Cost Effective Energy Retrofit Research Underway

Building scientists and home energy nerds have known for a long time that the best way to reduce the overall energy usage in North America is to dramatically improve the way the 130 million *existing* homes operate. And now, a partnership in Grand Rapids Michigan's Black Hills Neighborhood is attempting to come up with the plan to do exactly that: Improve the way existing homes operate—from Grand Rapids, San Diego to Boston and beyond.

Habitat for Humanity, along with Dow Building Solutions, Michigan State University, Ferris State University's Energy Center, are working together on the "Habitat Cost Effective Energy Retrofit (CEER) Program Mixed - Humid and Cold Climate" project through the US Department of Energy's BuildingAmerica Program.

The four reasons for doing this include:

1. To identify the most common "archetypes" of homes in various parts of the country.
2. To test those "most common" homes in order to identify best practices and most effective technical strategies.
3. Once we know what works best and is most cost effective for a large number of homes, we can offer simple "if this is your home then try X, then W, then Z"-type recommendations online and at the point of sale for home energy purchases.
4. To develop consistent processes for large scale implementation.

Habitat in Grand Rapids has built and rehabbed dozens of homes in the Black Hills Neighborhood since the early 1980's and identified some simple ranch homes to be rehabbed for future families. Dr. Tim Mrowoski from MSU and his team have now collected a database of "typical" homes for major Midwestern markets, including greater Grand Rapids. These Black Hills homes happen to be very common to other ranch homes in West Michigan. After walking through the homes, research team members recommended them as test homes.

Thanks to a grant from Dow and to a partnership with the Kent County Land Bank, Habitat lined up three homes (956 Woolsey SW, 937 & 941 Merrill SW) and will spend the next year testing various energy efficiency measures. Once research is complete, Habitat will finish rehab work with volunteers and donated material in order to sell it to a qualified, hard-working family who needs a hand up—not a handout. Any of the homes that are fully gutted will also qualify for LEED for Homes certification.

Research is being done by MSU and FSU students and faculty with support from Dow and Habitat. They begin with the lowest cost and simplest forms of energy efficiency including cans of spray foam at joints and in gaps, spray foam in rim joists, and other air sealing measures. From there they will test other wall insulation and mechanical system combinations. At each step the homes are tested and analyzed.

Habitat Director of Strategic Initiatives Chris Hall enjoys seeing young people included in the project, "The Michigan State and Ferris State students have really been on the frontline the whole way and they're getting their hands dirty—in a good way. What they're learning will directly be applied to what they do in their careers in architecture, engineering, construction management or beyond. And that their work on these homes specifically will benefit a low-income family is especially cool."

New construction is not part of this project but Habitat works closely with Ferris State to push the envelope there too. But why not concentrate more on new construction in this project? According to Hall, "new homes are a drop in the bucket! Plus, those being built must meet (historically speaking) very stringent energy codes. Toss in ENERGY STAR, local/regional green ratings and LEED for Homes and you quickly see that new homes are not the answer compared to the 130 million energy hogs on every street in America. What we're doing in the Black Hills will impact the way homes operate from sea to shining sea. That seems like a much more effective way to reduce energy consumption than looking at stricter codes for new construction."

Check back for updates as research data is produced.