) were installed with different types of glazing, and testing has confirmed comfort differences that result. In the window in the purple wall (1,2), the top sash contains the Heat Mirror product; clear double-paned glass is in the bottom. The window in the white wall (3,4) also has Heat Mirror glazing above; the bottom sash is from a double-pane low-e window typically used by the builder.

Even with a relatively mild temperature difference (52°F outside, 69°F inside) the effect of the Heat Mirror is clear. As expected, the inside surface of the clear window is coolest at approximately 61°F. The inside surface of the double-pane low-e window is warmer at an average of 64°F, and the surface temperature of the Heat Mirror window is 68°F -- almost at room temperature. For more information on this project, contact Robb Aldrich at raldrich@swinter.com.



Progress on Overlook at Clipper Mill

Building America's ongoing focus on community-sized projects that encompass energy conservation and resource efficiency on the scale of a development has led CARB into working with

Struever Bros. Eccles & Rouse on its Overlook at Clipper Mill

project in Baltimore, Maryland. Clipper Mill has a mix of residential and commercial uses that combine rehabbing old mill build-

ings with new construction. New housing is taking the form of 20 duplex units that are within walking distance of restaurants, retail, and a light-rail rapid transit system into the city. On-site storm-water management with a central drywell and landscaping that is not water-intensive are other approaches that will be applied on a community scale. This past week, SWA inspected two units under construction (*above*), with particular focus on optimum value-engineered framing and envelope integrity. According to SWA's Srikanth Puttagunta, one of the biggest challenges has been helping sub-contractors make the shift from outdated "rules of thumb" to science-based methods and techniques so that they will reach performance levels that will result in 40 percent total source energy savings. Among the next steps are air sealing of rim and band joists, foam insulation over right-sized HVAC ducts, blown-in insulation, and selection of green finishing materials and products. Overlook is also in the LEED for Homes pilot, and many of the lessons learned here will be carried over into other community-scaled Building America projects in the mixed, humid climate region. For more information contact Srikanth Puttagunta sri@swinter.com at 203-857-0200, ext. 275.



Are You a Future Building America Builder?

Four of the U.S. Department of Energy's Building America teams (including the CARB team) are preparing proposals for continuing their work with DOE. It's an opportunity for CARB and SWA to reach out to builders we might not have worked with in the past, but who might be interested in working as a CARB team member on high-performance housing. What makes a good Building America partner? Production builders responsible for communities of homes, so that new high-performance concepts and technologies can be tested on many houses in a development or community. We're looking for CARB team builders who are willing to commit to the Building America benchmarks, going far beyond ENERGY STAR, and improving performance along the way. Working with CARB gives the builder access to some of the latest ideas in high-performance houses, using systems and specs provided by CARB and tailored to the builder's market. If you're a builder who might fit the bill, contact SWA's Bill Zoeller at wzoeller@swinter.com, or at 203-857-0200, ext. 203 ASAP.