Notebook...

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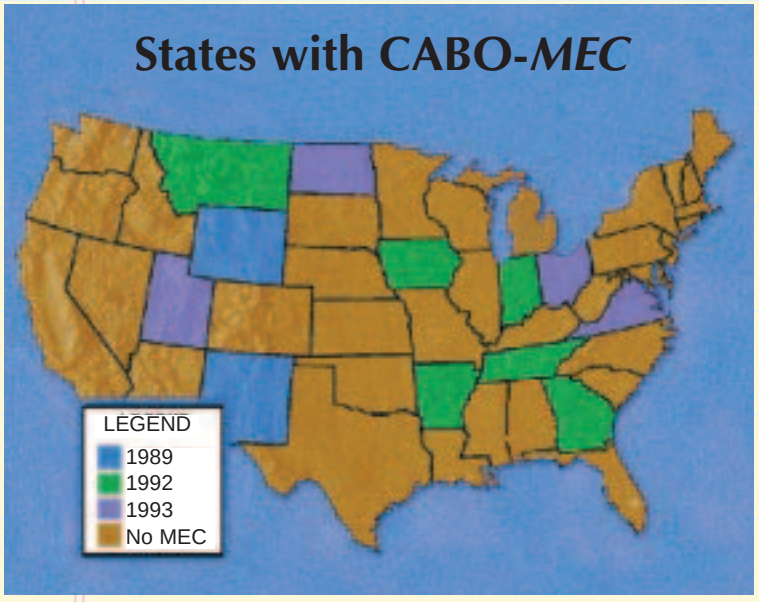
Energy Code Stirs Up Politics

Like all model codes, the Council of American Building Officials' *Model Energy Code* (CABO-*MEC*) changes over time. Every three years CABO revises the document through the same kind of consensus procedure it uses to update its *One- and Two-Family Dwelling Code.*

From there, the story gets more complicated. States and localities can choose for themselves to use CABO-*MEC* as their energy code, to adopt just parts of it, to create their own energy code, or to have no energy code at all. So depending on where you build, you may or may not have to work with CABO-*MEC*.

But if your state doesn't use CABO-*MEC* yet, chances are it eventually will. The Energy Policy Act (EPACT), passed by the U.S. Congress in 1992, requires states to "consider" adopting CABO-*MEC* as a statewide energy code and report on their decision.



This map shows states that have adopted CABO-*MEC* as a statewide energy code. In other states, some localities may be using *MEC,* with or without modifications.

While the federal government doesn't force states to actually adopt the code, the Department of Energy (DOE) does urge them to, and each year some states receive DOE grant money for training and energy code development efforts. By the end of 1996, many states had adopted the code, and many more are currently considering it (see map).

What* MEC *does. The code deals primarily with the building envelope. In its simplest form, the code merely specifies levels of wall, roof, and foundation insulation, and maximum areas of glass. However, more sophisticated builders can take advantage of the *MEC*'s system of "tradeoffs." Using advanced windows, for instance, or increasing wall insulation, may enable you to increase the glazing area; increasing the efficiency of heating or cooling equipment above federal minimum requirements could allow you to reduce insulation thicknesses. Even shading and house orientation can play into the equation.

Cost concerns. But according to NAHB energy policy specialist Ron Burton, the wiggle room allowed by these tradeoffs does not eliminate a significant drawback to the code. "*MEC* is not sensitive to cost at all," he says. "In the more northern climates, with inexpensive gas fuel for heating, we don't consider it cost-effective and affordable. The mandated codes cause a problem in the marketplace — we are losing people out of the market."

The tradeoffs allowed by *MEC*, admits Burton, lets a builder find the most cost-effective path to energy efficiency. "You can modify the requirements, change them around, and build the structure to the code in the least expensive way. But most builders don't know how to do it. If you hire somebody else, there goes your money."

Builders Guide to the Model Energy Code, a 250-page book explaining the *MEC* to builders, is available from the NAHB Bookstore (800/223-2665). The book provides guidance on basic and advanced methods of complying with each version of the *MEC*, and includes worksheets and *MECCheck* software.

State-by-state struggle. The decision to adopt or reject *MEC* has been easy in some states, hard in others. In the South, where heating loads are insignificant, the *MEC*'s requirements are easier for builders to

implement, and the code has often been adopted with little fuss. Alabama, for example, adopted the *MEC* in 1995. Says state HBA staffer Shaun Strickler, "The builders backed it. They like it, because it levels the playing field." Alabama's state law, however, was subject to local approval, and so far no Alabama municipalities are actually enforcing *MEC*.

In northern states, the *MEC* has provoked some rough political battles. Builders have objected strenuously to the code's complexity and cost. "It's just a very poorly written code," says Cleveland, Ohio, builder Bob Schmidt, an engineer with decades of experience building energy-efficient homes. "It makes a simple subject more complicated than it needs to be. For builders and code officials, it's Greek."

