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Office of Energy Efficiency & Renewable Energy

DOE Zero Energy Ready Home

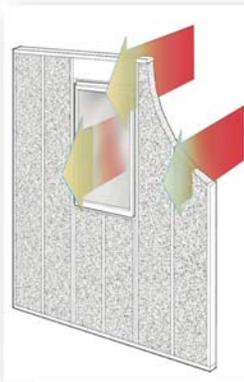
November 2014

A note from Sam Rashkin:

It's the Window, Stupid...

I have personally delivered over 25 zero energy ready home (ZERH) training classes across the country. Consistently, one of the biggest “ah-hah” moments in the four-hour course is the huge impact windows have on overall wall assembly performance. Even with just a 15% window-to-floor-area ratio, windows represent a giant thermal hole that disproportionately upsets all the good work you do on the insulated wall assemblies. Who knew? Below is a table I developed that compares the overall R-Value of the entire wall assembly with various cavity insulation levels. Assuming approximately an R-3 window (e.g., U-value = 0.30) representing 15% of the wall area, we can invest substantial cost to increase the wall cavity insulation from R-18 to R-39 with only a marginal increase in the overall wall assembly R-value (e.g., R-11 vs. R-15). In other words, we've more than doubled the wall insulation at substantial cost and only realized about a 33% improvement in overall wall assembly R-value due to the impact of much lower R-value windows. With these same assumptions, we can increase the R-18 insulated wall over 300% to R-60 and only get a 50% improvement in overall wall assembly R-value (e.g., R-11 vs. R-17). Now look at the power of high-R windows. We get nearly the same overall wall assembly R-value with an R-10 window (e.g., U-value = 0.10) and R-18 insulated wall as an R-3 window and R-60 insulated wall (e.g., R-16 vs. R-17). Yes, windows are a really big deal! There is a desperate need for reasonably priced, high-R windows.

Window 15% of Wall Area	Wall R-Value with Windows w/Variied Wall Insulation Levels			
U-Value	R-0	R-18	R-39	R-60
0.30	R-5	R-11	R-15	R-17
0.20	R-5	R-13	R-19	R-23
0.15	R-5	R-14.5	R-23	R-28
0.10	R-5.5	R-16	R-27	R-34



Sources:

"Holes in the Wall: To Improve the Energy Performance of Walls, Look at the Total R-Value,"
 Journal of Light Construction, February 2014;
 Multi-Assembly R-Value / U-Value Calculator – Cascadia Windows and Doors;
 Michael Blasnik Presentation, 2014 ACI Conference

And the winners are...

DOE presented [Housing Innovation Awards](#) to 28 industry leaders at the Energy Environmental Building Alliance's Excellence in Building Conference in St. Louis, Missouri in late September. These leaders are at the forefront of a revolution. You may think it is calm now -- it usually is right before the storm – but be prepared. Zero energy ready homes are in the news daily. A recent study by [Navigant Research](#) expects the zero energy building market to grow to \$1.4 trillion by 2035. [Learn more](#) about how each of these winners has prepared for the future today and get ideas for your preparations.

Leading ZERH builders discuss what DOE can do for them

Last winter a group of our nation's leading production builders got together to share trends, experiences, successes, and obstacles to transforming the housing industry to zero energy ready homes. The results were captured in a [report](#) available on our [resources](#) page. One of the biggest outcomes was the DOE program name change from Challenge Home to Zero Energy Ready Home. The participants noted that "zero" resonates better with consumers.

Last week, 18 leading Zero Energy Ready Home builders got together to build upon the first meeting. They discussed successful architectural solutions, technical solutions, cost solutions and sales solutions and identified what they need from DOE to support and improve their zero energy ready home business. One of the key items to come out of this is the need for greater consumer awareness and homeowner education on living in a high performance home. They also want a forum for discussing innovations and solutions among their peers. There was discussion – as expected - about recognizing the value of energy efficiency in appraisals. A report will be available soon on the resources page that will outline next steps, but for now take a look at how DOE is addressing these issues with the Building Science to Sales Translator and the new DOE Zero Energy Ready Home Lender Partnership Agreement.



