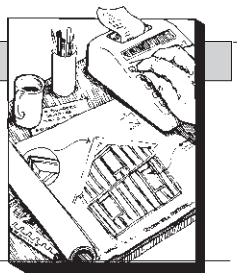
Selling Energy-Efficient Spec Homes

by Barry Preston



The typical production house in southern New England has the bare minimum in energy-efficient construction. This reflects the marketplace: Most buyers don't think energy efficiency is worth the extra cost. Many buyers are actually turned off at the thought of energy efficiency—they associate it with a yurt: smells like one because it doesn't get much fresh air, and looks like one because it is filled with weird gadgets that don't work—like solar water heaters. Little wonder few spec builders see any reason to spend money on these features.

Average Energy Specs

What does the average spec house buyer get these days?

- 2x4 exterior walls (R-13), sometimes 2x6 (R-19)
- R-30 in the ceiling
- Double-glazed windows, but usually the cheapest available with no regard for U-value or air-infiltration rates
- An air/vapor barrier of kraft-faced batts (or occasionally 4-mil poly, only on the walls, and not sealed at the seams, the electric boxes, or other penetrations), and an air-infiltration rate of about 20 air changes per hour at 50 pascals
- 2 inches of beadboard outside the foundation, but only below-grade (it's too expensive to protect, repair, and stucco it above-grade), and 2 inches of beadboard 2 feet in from the foundation wall under the slab—maybe.

And that's it.

Does this sound like the homes you build? Then you're right in the middle of the pack, and probably right on target for most home buyers. The spec builder must produce a product with the widest appeal in the market he is pursuing. He must be cost-competitive with other comparable units on the market, and he must be "feature-competitive." A spec builder must invest in the so-called "hot buttons"—those features that turn prospects into purchasers.

To produce profitable energy-efficient homes that sell easily and recapture the extra cost of energy features, a developer must turn these energy-efficient features into "hot buttons." Buyers must demand and pay for them.

Why should the spec builder bother with energy-efficient features anyway? There are three reasons:

1. The right kind of energy-efficient construction, properly presented, can be a sales plus.

2. The energy we use comes mainly from non-renewable sources. It is in the long-term interest of our buyers, and our society, to have an appropriate amount of energy efficiency built into the homes we market. And we can do it. We have the knowledge to build houses with common products and conventional methods that can be heated with a water heater for less than $100 per year!

3. If you pride yourselves in building a quality home, one of the hallmarks is optimal energy efficiency. Just what level of energy efficiency is explained below.

Use Brand Names

How do you market energy efficiency? The best way, we've found, is to use brand-name items that are recognized as hallmarks of quality and are actively promoted at the national level. We have found that most of our buyers want quality and will pay for it. With brand-name items—like KitchenAid dishwashers or Sub-Zero refrigerators—we don't have to educate buyers about the products we use. And the products suggest that they are getting a high quality house. By relying on the familiar, we take advantage of a foundation already laid.

Some examples follow:

Customers know Andersen windows and associate them with quality homes. Andersen also happens to have a very good U-value and infiltration rating. So we use Andersens and leave the brand stickers on until the house is sold.

Many buyers have heard of low-e glass. It's the latest energy feature. We provide it and use copies of the manufacturer's national ads as promotional materials.

It's conventional wisdom that a house loses lots of heat through the ceiling. So when we tell prospective buyers that we've put 12 inches of insulation in the ceiling they're favorably impressed. The same goes for our walls. Since it's fairly common knowledge that a 6-inch insulated wall is tvpical, and sufficient, buyers find our 8-inch equivalent wall (R-25) more desirable.

Most buyers have seen Owens-Corning's pink panther. If your house meets the very reasonable standards of their "thermal-crafted" program, Owens-Coming will "brand-name" it for you. They will provide you with a "thermal crafted" certificate for each qualifying house and promotional material to help you. Since buyers see this advertised on national TV, they feel they are getting a good value that is well accepted. It is like the "Good Housekeeping seal"—it's safe and economical—and it becomes a hot button.

Along this same line, the energy efficiency of the house itself can be "branded" or certified. We have our homes tested by the state energy conservation office (RISE in Rhode Island). We include results of a blower-door test and energy audit for each type of house we build in our marketing materials. Many of our buyers would have their new homes tested by RISE because this program is widely promoted in our state. Having it already done demonstrates that our buyers are getting a "properly built" house and a "certifiable" value.

RISE provides an estimate of annual heating bills. Homes with lower than normal heating bills are now recognized by mortgage lenders. Thus we are able to enhance our customers' financing position—something they'll appreciate.

Optimal Performance

In his book, *The Optimum House,* (Energy Design Collaborative, Scarsdale, N. Y.), architect Bill Bobenhausen identifies what level of energy efficiency makes economic sense—that is, what additional expense is justified by savings. His calculations take into account house location and local construction and energy costs. We use this as a guide, modifying it as to what is "marketable."

