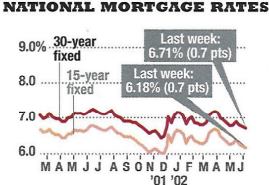


BRENDEL
PATTERSON
IN FRIDAY
REAL ESTATE



A look at Lenox Township in northern Macomb County. **ONLY IN THE FREE PRESS**



KENNETH HARNEY

Realtors want buyers to know how their house was appraised. **PAGE 2H.**

CREATING SPACES


Changes keep out streets sounds. **PAGE 1J.**

REAL ESTATE

PHASE
7


THE HOUSE CHRONICLES SERIES LOOKS AT THE INSULATION THAT'S REQUIRED TO MAKE A NEW HOME COZY AND ENERGY EFFICIENT

THE HOUSE CHRONICLES



SEALED WITH CARE

JUDY ROSE
REAL ESTATE WRITER



It was that dramatic moment in May when the rough carpenters finished their work and we walked into the large wooden shell of this new house for the first time.

Oh, no. At the back of the dining room, where three walls meet on an angle to form the bay, you could see sunshine through gaps between the boards.

"Look at this," we said to Matt Kime, youngest son in the Kime family of builders and project manager for this house.

"The energy seal will fix that," he said.

Of course. One reason the Free Press picked RDK Homes for the House Chronicles — the Free Press' spring and summer project to document the building of a house — was that the company's houses give us the chance to explore some good new products and processes. Without being lavish, the houses go beyond what's baseline for a medium-priced subdivision house.

In insulation, this extra is the Nelson Energy Seal. Like extreme sports, it's extreme caulking that exceeds what most insulation companies offer as standard.

The process is done in two stages — the first after the rough frame is built, but before it's insulated, the second after drywall is hung.

You'll become a convert to extreme caulking if you ever stand inside a just-framed house when the sun is behind it and you see how shafts of light shoot through gaps between wood and wood — spaces that might be a quarter-inch high and 20 feet long. It's estimated that the air leaks in the frame of a standard house add up to the size of an open window.

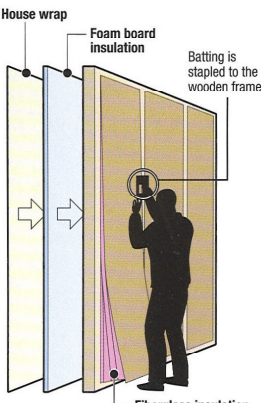
This matters. The insulation package that goes into your new house will be one of the most important factors in how much you enjoy it.

Feels like home

The pluses to good insulation are more than saving money on energy. A house with cold spots will never feel cozy in the winter, even if you crank up the heat.

Heat and cold always move toward each other. If areas of your house leak heat, inside air always will be moving,


INSULATION: TRADITIONAL AND 2 NEW CHOICES



FIBERGLASS BATTING

- **Method:** Fiberglass batting, unrolled into the cavity between wall studs, cut to fit around electrical boxes and other wall intrusions. Often with paper cover that's stapled to wall studs.
- **R-value:** R-13 in a 2-by-4 framed wall, R32 when 10 inches deep in the attic. Can be improved by adding exterior foam board and house wrap.
- **Pluses:** Crews are familiar with it; installs easily; most economical; works well if it's installed well.
- **Minuses:** Prone to air leaks, loses some insulation value in cold temperatures, as in under 20 degrees.

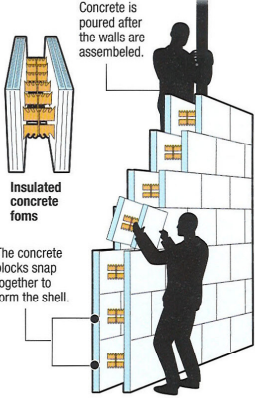
Cost: Estimated \$2,000 for a 2,500-square-foot house.



