



## BUILDING CODE CHANGES COMING?

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### *What Do Code Changes Mean for You?*

#### **A constant in the construction industry is that change is inevitable.**

Every year, innovative products and new ideas not only directly affect many aspects of the building process itself, but also offer those of us working in the industry a compass for the future.

Looking ahead, this year and next, a major driver of change will be many states impending adoption of International Building Codes particularly in the areas of building envelope design and construction, and in the efficiency of heating, ventilation and air conditioning systems.

Code revisions are implemented at the federal level every few years, and then adopted locally at either the state or county level. Energy Star, U.S. Green Building Council's LEED program and individual state energy codes are less regular in the timing of their respective changes, but they are constantly evolving as well.

For the state of Minnesota for example, codes are updated every three years, IBC for 2012 builds upon and clarifies the 2009 codes, whose adoption Minnesota skipped because it lacked the resources to do the extensive reviews. "As a result, there is some catching up to do for our state in terms of examining the impact of 2009's changes and proposing amendments," says Dave Haaland, architect and code specialist with UrbanWorks, Minneapolis. "IBC also works in concert with the International Conservation Code—they reference each other--which makes reviewing them even more complicated."

#### ***Changes will Affect Building Performance and Costs***

All of these code updates serve two primary purposes: ***provide guidance to developers, designers and construction professionals in incorporating enhanced standards into new projects, and ensure state specific uniformity in performance and compliance.*** Because many changes also affect building performance and costs, it is important to understand how they may influence the design, construction and costs of your project.

Haaland says the changes to take effect this fall in Minnesota, or more likely in 2015, are "all about energy efficiency, so tighter envelopes, and improvements in windows and wall assemblies are a large part of it. And since commercial buildings rank among the largest consumers of energy, their construction and design will be the ones most significantly affected."

Haaland says the challenge of these changes for architects, developers and builders will be "to choose and use the systems and materials that are most effective in meeting the new standards." But, he added, their influence reaches beyond the codes themselves. "As we incorporate the new codes into our practices, we must also pay closer attention to such things as the orientation and the siting of the buildings we design and build, and respond better to the contexts in which they are set."



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Minnesota differs from most other states in its approach to the adoption of the new codes, according to Jerry Norman, section chief of Construction Codes and Licensing for the Minnesota Department of Labor and Industry. “Our state made the decision years ago to have just one code for the entire state, so that whatever you design works everywhere. However, adoption is up to each municipality on an ‘all in or all out’ basis. As a result, there are a lot of areas in Minnesota where there is no enforcement because local jurisdictions haven’t adopted it.”

Other states have an approach that creates numerous different interpretations, so that working with a knowledgeable design professional and construction service partner who understands local adoption and enforcement is extremely important. Each specific change can carry its own cost implications, and deserves a careful review with your construction and design professional partners. Gerhard Guth, staff code specialist for HGA Architects, Minneapolis, and chair of AIA Minnesota’s Building Codes Committee, acknowledges that there will be incremental costs involved in incorporating these changes into the design and construction process, but says “the markets will respond, and new products and systems will alleviate some of those costs as time goes by.” Material suppliers and equipment manufacturers also note that these code changes impact their own products, and frequently make modifications to correspond to a particular project’s code requirements.

### ***Here’s a Snapshot of Some of the Coming Changes***

A number of systems and building types are likely to be affected. Here’s a quick look at some of the more significant revisions.

**Air Leakage.** Not all code changes will result in greater costs. For example, a pending change centered on air leakage and insulation provides inspection opportunities for insulation fill and air barriers while components are still accessible for inspection. This would be relevant when thermal envelope assemblies are modified or repaired on an existing building. The inspection would be done prior to the assembly being closed up and the window removed for inspection.

**Alterations and Repairs.** In many cases the scope and definitions of key terms may change. Code changes affecting “alterations” and “repairs” are an example: both definitions are being modified to include retrofits and modifications of energy systems. This change will potentially make more projects subject to meeting existing code when renovation or upgrades are planned.

**Apartments and Multifamily.** Changes primarily revolve around building heights and areas, “with a lot of small nuances”, says Haaland, such as wider corridor requirements. Currently popular six-story multifamily construction, with five stories of wood frame over one story of precast, “should remain intact for the apartment market.”



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There will be changes in accessibility requirements, especially for care facilities. Window fall protection, restricting window operability and maximum window opening to no more than 8" will also be part of the mix.

There are also new requirements for exterior walls higher than 40 feet which use EIFS facades or incorporate plastic foam. All such materials must pass a National Fire Protection Association (NFPA) 235 test, even if there is a brick or masonry veneer. Wall assemblies must also incorporate non-combustible fire blocks.

Other provisions affecting apartment buildings will relate to stair provisions and elevator requirements, for better egress and fire protection. Because of 9/11, there will also be requirements for photo luminescence (probably tape) in larger high rises to counter power outages and blackouts, according to Guth. Also impacting multifamily construction will be changes in insulation requirements (see Insulation, below) and the requirement for high efficiency individual furnaces, as in residential HVAC.

**Commissioning.** There will be a new emphasis on building commissioning. For example, annual review of all fire openings will be mandated to make sure they are still operable. Envelope commissioning on a regular basis will be required as well. However, we question if States be able to adequately formulate a good game plan to enforce this. The new codes also suggest annual type inspections during the next build cycle that could mandate a more formal and regular inspection process.

**Energy.** Updated energy standards for building envelopes change the thermal comfort standard requirements that impact the exterior envelope design as well as the required efficiency of mechanical systems. Lighting and controls systems may also be impacted. Energy code changes will also have an impact on both architectural design and the specification and selection of materials.