We use electric baseboard heat because it never breaks, provides total zone control, has low initial cost, and uses a utility and sub already on the site. In Rhode Island, with electric baseboard heat costing $.075/kwh, and using *The Optimum House* as a guide, we specify the following:

Exterior walls: R-25. We achieve this with 1 inch of foam laminated to exterior sheathing, plus 6-inch fiberglass batts in the walls.

Windows: Andersen double-glazed casement windows with low-e glass. *The Optimum House* does not require low-e glass, but we offer it because the additional cost is minimal and shrinking, and it is a marketing plus.

Roof/ceiling: R-38. We achieve R-38 with 12 inches of fiberglass, consisting of one layer of 6-inch batts between the joists, with 6 inches blown over the top so as to fill any gaps. We add the additional insulation because we feel it aids in marketing.

Slab edge: R-16.2. We use 3 inches of extruded polystyrene, inside the foundation wall extending downward 2 feet, and under the slab extending inward 2 feet.

Air infiltration control: *The Optimum House* recommends an air-exchange rate (ach) of 0.25 air changes per hour with an air-to-air heat exchanger, but this tightness is extremely hard to achieve. Also, we are not yet comfortable with air-to-air heat exchangers (recommended for houses below 0.3 ach). They are not yet sufficiently "user-friendly," are expensive, and lack brand-name recognition.

We achieve 0.3 to 0.6 ach by working with our insulation subcontractor to seal the building envelope (see "Spec Checklist").

Tightening has been a relatively low priority because of our difficulty in achieving meaningful results at a reasonable cost. It is also difficult to market since both our customers and salespeople are nervous about the whole issue of air quality.

Energy efficient construction is the way of the future. The best time to learn how to provide it profitably is now while it can give you a competitive edge. Furthermore, I'd rather have the building inspector think we're heroes for doing more than is required than goats for failing to abide by new state energy regulations. ■

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Insulation and Air /Vapor Barrier Checklist

To the Insulation Contractor:

☒ Install 6 inches of unfaced fiberglass batt insulation, installed to Completely fill the cavities in exterior walls.

☒ Install 3 1/2 inch fiberglass by 6 inches wide, installed in the space between unit party walls at the outside walls.

☒ Install 6 inches Kraft-faced batt stapled (to keep them in place) around chimney chase, covered with 6-mil poly.

☒ Install l-inch Hi-R board on garage side of walls between heated living area and garage.

☒ Install continuous foam baffles between all roof rafters from eave to ridge vent where insulation is specified between rafters.

☒ Install 6 inches unfaced batt insulation in all exterior walls. Install 6 inches unfaced batt "sound" insulation in party walls on side with air cavity (3¼inches on the side with no cavity and 3 1/2 inch wall).

☒ Install 9 inches unfaced batt insulation in ceiling over unheated spaces. 14 inches (6 inches unfaced batt, 8 inches loose, blown in) in flat ceiling. 9 inches unfaced batt and foam baffles and l-inch Hi-R board for all cathedral ceilings.

☒ Ensure seams between sheets/pieces of poly are located only at framing members. Overlapped 4 inches minimum. Stapled every 6 inches.

☒ Overlap poly 2 inches onto subfloor and staple to floor.

☒ Overlap poly 6 inches onto ceiling and staple to joists before ceiling air/vapor barrier (AVB) is installed. Run ceiling AVB all the way to outside walls.

☒ In general, install AVB so as to form complete and air-tight envelope for inside of home.

Leak Busters (an in-house thermal crew) shall:

(Before Drywall)

☒ Seal with foam all joints between foam sheathing on outside wall.

☒ Seal all plumbing, electrical, and hvac penetrations in wall top and bottom plates with foam or caulk.

☒ Seal with caulk the joint between the sill and the foundation,

☒ Install polystyrene board between joists at overhangs, and seal edges — four sides with caulk.

☒ Install safing in party wall air cavity at band joist level for each floor.

☒ Insulate all small crevices in exterior walls (around doors & jambs over windows/doors) using foam or caulk.

☒ Sea1 between fireplace and floor using silicone caulk. Seal chimney flue penetrations through thermal ceiling with high temperature silicone.

☒ Seal AVB to edge of fireplace using silicone caulk or Teno Sealant

☒ Caulk corners of sliders outside between door frame and siding.

☒ Ensure that all Hi-R boards have seams taped.

☒ Install "Plussers" or other approved attic-edge baffle and insulation at top plate of exterior wal1.

(After Drywall)

☒ Weatherstrip access hatch to attic. Use EPDM gasket.

☒ After plumbing hookups, seal around all plumbing penetrations through drywall using silicone caulk, if possible. Otherwise foam under sinks, shower head and mixing valve, and tub faucet and handles.

☒ Seal gap between fireplace and drywall using silicone caulk.