BLOWN-IN CELLULOSE

- **Method:** Shredded, chemically treated cellulose is blown into the wall cavity wet or blown into the attic dry.
- **R-value:** R13-R15 in a 2-by-4 framed wall, R38 when 10 inches deep in attic.
- **Pluses:** Because it's blown in wet, insulation flows through the wall and attaches snugly in tight spaces and around intruding building materials. Not only insulates but gives a very good air seal.
- **Minuses:** Messier to handle during installation.

Cost: Estimated \$3,500-\$4,000 for a 2,500-square-foot house.



INSULATING CONCRETE FORMS

- **Method:** Hollow, foam-plastic blocks, reinforced inside with steel and assembled into the house frame. Then concrete is poured through the honeycombed inside.
- **R-value:** An excellent R20-plus, with virtually no air leaks.
- **Pluses:** Excellent insulation and air tightness makes for very stable interior temperature, produces a very strong house that withstands hurricanes or tornadoes.
- **Minuses:** Crews must learn a new way to build.

Cost: An additional 3-5 percent to the price of a house.

Sources: American Council for an Energy Efficient Economy, Owens Corning, Nu-Wool, Portland Cement Association, Free Press research.

F.S. FLUKER/Detroit Free Press

as heat travels to cold spots. You're not only paying for heat that's lost, you're sitting in a constant draft.

In Michigan, home insulating codes are so-so — better than they used to be, but well short of what's recommended by the U.S. Model Energy Code for this climate. For a northern state, we have one of the weaker codes. (Detroit Free Press Business section, March 26, 1996. Read it online at www.freep.com/realestate/renews/energy9_20020609.htm.)

So a smart new-home shopper has two ways to go.

■ If you choose a builder who uses today's standard code — and most do

Please see SEALED, Page 17H

Innovations in insulation

By JUDY ROSE
FREE PRESS REAL ESTATE WRITER

If you shop for a new house in the next few years, you'll see different kinds of insulation being installed to compete with fiberglass.

These choices are well-known among people in the building industry, but less so among consumers. Here are two insulation variations making quick gains around the country, including metro Detroit.

BLOWN-IN CELLULOSE: Cellulose fi-

bers are blown into your wall cavity or on the floor of your attic. Usually it's recycled newspaper, shredded and mold treated to retard fire, insects and mold.

In a wall, the cellulose is sprayed in wet, so it adheres and doesn't settle. In an attic it's sprayed dry.

Blown-in cellulose has two big advantages. First is a higher R-value per inch than fiberglass, perhaps 15 percent to 20 percent more.

Second and more important is the effect of spraying it wet. It flows

Please see NEW, Page 17H

THE PROJECT SO FAR:

Free Press readers have watched while we picked a builder and a house plan, chose \$21,225 worth of options, dug and poured the basement, built the frame, then sheathed it with different colors and textures of shingles, siding and bricks. Find those reports online at www.freep.com/realestate/chronicles.htm

Today, in Phase 7 of 12, we tackle one of the most important things you cannot see in your house — its insulation package.

Watch this house as it's insulated: learn what makes a good package, and find out about new options you will be seeing on the market.

Phase 7. Today

BUNDLING UP

Insulation options — what you don't see pays off.

Phase 8. June 16

THE SYSTEMS

Plumbing, heating and electricity — choices you can live with.

Phase 9.

THE INSIDE SKIN

The drywall, the paint, the trim.

Phase 10.

THE INSTALLATIONS

Choosing cabinets, countertops, floors and fixtures.

Phase 11.

THE SURROUNDINGS

Landscape, hardscape, patios and decks.

Phase 12.

THE FINALE

The walkthrough, the closing, the warranty, the keys.

CHECK THE BASEMENT

You can tell a lot about the standards of a builder from the basement of that company's model home.

Always go down there and look up.

Check insulation at the top of the basement wall, where the concrete is topped by the wooden structure.

Between the studs of that short, high wood wall, insulation must be tucked. It's a hard-to-reach, little-seen spot. Is the insulation cut and fitted, or is it just stuffed in like a wad of paper?

Next, look up at floor joists and subfloors. If the rough carpenter crew took care, you won't see more than a few nails sticking through subfloors where they missed the joists.