In Ohio, state officials have accepted a compliance method developed by Schmidt that replaces the cumbersome U-value and R-value manipulations and annual energy use calculations with a simplified analysis based on design heating load in Btu/sq. ft.

"I'm not building houses to meet the code, I'm building houses to save energy," says Schmidt. "Most *MEC* worksheets use UA [U-value times area]. I say, let's put it in Btus — that's the parlance of the trade. My method lets the builder see where the Btus are going. That way, he becomes a better builder."

In Michigan, a state administrative decision to adopt the 1992 *MEC* was overturned by the legislature after home builders objected to the code's cost. "When we ran the paybacks, they were 30 years or more," says Michigan HBA official Lee Schwartz. "There was no way first-time homebuyers were going to get their money back." Michigan has now adopted a compromise energy code based on a seven-year payback period for energy improvements. According to Schwartz, this new code falls about halfway between the state's previous code and the requirements of *MEC*.

In Kansas, state regulators decided to require builders to prove compliance with the *MEC* in order to obtain electrical hookup. After a political battle, the legislature took energy code authority back into its own hands, repealed the electrical hookup requirement, and instead required builders to provide buyers with energy-efficiency documentation on each new home.

"The insulation manufacturers hired the top lobbyist in the state to fight for the *MEC*," says Kansas HBA official Karen Stubbs. "In the end, the issue wasn't decided on the merits — we won by forming a coalition and attaching it to another bill. It was a bloody battle. Everybody is sick of it."

Lizards Endorse Warm Floors

Contractors who specialize in radiant-floor heating have found a new clientele: zoo animals. That's the latest from hydronics expert Joe Fiedrich, writing in April's *Contractor* magazine. In an Alberta zoo, an elephant who had always slept standing up grew to prefer the recumbent position after her cage got a new in-floor heating system, Fiedrich reports. And a new in-floor heating system in the Minnesota Zoo, near Minneapolis, not only keeps giant Komodo dragons comfortable, it also helps handlers manage the enormous lizards, according to zoo official Jackie Northard.

The carnivorous lizards were a gift from Indonesia, Northard explains. On their native island, they bask in 110°F heat during the day, then burrow in the sand at night to stay warm. Now, zookeepers use buried Wirsbo heat tubing to warm a section of rocks and sand in the display area during the day, then allow that zone to cool at night and warm up the creatures' holding pen instead.

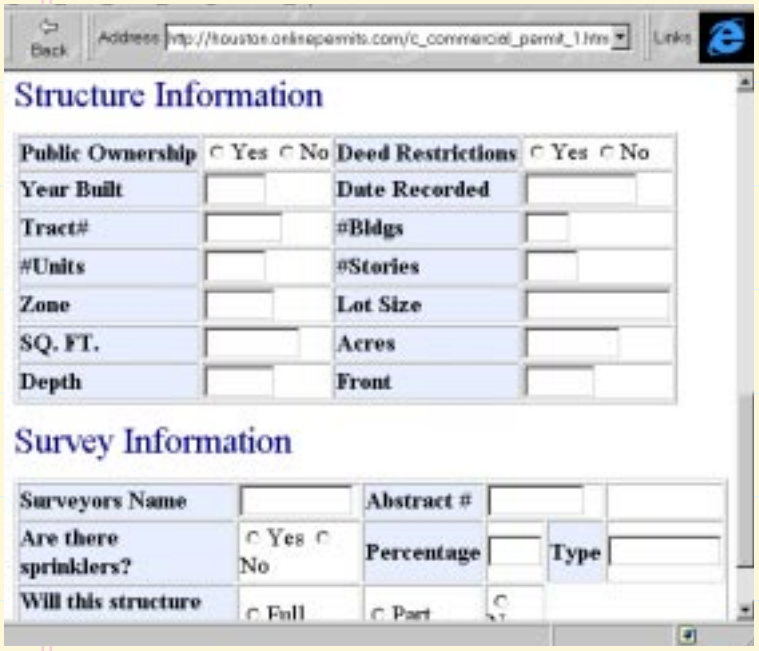
Carnivorous Komodo dragons have found a cozy home in the Minnesota Zoo, thanks to in-floor heating technology donated by Wirsbo, Inc.

That way, no one has to enforce bedtime rules for the reluctant dragons. "They're not full-grown yet," says Northard, "but they have teeth like sharks. They could take your arm off."

Maybe there's a lesson here for home designers: Put the warm floors where you want people to congregate (but don't be surprised if they lie on the floor).

Permits via the Web

Now that the World Wide Web has arrived, contractors in Houston may no longer have to spend half a day downtown every time they need to pull a permit. A new online service allows builders to apply for a permit, follow their application's progress, and even read building officials' comments from any online computer terminal.



Contractors shopping for materials at Builders Square stores in Houston can now apply for city permits from computer kiosks in the store. The inset shows a screen shot from the permit Web site.

The new service was developed by the Houston-based software firm TeleBuild, and a sponsorship by the San Antonio–based home-center chain Builders Square enables the city to provide the service at no charge to users. Instead, advertisements for building materials cross the top of the screen whenever you log on to the site.

