

## THE POPSICLE STICK FALLACY

Jason W. Wheeler

In a desperate attempt to live the American dream, I bought my first home 18 months ago at the beginning of my Rose Fellowship in St. George, Utah.

My wife and I left the kids with Grandpa for a weekend in Illinois and caught a plane to Southern Utah's desert metropolis in search of the perfect place to settle down. After three days of driving around the area, we found a home that more-or-less met our criteria: It was conveniently situated near my work, and likewise close to a good elementary school. It had three bedrooms and two bathrooms, a yard, a fence, windows, a roof, and most-importantly, air-conditioning (it can get as warm as 120 in St. George in August). Recently remodeled, the kitchen sported stainless steel appliances and granite countertops, and the front room was fitted out with a lovely fireplace.

Despite my past experiences with energy-efficient construction and my training as an architect, not once did I think about how much the home would cost me in monthly utility bills. I didn't look closely at the water heater or the heat pump AC unit. I didn't poke my head in the attic to see how much (or even if!) insulation was present. I failed to notice the 1970's aluminum window frames that conduct both heat and cold most beautifully.



And I'm sure I'm not the first to overlook such things when buying a home.

We all know that a more efficient home will translate into lower utility bills and will better protect our limited natural resources. Why, then, is the residential housing market so resistive to changing the way that we build, buy, and sell homes to better reflect a home's overall energy performance?

While there are many obstacles to promoting energy-efficient construction practices in the residential market, perhaps the following four points are most indicative:

**INVISIBLE.** Unless you are one of the lucky few to sport red and blue briefs in public and possess infrared vision, ascertaining the quality of a home's insulation can represent a bit of a challenge. Especially since real estate agents tend to discourage buyers from punching random holes in the walls and ceilings of the homes they show. Determining the efficiency of mechanical equipment can be easier, but requires a fairly conscientious home buyer.



**A BIT DULL.** Let's face it. It's a lot harder to get excited about well-installed fiberglass batts and an advanced air-sealing package than, say, granite countertops and jetted tubs (although, as far as I can tell, jetted tubs are primarily decorative – the electrician could never wire the thing up and the homeowner wouldn't have a clue, for as often as they get used). Choosing "green" improvements instead of additional features becomes particularly difficult if it means giving up an extra bedroom or one of the bays in the attached 72 car garage.

**UNDER-VALUED.** Any appraiser worth his salt will attest that you would be better off decorating your yard with an army of ceramic gnomes than wasting \$4000 on extra insulation (at least when it comes time to resell). Not only are appraisers unable to give monetary value to specific energy-efficient

improvements, there is little or no precedent for using market comparables as it relates to a home's energy performance.



Assuming you were foolish enough to disregard the appraiser's advice and installed the additional insulation regardless, your best chances at getting your investment back when it comes time to sell is to wallpaper your kitchen with Xeroxed copies of the last 12 months of utility bills. Then pray that your home will be shown to the kind of buyer who races to the mailbox at the end of each month in fits of anticipation at receiving the next utility bill and seeing just how little they've spent on electricity.

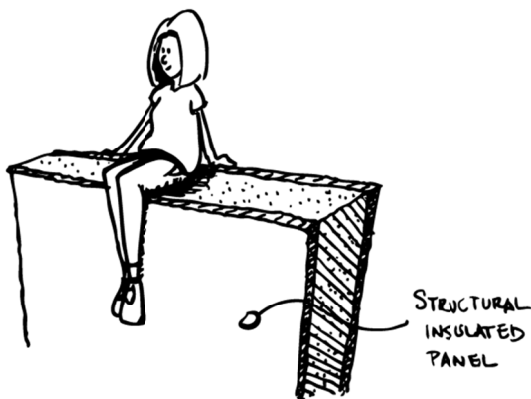
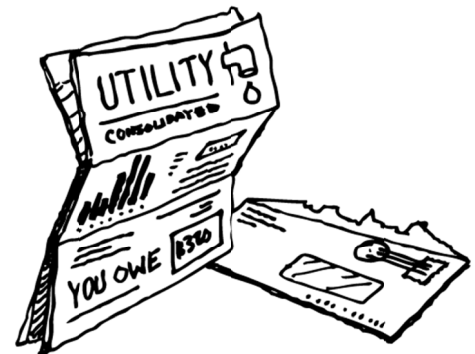
**UNDER-FINANCED.** Perhaps the most damning obstacle in building energy-efficient homes comes from well-established regulations and practices of home lending institutions. (But then, it is easy to blame the banks for any- and every-thing in the wake of our nation's mortgage crisis...)