Are the basement stairs good, uncracked wood? Is the trim around them neat and well-fitted?

By sleuthing in the basement, you can gauge whether the building crews did their best work even in places where they didn't think it would show.

SEALED | Extreme caulking can help keep house cozy

From Page 1H

— try to ensure that you get good work.

■ As an alternative, look for a builder who gives you more than Michigan's energy code requires.

Here are details about both paths:

Standard Michigan insulation

At the majority of subdivisions, the standard package you'll be offered is R13 insulation in the walls, R30 in the ceiling, plus a house wrap like Tyvek. The "R" stands for resistance to heat and the higher the number, the higher the insulation quality.

R13 usually is achieved by unrolling fiberglass batting into the 16-inch-wide spaces between the wall studs. Most often you'll see the distinctive pink product from Owens Corning.

The fiberglass might be exposed, or it might come in a paper wrap that has a thin coat of tar on the inside for a partial vapor barrier. That's good because the paper edges can be stapled to the wood studs for a snugger fit.

If your house is framed with 2-by-4s, as most are, the insulation goes into a wall cavity 3½ inches deep. Usually R13 is the most insulation you can fit into that space.

The ceiling gets R30 insulation, more than the walls, because warmed air rises. Some common forms are fiberglass batting, blown-in cellulose or a combination of the two.

Sloppy installation can greatly reduce the effectiveness of the insulation. Compressing it — for example, behind plumbing in the walls — cuts the R-value.

Holes have to be cut for electrical switches and plugs. They should be as small and precise as possible. In a sloppy job, you see gaps around the windows and doors or the reverse — insulation stuffed messily around door and window openings, plumbing and electrical boxes.

Pretty in pink

At the House Chronicles home in Van Buren Township, our insulation is a joy to the eye.

This is the typical product — pink batting wrapped in paper. But the subcontractor who installed it, Chris Leach, owner of Arctic Insulation in Plymouth, stapled it in as precisely as fine sewing.

It looks tighter and neater than photos in the Owens Corning promotion kit. You almost hate to see the drywallers cover it.

Leach has not tucked insulation behind the areas like the electrical boxes, because this house will get Nelson Energy Seal. That includes insulating foam sprayed around all areas that required openings be cut in the batting, for example, electrical boxes and plumbing.

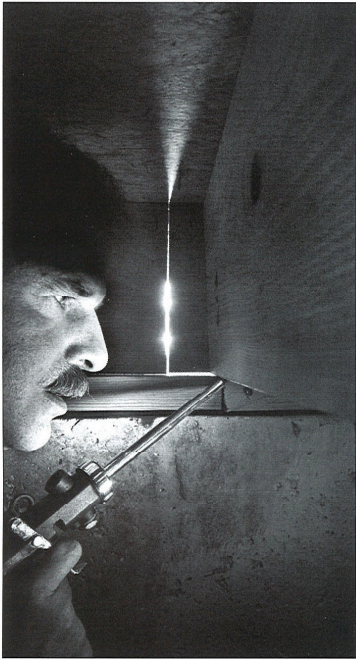
Most, though not all, builders also add house wrap like Tyvek, which stops air infiltration while it lets moisture escape from the wall cavity. It's so common now that unless the builder has substituted another air barrier, you might be hesitant about buying in a subdivision that has no house wrap or charges extra for it.

Add insulation to your list of items to check before you choose your builder and are visiting construction sites.

Finally, try to visit your home while your insulation is being installed.

Upgrading your insulation

Traditional fiberglass batting is being used in at least 90 percent



File photo by J. KYLE KEENER/Detroit Free Press

of subdivision houses today, not necessarily because it's better than other insulation, but because it's what most crews are used to installing.

But even using fiberglass batting, you can improve on that R13/R30 code minimum, and about 20 percent of metro Detroit builders offer a better package. Macomb County's builders, especially, sometimes give better-than-minimum insulation.

Here are four ways to get a snugger house while using fiberglass batting.

