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## Don Ferrier: Model Builder

By Rich Binsacca

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Don Ferrier first learned about energy modeling in 2004, when he was about to start construction on Heather's House, a breakthrough project named for (and now occupied by) his daughter that put residential building science under the microscope of actual practice.

Pegged as a Building America project, the house underwent an energy modeling analysis by Building Science Corp., a Boston-based consortium partner in the DOE program. The process enlightened Ferrier to the benefits of such scrutiny and became a tool to improve his practices, alter his specs, and push the envelope of energy efficiency and overall housing performance.

"The parameters of Heather's House were that anything with a cost premium had to pay back in five years or less," says Ferrier. "We gained a lot of insight comparing the initial costs and energy savings of the whole house and most of its component parts to arrive at the best solutions."

Still, Ferrier does not consider energy modeling a panacea ... or even his best weapon to gauge return on investment. "The programs aren't as

*Credit: Terri Glanger Photography*

Don Ferrier, president of Ferrier Builders, Inc., and Ferrier Custom Homes.

exact as I wish they were," he says, noting that most modeling overstates the energy savings potential for a building or given product compared with actual results, a factor Ferrier chalks up to unanticipated occupant behavior and variations among products and systems.

"A passive [energy] home requires a very active homeowner," he says. "And if every A/C unit performed exactly the same and every installation was exactly the same, it might be a more reliable tool, but that's not reality."

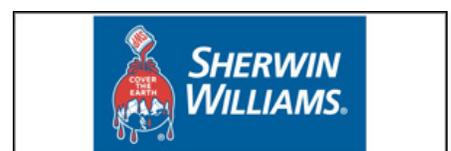
In addition, he says, most owners aren't interested in the nitty-gritty or even making value judgments about energy investments or ROI. "They know we build high-performance houses, and they want the same thing," says Ferrier of the 60-plus, net-zero-energy ready homes (and one actual net-zero energy home) he's built since the early 1980s.

Today, he relies on a \$450 energy modeling analysis conducted in the design phase of each new-home project by Oklahoma-based Guaranteed Watt Saver Systems to tweak his specs and gain insight into new products and systems he's considering, such as high-SEER, split-system air-source heat pumps and cool roof designs that passively ventilate the underside of the roof finish. "Modeling allows us to go as far up the energy-efficiency scale as possible and still build within budget," he says.

Initially populating the energy modeling software with data derived from manufacturer specs, Ferrier has since come to rely more on his experience with SIP roof and wall panels, various water heating options, and other products and systems to derive a more accurate analyses. "Sometimes we don't get credit for things I know will reduce energy use," he says, such as rolling shutters on west-facing windows that, if used properly and consistently, would cut solar heat gain by perhaps 90%.

He also reverts back to a trio of tenets that drive every project, no matter what the modeling program says. "You have to control the sun's heat, make the envelope as airtight as possible, introduce controlled fresh-air ventilation, and make the shell highly insulated," he says. "If you do those right, everything else falls into place."

As for the future of energy modeling, specifically for small-scale, single-family housing, Ferrier isn't hopeful for radical improvements in the short term, but he sees the industry being pushed to come up with a better mousetrap in response to demand for more precise and reliable energy-efficient practices and products.



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"There are so many factors driving up overall energy use and costs, even as homes become more efficient," he says, such as population growth and a recovering housing market that is eking out more starts every year, and even more so in markets like Texas. "At least it's now on the mainstream radar screen."

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