When underwriting any residential home loan, banks will typically use income to debt ratios to help establish maximum loan limits. The "front-end" ratio represents your monthly mortgage payment compared with your household's total income, while the "back-end" ratio looks at total recurring debt (i.e.: your mortgage, plus those pesky monthly bills for that awful paisley recliner you bought last November on a whim) compared to total income.

What banks don't consider in their calculations is the amount of money you will be spending each month to keep your home at a toasty 76 degrees when it is 13 below with freezing rain outside. In other words, the bank will lend you the same amount of money for a home built of popsicle sticks and insulated with a healthy mix of fiberglass batts and air-pockets as they will for an equivalent-sized home built with 8" Structural Insulated Panels (SIPs) and R-50 dense-pack cellulose insulation in the attic.

And the issue with that? Let's say Mr. Popsicle Stick is approved for a \$1250 per month mortgage payment based on his front-end and back-end ratios. He builds his fancy new dream home in Buffalo New York, moves in and finds himself enjoying all the lovely perks of home ownership.

Ms. SIP is likewise approved for a monthly mortgage payment of \$1250. She builds her home across the street from Mr. Popsicle Stick; however, in order to afford the higher-performing building materials that she is committed to using, she has to scale back on the size of her house. She moves into her new not-quite-dream home two weeks before Mr. Popsicle Stick completes construction of his McMansion.

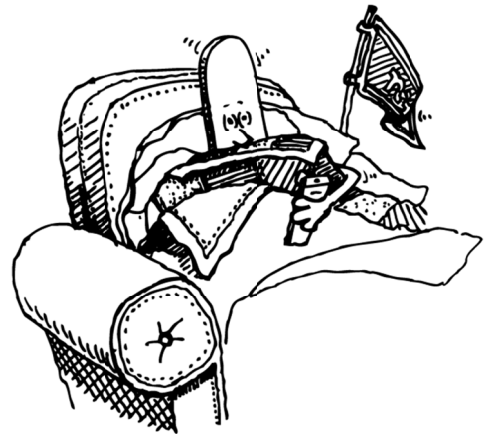


Then winter hits (which happens to be September 1<sup>st</sup> in Buffalo). Mr. Popsicle Stick is horrified to discover that his natural gas bill has jumped from \$40 per month to \$320 per month. In a desperate attempt to save money, he shuts off his furnace, buys a small electric heater, and huddles up under a pile of blankets in his den where he watches football games and wonders how he is going to survive from Super Bowl Sunday until the end of winter (which, unfortunately, happens to be July 1<sup>st</sup> in Buffalo).

Ms. SIP's gas bill, on the other hand, only increases by \$10 per month.

Had the bank taken energy performance into account during the underwriting process, Ms. SIP could have theoretically afforded a substantially larger mortgage payment on the basis of smaller monthly-utility bills.

Alternatively, Mr. Popsicle Stick should have qualified for a smaller monthly mortgage payment on the basis of needing to set aside a larger portion of his income to finance his furnace's voracious appetite. Fortunately, his large-screen TV was Energy-Star rated, so he didn't miss a moment of the epic showdown between the Giants and the Patriots.



**AND YOU PROPOSE...?** Obviously, significant changes need to occur in residential real estate before much progress can be made towards encouraging improved energy efficiency. For one, buyers need to be better educated on the full cost of homeownership as well as have some ideas about what they should be looking for when buying an energy-efficient home. Real estate agents, on the other hand, should find out more about a home's performance and then help explain potential operating expenses to buyers.

One potential solution could require that all listed homes on Multiple Listing Services include an Energy-Star HERS score for new homes, or an average of the last 12 months utility bills for existing homes. Such a listing would begin to give appraisers the necessary tool to make accurate comparable market analyses. And in a like manner, such a listing will give banks a better basis for establishing loan limits.

Home buyers will no longer have to choose between better insulation and the decorative jetted tub.