Studying the consumption patterns of a commercial structure's energy usage illustrates the importance of a more energy efficient building. Mike Miller, vice president of ESG Architects, Minneapolis, say that approximately 45-60% of energy consumed in the U.S. is used to heat, cool and illuminate buildings. Any updates or changes in the current energy code that would reduce consumption by 1-2% would dramatically increase conservation.

**Exterior Envelope.** The biggest cost impacts of the updated codes will likely relate to changes in requirements for the building envelope. Perhaps most significant are requirements for window fall prevention, yet it is unclear at this point whether those requirements would be addressed at the point of manufacture of window assemblies, or handled as an aftermarket solution.

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Although the new code will require few changes directly related to windows and glazing, enhanced exterior envelope design could require higher performance exterior glazing, envelope assemblies, air barriers, building insulation adjustments and higher performance HVAC equipment. They will also change how a design professional approaches items like building insulation, finishes and openings. Modifying a building's insulation, type and application methods of exterior finishes and the performance specifications of window and door openings to meet the new energy codes is likely to have a significant impact on construction costs.

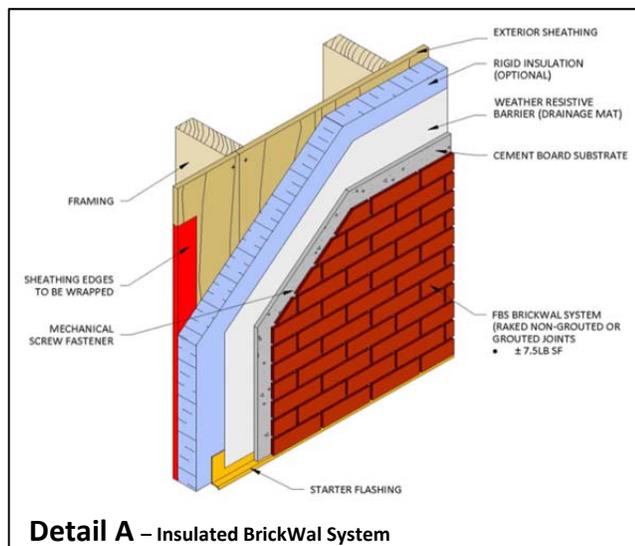
**HVAC Systems.** HVAC changes will require the mechanical code and the energy code to work together. Current proposed changes attempt to standardize and simplify the code and reduce redundancy by eliminating reference standards that are no longer necessary. A majority of the proposed changes are cost neutral, but some that impact energy efficiency will have increased costs associated with them. There are additional code changes which, while potentially not adding costs, will require some design modifications.

**Insulation & Cavity Ventilation.** A shift in the mandated R-value requirement is driving additional changes in the design development process. While past codes require 1 inch of rigid insulation or thermo break in the exterior wall assemblies for commercial structures, the standard is now moving toward 2 inches. For residential structures, the change is from zero to 1" rigid insulation. This represents a major shift in design plans and will challenge developers of multifamily projects to adapt to the standard.

### See Detail A.

Another recent design enhancement gaining popularity is exterior cavity wall ventilation/drainage. This is sometimes referred to in the industry as a "Rain Screen" system.

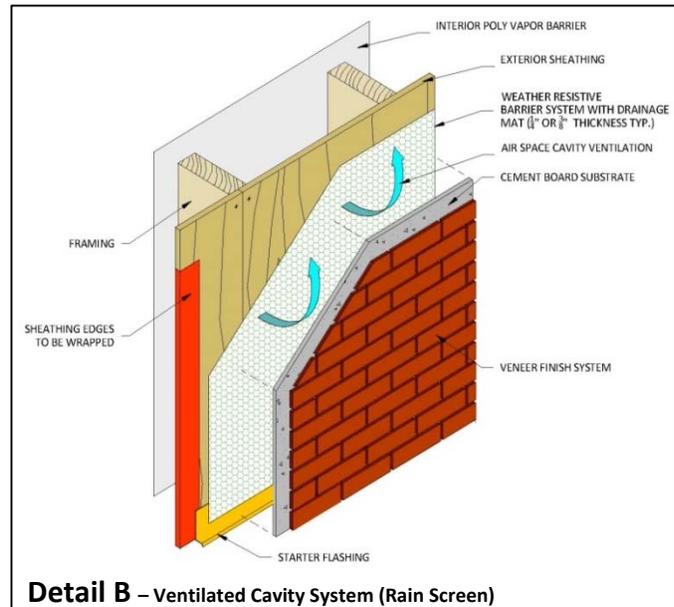
Residential and commercial projects are giving this approach consideration. When design professionals have concern or need for an interior vapor barrier, a ventilated cavity can provide additional protection. Pressure equalization and trapped water vapor concerns are minimized with a rain screen design.



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A number of products are currently available that work in conjunction with exterior wall finishes to address these concerns. **See Detail B.**

**Panelized Construction.** Mitigating the potential higher costs involved in more stringent code requirements, there appear to be ways of securing additional renewable and efficiency credits in the case of panelized or pre-cut construction. Under the LEED and energy codes there is potentially a positive impact of the new codes on these increasingly popular types of construction. (Further information will be provided in upcoming issues of *Fullerton Building Systems News*).



### *Fullerton is Here to Keep You Informed*

At the Fullerton Companies, we will always strive to be a valuable resource, keeping you informed on the changing dynamics of our industry. As wide-ranging as the upcoming code changes may be, we believe our existing details and available products already meet or even exceed many of these new standards. Our commitment to leadership in the construction and building materials industry means staying well ahead of developments in our industry, incorporating significant code improvements into our products and services before they are widely mandated.

We pledge to continue being proactive in adapting to change, and enhancing and expanding the ways in which we serve you, our customers. If you have any questions or want to discuss how this may affect you directly, we welcome your call.

Best Regards,

**Dave Walock**  
*President*