Builders Square stores in Houston are now equipped with computer kiosks that enable customers to pull permits in the store, and shop for materials while they wait for a response from the city. The small contractors who patronize the store often aren't computer-literate, says Builders Square executive Tim Shanahan, but he says dozens of customers each week are signing up for short training courses in how to use the system. Of course, if you're Web-ready at home, you don't have to go anywhere. Any contractor with a computer and modem can apply for a Houston permit from home in the evening. If you need to submit plans, however, you'll still have to mail them in.

TeleBuild spokeswoman Tracy Curry says the company's Web software is designed to be compatible with software designed by partner Sierra Systems. Because Sierra's database system is already being used by hundreds of building departments nationwide, TeleBuild expects to have little difficulty extending the Web-based permit service to cities across the country. For more information, contact TeleBuild (281/588-9847) or visit its Web site (*www.telebuild.com*).

Offcuts ...

Federal legislation introduced this summer will reverse restrictive lumber trade rules and improve the affordability of new homes, according to the National Association of Home Builders. A duty on Canadian imports backed by the U.S. timber industry caused lumber prices to jump in April from $354/MBF to $463/MBF, adding as much as $2,000 to the price of a typical 2,000-square-foot new home.

Homeowners are planning to spend money on energy upgrades, according to a poll conducted by Fannie Mae and reported in *Energy Design Update*. Of the 40% of respondents planning some type of home improvements, 13.4% indicated plans to upgrade windows, doors, or heating and cooling systems. Kitchen renovations were first on the list (15.3%); other planned improvements included new roofs (13.2%), decks and porches (13.1%), and new bathrooms (10.5%).

During the current worker shortage, time and money invested in training will be the key to success in the construction industry, according to an article in *Concrete Construction* magazine. Several factors, including fewer people entering the work force, the unattractiveness of construction as a career choice among young people, and the retirement of skilled workers, are said to be contributing to the current labor shortage, which is not likely to ease for another decade.

Beyond Nails

Adhesive for Roof Retrofits

Homebuilding isn't rocket science. But a concept that has worked for the aerospace industry — using adhesives to augment the strength of point fasteners — shows great promise in the effort to create building systems that can stand up to nature's toughest tests.

Engineers with the Blue Sky hurricane-resistant building research program, headquartered in Southern Shores, N.C., report that polyurethane adhesive spray-applied to the joint between rafters and roof sheathing creates a bond twice as strong as the connection made using nails alone. The spray adhesive, developed by FoamSeal, Inc., of Oxford, Mich., forms a continuous, resilient bond. Lab testing at Clemson University, in Clemson, S.C., confirmed that the foam-reinforced joints are much more resistant to wind uplift forces than nails alone.

FoamSeal adhesives are already widely used in manufactured housing, where they help prevent drywall or panel fastener pops when units are shipped overland. In the factory, whole ceiling assemblies are glued together at once — drywall is

laid face down on a huge table, trusses are set on top, and the panel-to-framing joints are sprayed with the adhesive foam. Within minutes, a crane can pick up the entire 60-foot section of roof and swing it into place on top of the wall system.

FoamSeal executive Russell Cole says that spray foam reinforcement for on-site construction will soon be widely available through specialty contractors. "This will be economically feasible for single homes or even garages," he predicts. For further information, contact FoamSeal (248/628-2587) or visit the company's Web site at *www.itwfoamseal.com*.

True Cost of Injuries

A workers comp claim for a job-site injury could run from a few hundred dollars to tens of thousands. But at least that cost is covered by insurance.

Increasingly, safety experts are emphasizing the uninsured financial losses that injuries create. According to industry statistics, costs you may not even track — like the costs of job delays, recruiting and training replacements, and management time devoted to handling the injury — typically add up to four times the cost covered by insurance.

The federal Occupational Safety and Health Administration (OSHA) has started a new Safety Pays program in an effort to raise employers' awareness of the dollar value of safety improvements. After taking a look at a company's insured losses from their comp records, the agency presents its statistics that estimate the true losses as many times higher. Then they go one step further, estimating the amount of additional work a company would have to complete to restore that much profit to the bottom line. The numbers can be impressive: It can take hundreds of thousands of dollars in business volume for a company to recover financially from an injury that cost only a few thousand in insured losses.

OSHA didn't invent this kind of analysis; they learned it from private business, says Mary Reed of Argonaut Insurance, based in Atlanta, Ga. A consultant hired by OSHA to investigate effective safety programs referred the agency to Argonaut, a large insurer whose clients tend to have outstanding safety records. It was Argonaut who taught OSHA the "safety pays" approach the company uses in its own dealings with clients.

"Our numbers came from companies large enough to track this type of thing," says Reed. "Any large company that tracks the costs finds out that the indirect costs of injuries are at least four times and sometimes ten times greater than the direct costs." For small companies operating on slim margins, notes Reed, injuries can be the straw that breaks their financial back.