■ **Rigid foam-board insulation:** This consists of 4-by-8-foot boards of foam plastic attached to a backing. It's applied like a shell around the exterior of your house before bricks or siding are applied.

Foam-board insulation gives good added R-value for your walls, plus an added air barrier, at a moderate price. Most manufacturers — Dow, Owens Corning and others — say they can make foam plastic without using ozone-damaging chlorofluorocarbons, or CFCs.

One inch of foam board has an R-value of 4 or 5. In metro Detroit, you'll often see a half-inch board for an added R2, plus the added air barrier. The giant Pulte Homes adds an R31 foam board to all houses it builds in Michigan, says Great Lakes marketing director Mark Powers. Some mid-sized and small-sized builders do as well. At Dow, a representative estimated that adding half-inch foam board to a 2,500-square-foot house would cost \$650-\$750 installed.

■ **More attic insulation:** The cheapest, easiest improvement you can make is increasing attic insulation from R30 to R38. You get R38 with 12 inches of fiberglass or 10 inches of blown-in cellulose. Because you already have some insulation, you only have to augment it. It's fine to combine fiberglass and cellulose. Using either, materials to make this increase would cost \$200 to \$400 in a two-story, 2,500-square-foot house, according to prices from

Home Depot. Installation might roughly double that.

■ **Nelson Energy Seal:** A laborious process in which workers come to the house twice and seal every possible spot that air could pass through, with an expanding foam caulk. Any company is free to caulk like this, but around here it's usually Nelson Energy Seal, founded by D.R. Nelson.

It's far more than the standard caulking, and the Nelson company checks houses frequently with the blower-door test. This is the insulation industry's accepted method for measuring air-tightness. The house is closed up; the door is sealed and attached to a device that pumps in air under pressure. A built-in gauge measures how much air the house lets escape.

Some areas are especially vulnerable to air leaks, Nelson says, like the dining room bay in the House Chronicles home.

"Bays are notorious," he says. "They have lots of gaps just by their nature."

When you are new-house shopping, give extra points to a builder who includes this super caulking. It's about a day's labor after the worker becomes skilled, Nelson says. It costs the builder \$500-\$700, and the builder usually has to explain to the buyer why it's worth having.

Last year roughly 3,000 new houses or condos in metro Detroit got Nelson Energy Seal, Nelson estimates. That's about one in eight of the houses built.

Pulte puts it in all houses here. "It's all about air and water infiltration," says Powers. "We certainly found we had fewer callbacks," he said of home owners' complaints.

Some builders who add Nelson Energy Seal for free are RDK Homes, Moceri Development, Multi Building Co., Leader Homes, LoPiccolo Homes, Kingsway Builders, Tri-Mount Development and some of the Toll Brothers subdivisions. A few builders offer it as an option.

■ **Building with 2-by-6 construction, rather than 2-by-4:**

Light shines through gaps where wood meets wood in the basement of a house under construction (not the House Chronicles home). In a total house, such gaps may add up to the size of an open window. Don Nelson, founder of Nelson Energy Seal, is closing the gaps with a low-expansion polyurethane foam. This is done twice — after rough framing and after drywall is hung.

This gives you a terrific, solid house, and the deeper wall cavity you get with 2-by-6 studs allows great insulation.

A 2-by-6-built house gives you a wall cavity of 5½ inches, a depth that holds R19 insulation easily. Typically, a builder who goes this far also will add foam board to the outside, and you get walls of about R22.

Not many subdivisions are built this way, though. One-of-a-kind houses sometimes are, and a few smaller-scale builders like to build 2-by-6 houses. A high-volume builder who works exclusively with 2-by-4s can't switch easily to 2-by-6s at your request. The transition requires a number of changes, for example, the framing of doors and windows.

Measuring sticks

The Gold Standard would be the U.S. Department of Energy's recommendations for Michigan, as found in the Model Energy Code.

