Codes and Standards: Do we really need more?

BY AMY MARTINO, AIA, CAASH, LEED-AP

This year has already seen more than its share of natural disasters. The flooding in the Mississippi, Ohio and Missouri River valleys caused widespread destruction throughout the Midwest. More than 1,100 confirmed tornadoes have resulted in 540 deaths. Wildfires laid waste to large swaths of Arizona and New Mexico.

The damage that results from the severity and unpredictability of these natural disasters can't be prevented, but it can be mitigated by effective building codes and standards. Unfortunately, it's hard to ensure that adoption — let alone enforcement — is uniform.

Before 2005, when Hurricanes Katrina and Rita caused widespread damage in Louisiana, the state did not have a building code. After the disaster, the state legislature mandated the use of the International Code Council's (ICC) family of model codes, which evolved into the Louisiana State Uniform Construction Code, effective in 2007. The idea was that building stronger and safer will lessen damage in the future.

Intent of codes and standards

The intent of building codes is to minimize loss of life and property. Building codes addressing fire, for example, strive to enable people to safely exit the building and to create safe passage to areas away from the hazard.

Preventing damage from catastrophe just is not a reasonable expectation. Can you design a home to withstand a tornado or major hurricane? Even if you could, the cost would be extraordinary.

Another approach to safeguarding lives in tornado-prone areas, for example, is building safe rooms or shelters. In the past decade, through grants and more than $50 million of federal funds, the Federal Emergency Management Agency (FEMA) has built more than 20,000 residential safe rooms and more than 500 larger community-level safe rooms.

Challenges implementing new codes

The ICC model codes have made major strides in coordinating the requirements and language, but it is still up to state and local municipalities to adopt and implement them — and regional and geographic differences and preferences lead to many variations.

As a leader in the NAHB Construction, Codes and Standards Committee, Chip Dence, a partner at East End Builders in Victoria, Texas, has extensive code-writing experience. Dence has been the NAHB representative for the Residential Code Interpretation Committee and also the International Residential Code – Building & Energy Committee for ICC.

"Codes are not one-size-fits-all," Dence said. "All building and model codes need to be adopted at the local level and amended to be appropriate for your community."

However, these changes can result in gray areas if the intent and language is not consistent. It is complicated even more by jurisdictions that choose not to adopt the model codes as a base — one reason why NAHB supports the ICC code development process.

Crisand Giles, executive director of Governmental Affairs for the California Building Industry Association of the Bay Area, said, "The building code development and adoption process needs to be efficient, effective and reflect the public's best interests."

Each time a code or standard is adopted, there is the potential for conflict. "Codes should be easy to understand. We would like to see fewer amendments by state agencies and local governments; it reduces consistency and creates confusion at the local level," Giles added.

The ultimate challenge is "complete cooperation and collaboration between building code staff, adopting state agencies/jurisdictions, and home builders to develop model codes," she said.

Conflicting requirements

Builder Chuck Ellison, vice president of Miller & Smith in McLean, Va., talked about other conflicts, such as zoning densities, energy-efficiency goals and environmental regulations.

"Recent experiences with energy codes have sometimes resulted in homes being sealed too tightly as the builder strives to meet the new requirements. In some instances, the lack or minimal ventilation can lead to an environment that promotes the growth of mold. If sufficient ventilation and/or air exchange is provided, it may be difficult or impossible to meet a certain level of energy efficiency.

"Both objectives are good ones that benefit the family living in the house. It just takes more coordination than often exists in the code adoption process to balance the two," he said.

Special interests

In Ellison's experience, one of the most frustrating and challenging aspects of revisions to codes for builders and developers is that they are often proposed by special interest groups.

"The narrow focus of the sponsoring group often — almost always it seems — correlates to limited thought or consideration given to the impact on other codes and regulations," he said.

"As a result, conflicts between two or more well-meant and often beneficial codes or sets of design criteria develop. Since there seldom is a process available to resolve conflicts between codes, the law of unintended consequences often comes into play."

Dence also pointed out an example in Texas. The Texas Windstorm Insurance Association (TWIA) and Texas Department of Insurance have developed rules that cover more than 14 counties within hurricane-prone or "catastrophe areas" — and they also perform all inspections. Participation is not mandatory, but properties that have not been inspected and certified are not eligible for windstorm and hail insurance through TWIA.

Advocates rarely consider the cost — or the marketability — of their proposals. The 2009 International Residential Code requirement of fire sprinklers in all one- and two-family homes is one example. Championed by a well-funded group of fire sprinkler manufacturers and installers, the expensive requirement made the national model code but state and local code officials voted with their pocketbooks: 41 of the 50 states have not adopted this requirement.