You have spoken: Building Science to Sales Translator revitalized

Last winter DOE convened a group of leading building science stakeholders to discuss the use of technical terminology in the housing industry. The discussion centered on the need to raise consumer awareness by more effectively communicating the value and benefits of high-performance homes. As a result of the meeting, DOE created a glossary of power words to reinforce the high performance home value message based on the consumer experience rather than the engineering function of home systems. This power words glossary was vetted over the summer. Feedback was incorporated into a new document that was discussed at a recent workshop where the words were finessed even more. So what's next? The revised glossary will be turned into a Building Science to Sales Translator Tool that will be available on the [Building America Solutions Center](#) next spring. Also, DOE will work with sponsors to support market research by the Shelton Group to test words that really work with consumers. Want to get involved in the market research? Join us for a [webinar](#) on November 20, 2014.

Calling all lenders: DOE establishes lending partners to recognize efficiency in the financing process

One of the major opportunities for progress in the housing industry is successfully identifying the added value of energy-efficient homes, and encouraging a consistent approach to applying this value during the appraisal and lending process. The DOE Zero Energy Ready Home program is just launching a [new partner type](#) for the [Partner Locator](#) tool. The tool links innovative builders to lenders who understand the need for accurate valuation of certified energy efficient homes. [Lender partners](#) can be easily identified by builders selling certified homes or by homebuyers interested in purchasing a certified home. The partnership encourages lenders to use appraisers from the [Valuation of Sustainable Buildings Professional Development Program Registry](#). These appraisers are educated on how to incorporate the value of energy-efficiency features in a home using the [Appraisal Institute's Residential Green and Energy Efficient Addendum](#). The best part for builders is that participating lenders will be more responsive to using a green appraiser and pushing the energy efficiency documentation from REM/Rate through the process. The best part for lenders is increased visibility and marketing within the energy efficiency community by being listed as a DOE partner. Are you a lender? Become a [partner](#) today.

Architects and designers can get in on the act

For the last couple of years, architects and designers have asked how they can be a part of the transformation to zero energy ready homes. Now we have a solution. Architects and designers can now [register](#) to be [partners](#). These partners must design a home that can be certified to meet the [DOE Zero Energy Ready Home National Program Requirements](#). The partner can submit a complete design with floor plans, elevations and detailed specifications that a builder or homeowner can use to build a DOE Zero Energy Ready Home. This must also include energy modeling results from RESNET-accredited software to document that the design meets the Target Home HERS Index. Alternatively, an architect or designer can get credit on the [partner locator](#) for certified homes they've designed for builder partners. This helps builders more easily find experienced architects and designers and vice versa. It also help interested homeowners find qualified partners to create their zero energy ready homes. Our hope is that this also leads to the creation of an online zero energy ready plan book.

Tech talks and training

Once a home is as good as ENERGY STAR, the modest added “lift” to bring it to DOE’s Zero Energy Ready Home specs unleashes a wave of powerful value messages. DOE Zero Energy Ready Homes live better, work better, and last better - - and give leading builders a U.S. Department of Energy brand to tell the incredible story of the homes they build. You don’t have to say “trust me” along with every other builder in your market – you have a US DOE-labeled, 3rd party-verified home built to exacting standards for efficiency and performance. To learn more, visit our [resources page](#) for recordings of past webinars.

Our next ZERH webinar: [Sales and Value Recognition of Zero Energy Ready Homes](#) is December 18, 2014, 12:00PM – 1:15 PM EST. Laura Stukel, Elevate Energy and Sandra Adomatis, Adomatis Appraisal Services will reveal solutions on how to overcome the challenges of appraising high performance homes. [Registration](#) is open now.

You deserve credit!

Don’t forget to [send](#) in your DOE Zero Energy Ready Home verification form from your RESNET-accredited software to get credit for your hard work on your profile in the [partner locator](#).

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