Roughly, they call for at least R15 walls plus house wrap, R38 ceiling, insulation inside or outside the basement, energy-efficient sealed, two-pane windows made of wood or with a heat barrier between inside and outside. These guidelines are not absolute; increasing one component can allow decreasing another.

You could achieve R15 walls by adding a half-inch of foam board insulation to a standard R13 fiberglass or cellulose-insulated wall.

You could achieve an R38 ceiling with 12 inches of fiberglass or about 10 inches of blown-in cellulose, says insulator Chris Leach.

The easiest way to insulate basement walls is with foam board around the side. You can also insulate inside, or you can build the basement with one of the new precast insulated components.

The best insulation package you're likely to see in new metro Detroit subdivisions is this:

- Walls of about R16 — foam board over standard insulation.
- Ceiling of R38, fiberglass or blown-in cellulose.
- Nelson Energy Seal.
- Basement insulation of about R5 foam board around the exterior.

Finally, there is a touchstone if you are determined to find extra-good insulation — the Environmental Protection Agency program Energy Star.

Energy Star-approved houses will use 30 percent less energy than houses built to the Model Energy Code — a very high standard.

A few metro Detroit builders offer this, and the number appears to be growing.

For example Lombardo Cos., a large Macomb County builder, offers an Energy Star option on houses at Timber Mill North, a Washington Township subdivision of houses in the higher \$200,000s.

For \$2,995, you get a house that meets Energy Star standards with foam board on basement

Next week: Come back to the Free Press to watch the House Chronicles home get its plumbing, heating and electrical systems, and learn about some interesting choices among these essential house components.

Contact JUDY ROSE at 313-222-6614 or rose@freepress.com.

NEW | 2 styles work better, cost more

From Page 1H

through the wall and attaches snugly around framing materials and problem spaces where electrical, plumbing and heating materials intrude.

"The biggest benefit is the air-sealing effect," says Bill Prindle of the American Council for an Energy Efficient Economy. "One of the concerns with fiberglass batting insulation is that air gaps can degrade its performance."

The cellulose is used in about 5 percent of new metro Detroit houses, but gaining acceptance fast. The biggest supplier here — Michigan-based Nu-Wool — will analyze your house, peg the heating and cooling bill at a low number, then guarantee that cost and refund the difference if it's higher.

Cellulose costs more than fiberglass, says subcontractor Chris Leach. The owner of Arctic Insulation in Plymouth has installed both. For example, if the fiberglass insulation in a house costs \$2,000, he says, blown cellulose might cost \$3,500-\$4,000.

The National Association of Home Builders — the majority of whose members insulate with fiberglass — did a 1998 study that said blown-in cellulose did not seal cracks better than fiberglass.

But the large majority of energy conservation agencies disagree, including the Washington-based Alliance to Save Energy. That's not to disparage fiberglass, which can be very good insulation if there's enough of it and it's installed well.

INSULATING CONCRETE FORMS: Usually called ICFs, these are hollow blocks of foam plastic that snap together to form the shape of a house. Inside, they are supported and connected with steel inserts and reinforcing steel rods.

When the house is assembled, concrete is poured through the whole honeycombed interior of the structure. The resulting wall is rated much higher than standard construction for strength against hurricanes and tornadoes, and it has great insulation — about R20, with almost zero air

leaks.

Companies that manufacture ICFs are springing up fast. In Michigan ICF houses are still a small part of new building, but growing, especially in colder parts of the state, among upscale, one-of-a-kind houses and in some small developments, particularly in Macomb County. To find builders that use ICFs, contact the Portland Cement Association.

Walls built from ICFs cost perhaps three times more than a standard stick-built wall. In the overall price of a house that might add 7 percent to 10 percent.

Resources

■ Alliance to Save Energy, 202-857-0666 9-5 weekdays or www.ase.org.

■ American Council for an Energy Efficient Economy, 202-429-8873 9-5 weekdays or www.aceee.org.

■ Nu-Wool, 800-748-0128 8-5 weekdays or www.nuwool.com.

■ Portland Cement Association, 847-966-6200, 8:30-6 weekdays or www.psa.org.