California is one state that must implement the residential fire sprinkler requirement. "In California, we are required to use the national model codes as the basis for our state codes. While our state agencies can adopt more stringent provisions, they cannot adopt less stringent measures," said Robert Raymer, PE, the California Building Industry Association's (CBIA) senior engineer and technical director.

"A primary industry concern is that the vast majority of new home buyers do not want these systems in their homes, adding a minimum cost of $3,000 to $6,000 per home," he said. "Many local fire departments and water purveyors like to require expensive add-ons to the state minimum requirements — larger water meters, dual water meters, on-site storage tanks, etc. — all of which seriously add to the cost of installation."

Increased costs

Through his position, Raymer, too, has seen the tremendous costs that go along with code requirements.

"Advocates for various issues rarely give serious consideration for the up-front cost or impact on marketability associated with most code-change proposals," he said. "For example, one of the biggest code-related issues confronting California home builders today is the push to require all new homes to be 'zero net energy' by the year 2020. This will involve a combination of very stringent increases in our energy efficiency standards — already the most stringent in the nation."

"On the one hand, who wouldn't want to live in a home where you don't have to pay a monthly electric bill?" Raymer said. "While the

cost can vary, it is generally accepted that building a zero net energy home will add about $20 per square foot to the cost of the home. For a 2,500-square-foot home, the price tag for zero net energy is about $50,000, which will have a serious impact on affordability."

Implementation timelines

Another problem: Code changes can't take place instantly, Raymer pointed out.

"In many cases, it will take years for everyone to get up to speed with a major change to common design practice. Product manufacturers, architects, designers, builders, sub-contractors, site superintendents, plan checkers and field inspectors all need to get up to speed on the changes in code if that change is to be implemented effectively," Raymer said.

"Most of the real work by our agencies focuses on the development and adoption of new codes. The same amount of time and energy needs to focus on critically needed field education and training," he added.

Giles has been very involved with Alameda County Green Building Program and the new 2010 California Green Building Standards Code (*CAL* Green) update that includes new green building standards and mandates for all new homes. Educating building department staffs "has been an additional administrative burden for jurisdictions that are currently reducing staff and operating under constrained budget realities."

Assessment of need

When a natural disaster occurs, it's invaluable to have builders' keen perspective and experience in evaluating the damage. Dence participated in the FEMA Mitigation Assessment Team study of Texas and Louisiana areas hit years ago by Hurricane Ike, a Category 4 storm with 145-mph sustained winds.

Dence said most damage assessments are "performed by academics, engineers and bureaucrats. They do not have the knowledge to assess when a building was built, let alone what code it was constructed to and if it was constructed to the code requirements or with poor workmanship."

Builders need to participate in the process to facilitate changes that will make a positive impact. After Hurricane Ike in 2008 and Claudette in 2003, Dence said, "the buildings which complied with the code requirements performed well. There was very little damage to homes built to code."

By examining the details, unnecessary changes may be avoided. When CBIA reviewed residential fire fatalities in California from 1986 to 1991, the association found that of the 118 total fires, less than 2 percent of fatalities occurred in dwelling units that were less than 10 years old.

The department also found that more than 95 percent of all residential fire fatalities occurred in homes that were more than 20 years old. New homes that adhere to current codes really are saving lives.

Moving forward

Looking to the future, Raymer said he hopes that there will be balance between safety and excessive costs in building codes. Raymer has seen codes evolve during the past five decades from a focus on structural safety — to better withstand fires, storms and natural disasters — to now include disability access and energy efficiency.

"So, what was once a body of work that focused almost entirely on health and life safety issues has grown into something much larger and now includes issues related to civil rights and resource conservation and management," Raymer said.

"A very basic need is access to affordable housing. But more and more, that very basic of needs seems to be getting pushed to the back burner while the debate on 'how to make things better' moves forward," Raymer said.

Dence identifies the NAHB's Builder Action Kits, available from *www.nahb.org*, as a tremendous resource to assist state and local jurisdictions, organizations and builders in proposing amendments to the model codes, including posing arguments and reasoning for such amendments. The association "does a great job of keeping this issue front and center, exactly where it belongs," Raymer agreed.

Dence used the NAHB Builder Action Kit in Texas to propose amendments to the 2009 International Energy Conservation Code adopted by the Texas State Energy Conservation Office Code. Of the 28 NAHB recommendations Dence presented, the Board of Adjustments and Appeals accepted 26.

"It can make you look like a genius," he said. BW

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